TVA

Title: REG. GUIDE 1.75 ASSOCIATED CIRCUITS AND APPENDIX R ANALYSIS FOR NON-CLASS 1E 120VAC & 250VDC CIRCUITS

REVISION LOG
WBPEVAR9001006

Revision No.	DESCRIPTION OF REVISION	Date Approved
0	INITIAL ISSUE	TM Baker 2-1-90 T. Glenn 2-2-90
1	REVISED PAGE 1, 2, 5, & 7. ADDED PAGE 3A.	TM. Baker 4-27-90 TA Glenn 4-27
2	ADDED ATTACHMENT P5297A (SH 1→3) & PAGE 3B. REVISED PAGES 1, 2, 4, & 5 TOTAL PAGES REV. 2 = 8 FOR COMPLETE CALCULATION ADD REV. 2 TO REV. 1	TM Baker 5-3-90 GP 5/7/90
3	ADDED: PAGE 3C & APPENDIX F REVISED: PAGES 1, 2, 4, 5, 9, A54, A57, A60, A61, B19, B36, B41, B48, B51, B52, B24. TOTAL PAGES REV. 3 = 20.	
4	ADDED PAGES ~~1A~~ 3d & ATTACHMENT P5833A 9-6-90 REVISED PAGES 2,4,5 & ~~B48~~ 1 9-6-90 ~~TOTAL PAGES REV 4: 87~~ 9-6-90 FSAR Compliance Review Rev. 4 : Date 9/6/90	9/6/90

9209040086 920828
PDR ADOCK 05000390
F PDR

TVA

Title: **REG. GUIDE 1.75 ASSOCIATED CIRCUITS AND APPENDIX R ANALYSIS FOR NON-CLASS 1E 120VAC & 250VDC CIRCUITS.**

REVISION LOG
WBPEVAR9001006

Revision No.	DESCRIPTION OF REVISION	Date Approved
5.	The assumption (2.2) that circuits where the first cable does not terminate at the end device does not decrease in conductor size has been removed. Further analysis has been performed evaluating the entire circuit. The results of this analysis are identified on additional pages in Appendix B as either pass or fail.	

Added pages 2a, 3e, 5a, 8a, 10a, B1A, B1B, B2A, B2B, B2C, B3A, B5A, B5B, B6A, B6B, B6C, B6D, B7A, B7B, B7C, B8A, B8B, B8C, B8D, B8E, B8F, B8G, B8H, B9A, B10A, B11A, B11B, B12A, B13A, B13A1, B13B, B13B1, B14A, B14A1, B35A, B35B, B36A, B36A1, B36B, B37A, B39A, B39B, B40A, B40B, B41A, B41B, B41C, B42A, B42B, B42C, B42D, B42E, B42F, B42G, B42G1, B42H, B43A, B43B, B43C, B43D, B43E, B43F, B43G, B43H, B43I, B43I1, B43J, B44A, B44B, B44B1, B44C, B44D, B44E, B44F, B44G, B44H, B44I, B44I1, B44J, B44K, B44L, B44M, B44N, B44P, B44P1, B44Q, B44R, B44S, B45A, B45B, B45B1, B45B2, B45C, B45D, B45E, B45F, B45G, B45H, B45I, B45J, B45K, B45L, B45M, B45N, B45P, B45Q, B45Q1, B45R, B45S, B46A, B46B, B46C, B46D, B46E, B46F, B46G, B46H, B46I, B46J, B46J1, B46K, B47A, B47B, B47C, B47D, B47E, B47F, B47G, B48A, B48B, B48C, B48D, B48E, B48F, B49A, B49B, B49C, B49D, B49E, B49F, B50A, B50B, B50C, B50D, B50E, B50F, B50G, B50H, B50J, B50K, B50L, B50M, B50N, B50P, B50Q, B50R, B50S, B51A, B51B, B51C, B52A, B53A, B53B, B53C, B53D, B53E, B53F, B53G, B53H, B54A, B54A1, B54B, B54B1, B54C, B54C1, B54D, B54E, B54F, B54G, B55A, B56A, B57A, B57B, B58A, B58B, B58C, B58D, B59A, B59A1, B59B, B59C, B59D, B59E, B59F, B60A, B60B, B61A, B61B, B61C, B61D, B61E, B61F, B61G, B61H, B61I, B61J, B61K, B61L, B61M, B62A, B62B, B62C, B62D, B62E, B62F, B62G, B63A, B63B, B63C, B63D, B63E, B64A, B64B, B64C B64D, B64E, B65A, B66A, B66B, B66C, B67A, B67B, B67C, B68A, B73A, B73B, B75A, B75B, B76A, C114, C115 .

REVISED PAGES: 1, 4, 7, 8, 10, C1, C3

Added Attachment No. MP E110007

FSAR COMPLIANCE REVIEW D. J. Cebulka [signature] 9-5-91 DATE: 08-28-91

TOTAL NUMBER OF PAGES ADDED BY REV. 5: 246

TOTAL CALCULATION PAGES: ~~[illegible]~~ 623 [initials] 9/5/91

Reviewed assumptions for R1 through RA to verify that UVA's were appropriately considered and that results and conclusions are unchanged in accordance with corrective action for WBFIR910184112. [initials] 9/5/91

CALCULATION REVISION LOG

TITLE: WBPEVAR9001006 Reg. Guide 1.75 Associated Circuits and Appendix R Analysis for Non-Class 1E 120 VAC and 250 VDC Circuits.	REVISION LOG

REVISION NUMBER	DESCRIPTION OF REVISION	DATE APPROVED
6	Added attachment nos. M1417A & P01219D. ~~Revision 6 total pages added = 9~~ 10/7/91 Added pages = 2b, 3f, attachment M14174A (3 pages) and Attachment P01219D (4 pages) Deleted pages = None Revised pages = 1 & 4 Total number of pages for the calculation = 632 Complete calculation consists of all pages of all sections, appendixes, attachments listed in the Table of Contents. FSAR Compliance Review: No FSAR Section is applicable. FSAR Compliance [signature] ABC/LE Date 10-7-91 Prepared By [signature] Date 10-07-91 Checked By [signature] Date 10-07-91	See Cover Sheet

THIS SHEET ADDED AT REV 6

TITLE: WBPEVAR9001006 Reg. Guide 1.75 Associated Circuits and Appendix R Analysis for Non-Class 1E 120 VAC and 250 VDC Circuits.	REVISION LOG

REVISION NUMBER	DESCRIPTION OF REVISION	DATE APPROVED
7 swa 12/16/91	ADDED PAGES = 1, 2c, 3g, 5b, B8H1, B14A2, B37B, B38A, ~~B49G, B49H, B50T~~, B53C1, B53D1, B53E1, B65B, B66D, B71A, C116 & ~~APPENDIX G~~ Att. M16428A (~~9~~ 7 Pages) swa 12/16/91 REVISED PAGES = ~~1, 1a,~~ 1a, 1b, cee 12/18/91 4, 10 B8, B9, B9A, B12A, B14 B15, B35A, B35B, B37, B38, B39A, B39B, B42B, B43C, B43D, B44K, B45A, B49, B50, B53C, B53D, B53E, B65A, B66C, B71, C3, C112 DELETED PAGES = NONE TOTAL NUMBER OF PAGES FOR THE CALCULATION = ~~660~~ ~~654~~ 655 DJK 12/11/91 FSAR COMPLIANCE REVIEW: C. C. Lykon for MCB DATE: 12/18/91	See Cover Sheet
8	THIS REVISION ADDS ATTACHMENT NO. M-12051-C WITH APPENDICES A, B, C, D, E, & F, WHICH VERIFIES THE ADEQUACY OF THE POTENTIAL TRANSFORMER CIRCUITS FOR THE CSST - C AND CSST - D LOAD TAP CHANGERS. ADDED PAGES 3H, ATTACHMENT NO. M-12051-C (5 PAGES) PLUS APPENDICES A, B, C, D, E, & F, G (~~15~~ 16 PAGES) P.J. 3-13-92 REVISED PAGES 1, 2C, 4 P.J. 3-13-92 DELETED PAGES NONE TOTAL NUMBER OF PAGES = ~~676~~ 677 P.J. 3-13-92 R8 FSAR COMPLIANCE ~~[illegible] for MCB~~ P.J. 03-13-92 3/14/92 REVIEW: ____ DATE: 3-13-92 NO FSAR SECTIONS ARE DEEMED RELEVANT TO THIS REVISION.	SEE COVER SHEET P.J. McCann 03-11-92 K BUSH SIGN FOR MCB VIA TELECON WITH C LYKON 3/14/92

CALCULATION REVISION LOG

TITLE: WBPEVAR9001006 Reg. Guide 1.75 Associated Circuits and Appendix R Analysis for Non-Class 1E 120 VAC and 250 VDC Circuits.	REVISION LOG

REVISION NUMBER	DESCRIPTION OF REVISION	DATE APPROVED
9	REVIEW 18 CIRCUITS WITH CABLES THAT DID NOT MEET CRITERIA SET BY REVISION 7 OF THIS CALCULATION ATTACHMENT NO. M16428A-1 ADDED PAGES = 2d, 3i, 5c, ATTACHMENT M16428A-1 (20 PAGES) REVISED PAGES = 4, 10 DELETED PAGES = NONE TOTAL NUMBER OF PAGES FOR THE CALCULATION = ~~700~~ 701 4-20-92 FSAR SECTION 8.3 WAS REVIEWED AND NO DISCREPANCIES WERE FOUND 4-16-92 REVIEW: [signature] DATE 4-17-92 ~~4-16-92~~	SEE COVER SHEET

THIS SHEET ADDED BY REVISION 9

3885x

TITLE : CALCULATION NO. WBPEVAR9001006 Reg. Guide 1.75 Associated Circuits and Appendix R Analysis for Non-Class 1E 120V AC & 250V DC Circuits Attachments FIR103A & FIR103B	REVISION LOG

REVISION NO.	DESCRIPTION OF REVISION	DATE APPROVED
10	This revision adds an analysis of -Communication systems(Systems 250, 252,253) -Potential transformer circuits -Security Systems(Systems 257) -Vendor Packages(various systems) which resolves concerns raised in WBFIR910243103 R0 -Support for DCN M-19412-A Pages added by this revision : Att.FIR103A....86 Att.FIR103B....78 Att.FIR103C....38 Att.M-19412-A...6 Pages 1d,2e,3j, 4a,.............4 TOTAL.........212 Total calculation pages...913 Pages changed by this revision :0 Pages deleted by this revision :0 R10 FSAR Compliance Review : C.C.Lyke for MEB | 8/11/92 ABC(LE) | DATE Prepared by P. Vb Date 8/8/92 Checked by [illegible] Date 8-8-92	TJB 8-11-92

THIS SHEET ADDED BY REV 10

CALCULATION REVISION LOG

TITLE: Reg. Guide 1.75 Associated Circuits and Appendix R Analysis for Non-Class 1E 120V AC & 250V DC Circuits	REVISION LOG

REVISION NUMBER	DESCRIPTION OF REVISION	DATE APPROVED
11	~~This revision makes administrative changes to FIR103C.~~ JSB 8-15-92 Criteria was changed to include fuses in all cables leaving vendor skids or packages. The Vendor Package Matrix (Table) was changed to incorporate changes in Pass Criteria column to match the change in criteria. The changes involved cables not passing the criteria and hence receiving a "NO" in the Pass Criteria column. Pages added by this revision: 2f,3k, FIR103C pages 1 - 10. Pages revised by this revision: FIR103C Appendix A pages 3,4,6,10,14,17,18,19,20,21. 1d, FIR103C pages 1 - 10, FIR103B page 9. Pages deleted by this revision: FIR103C pages 1 - 11. Total pages in the calculation: 914 FSAR Compliance Review: C.C. Lyke for MCB / 8/15/92 ABC/LE DATE Prepared by: [signature] Date: 8-15-92 Checked by: Robert Hurst Date: 8-15-92	See Cover Sheet [initials] 8/15/92

THIS PAGE ADDED BY REV. 11

CALCULATION DESIGN VERIFICATION (INDEPENDENT REVIEW) FORM

WBPEVAR9001006 — Calculation No.

0 — Revision

Method of design verification (independent review) used (check method used):

1. Design Review ✓
2. Alternate Calculation ______
3. Qualification Test ______

Justification (explain below):

Method 1: In the design review method, justify the technical adequacy of the calculation and explain how the adequacy was verified (calculation is similar to another, based on accepted handbook methods, appropriate sensitivity studies included for confidence, etc.).

Method 2: In the alternate calculation method, identify the pages where the alternate calculation has been included in the calculation package and explain why this method is adequate.

Method 3: In the qualification test method, identify the QA documented source(s) where testing adequately demonstrates the adequacy of this calculation and explain.

PERFORMED DESIGN REVIEW IN ACCORDANCE WITH MEMO FROM W.S. RAUGHLEY TO A P CAPOZZI DATED DEC 22, 1987 (B43871222905). VERIFIED THAT THE INPUTS AND OUTPUTS ARE REASONABLE AND CONSISTENT BASED UPON EXPERIENCE, ENGINEERING JUDGEMENT, OR DETAILED CHECK OF SELECTED DATA. REVIEWED THE PURPOSE, ASSUMPTIONS, METHOD AND CONCLUSIONS TO VERIFY THE TECHNICAL ADEQUACY OF EACH.

GLNicely for P.K Guha — 2-5-90
Design Verifier ~~Checker~~ — Date
(Independent Reviewer)

JUN 0 4 1990

NEP-3.1
Attachment 6
Page 1 of 1

CALCULATION DESIGN VERIFICATION (INDEPENDENT REVIEW) FORM

WBPEVAR9001006 — Calculation No.

1 — Revision

Method of design verification (independent review) used (check method used):

1. Design Review ✓
2. Alternate Calculation ______
3. Qualification Test ______

Justification (explain below):

Method 1: In the design review method, justify the technical adequacy of the calculation and explain how the adequacy was verified (calculation is similar to another, based on accepted handbook methods, appropriate sensitivity studies included for confidence, etc.).

Method 2: In the alternate calculation method, identify the pages where the alternate calculation has been included in the calculation package and explain why this method is adequate.

Method 3: In the qualification test method, identify the QA documented source(s) where testing adequately demonstrates the adequacy of this calculation and explain.

Performed DESIGN REVIEW IN ACCORDANCE WITH MEMO FROM W.S. RAUGHLEY TO A.P. CAPOZZI DATED 22, 1987 (B43871222905). ~~VERIFIED~~ TAD 4-27-90. R1 added an unverified assumption the results and conclusions are unchanged

[signature] — Design Verifier (Independent Reviewer)

4/27/90 — Date

NEP-3.1
Attachment 6
Page 1 of 1

CALCULATION DESIGN VERIFICATION (INDEPENDENT REVIEW) FORM

WBPEYAR9001006
Calculation No.

2
Revision

Method of design verification (independent review) used (check method used):

1. Design Review ✓
2. Alternate Calculation
3. Qualification Test

Justification (explain below):

Method 1: In the design review method, justify the technical adequacy of the calculation and explain how the adequacy was verified (calculation is similar to another, based on accepted handbook methods, appropriate sensitivity studies included for confidence, etc.).

Method 2: In the alternate calculation method, identify the pages where the alternate calculation has been included in the calculation package and explain why this method is adequate.

Method 3: In the qualification test method, identify the QA documented source(s) where testing adequately demonstrates the adequacy of this calculation and explain.

Reviewed calculation for technical adequacy and reasonableness. Reviewed purpose, results, methodology and conclusions to verify adequacy.

S Peterson
Design Verifier
(Independent Reviewer)

5/7/90
Date

CALCULATION DESIGN VERIFICATION (INDEPENDENT REVIEW) FORM

WBPEVAR9001006	3
Calculation No.	Revision

Method of design verification (independent review) used (check method used):

1. Design Review ✓
2. Alternate Calculation ______
3. Qualification Test ______

Justification (explain below):

<u>Method 1</u>: In the design review method, justify the technical adequacy of the calculation and explain how the adequacy was verified (calculation is similar to another, based on accepted handbook methods, appropriate sensitivity studies included for confidence, etc.).

<u>Method 2</u>: In the alternate calculation method, identify the pages where the alternate calculation has been included in the calculation package and explain why this method is adequate.

<u>Method 3</u>: In the qualification test method, identify the QA documented source(s) where testing adequately demonstrates the adequacy of this calculation and explain.

Performed design review in accordance with memo from W.S. Raughley to A.P. Capozzi dated December 22, 1987 (B43871222905). Verified the inputs and outputs are reasonable and consistent based on experience and engineering judgement. Reviewed purpose, assumptions, methodology and conclusions to verify technical adequacy.

Peterson — Design Verifier (Independent Reviewer)

7/5/90 — Date

CALCULATION DESIGN VERIFICATION (INDEPENDENT REVIEW) FORM

WBPEVAR9001006	4
Calculation No.	Revision

Method of design verification (independent review) used (check method used):

1.	Design Review	X
2.	Alternate Calculation	
3.	Qualification Test	

Justification (explain below):

Method 1: In the design review method, justify the technical adequacy of the calculation and explain how the adequacy was verified (calculation is similar to another, based on accepted handbook methods, appropriate sensitivity studies included for confidence, etc.).

Method 2: In the alternate calculation method, identify the pages where the alternate calculation has been included in the calculation package and explain why this method is adequate.

Method 3: In the qualification test method, identify the QA documented source(s) where testing adequately demonstrates the adequacy of this calculation and explain.

Design verification has been performed by the design review method in accordance with the guidelines set forth by project procedure E-76-TVA.

Design Verifier (Independent Reviewer) — 9-6-90
Date

THIS SHEET ADDED BY REV 4

CALCULATION DESIGN VERIFICATION (INDEPENDENT REVIEW) FORM

WBPEVAR9001006	5
Calculation No.	Revision

Method of design verification (independent review) used (check method used):

1. Design Review ✓
2. Alternate Calculation ____
3. Qualification Test ____

Justification (explain below):

Method 1: In the design review method, justify the technical adequacy of the calculation and explain how the adequacy was verified (calculation is similar to another, based on accepted handbook methods, appropriate sensitivity studies included for confidence, etc.).

Method 2: In the alternate calculation method, identify the pages where the alternate calculation has been included in the calculation package and explain why this method is adequate.

Method 3: In the qualification test method, identify the QA documented source(s) where testing adequately demonstrates the adequacy of this calculation and explain.

INDEPENDENTLY REVIEWED CALCULATION WBPEVAR9001006 FOR TECHNICAL ADEQUECY AS ADDRESSED IN 10CFR50. APPENDIX B (NEP 3.1, ATTACHMENT 10) THE DESIGN INPUT DATA AND ASSUMPTIONS WERE REVIEWED AND WERE FOUND APPROPRIATE AND REASONABLE. THE CALCULATION METHODS WERE BASED ON BRANCH TECHNICAL INSTRUCTION EEB-TI-09, REVISION 2. THE RESULTS AND CONCLUSIONS ARE ADEQUATE.

D.J. C[illegible] 8-29-91
Design Verifier (Independent Reviewer) Date

CALCULATION DESIGN VERIFICATION (INDEPENDENT REVIEW) FORM

WBPEVAR9001006 — Calculation No.

Ø6 — Revision

Method of design verification (independent review) used (check method used):

1.	Design Review	X
2.	Alternate Calculation	NR
3.	Qualification Test	NR

Justification (explain below):

Method 1: In the design review method, justify the technical adequacy of the calculation and explain how the adequacy was verified (calculation is similar to another, based on accepted handbook methods, appropriate sensitivity studies included for confidence, etc.).

Method 2: In the alternate calculation method, identify the pages where the alternate calculation has been included in the calculation package and explain why this method is adequate.

Method 3: In the qualification test method, identify the QA documented source(s) where testing adequately demonstrates the adequacy of this calculation and explain.

Design verification has been performed by the design review method in accordance with the guidelines set forth by project procedure E-76-TVA.

[signature] DH 10/7/91 — Design Verifier (Independent Reviewer)

10/2/91 — Date

THIS SHEET ADDED BY REV 6

CALCULATION DESIGN VERIFICATION (INDEPENDENT REVIEW) FORM

WBPEVAR9001006 — Calculation No.

7 — Revision

Method of design verification (independent review) used (check method used):

1. Design Review ✓
2. Alternate Calculation
3. Qualification Test

Justification (explain below):

Method 1: In the design review method, justify the technical adequacy of the calculation and explain how the adequacy was verified (calculation is similar to another, based on accepted handbook methods, appropriate sensitivity studies included for confidence, etc.).

Method 2: In the alternate calculation method, identify the pages where the alternate calculation has been included in the calculation package and explain why this method is adequate.

Method 3: In the qualification test method, identify the QA documented source(s) where testing adequately demonstrates the adequacy of this calculation and explain.

INDEPENDENTLY REVIEWED CALCULATION WBPEVAR9001006 FOR TECHNICAL ADEQUECY AS ADDRESSED IN 10CFR50, APPENDIX B (NEP 3.1, ATTACHMENT 10) THE DESIGN INPUT DATA AND ASSUMPTIONS WERE REVIEWED AND WERE FOUND APPROPRIATE AND REASONABLE. THE CALCULATION METHODS WERE BASED ON BRANCH TECHNICAL INSTRUCTION EEB-TI-09, REVISION 2. THE RESULTS AND CONCLUSIONS ARE ADEQUATE.

D. J. C[illegible] — Design Verifier (Independent Reviewer)

12-1-[illegible] — Date

CALCULATION DESIGN VERIFICATION (INDEPENDENT REVIEW) FORM

WBPEVAR9001006	8
Calculation No.	Revision

Method of design verification (independent review) used (check method used):

1. Design Review *
2. Alternate Calculation NR
3. Qualification Test NR

Justification (explain below):

Method 1: In the design review method, justify the technical adequacy of the calculation and explain how the adequacy was verified (calculation is similar to another, based on accepted handbook methods, appropriate sensitivity studies included for confidence, etc.).

Method 2: In the alternate calculation method, identify the pages where the alternate calculation has been included in the calculation package and explain why this method is adequate.

Method 3: In the qualification test method, identify the QA documented source(s) where testing adequately demonstrates the adequacy of this calculation and explain.

* Design verification has been performed by the design review method in accordance with the guidelines set forth by project procedure E-76-TVA.

P. Kleinschmidt 3/11/92

Design Verifier (Independent Reviewer) Date

THIS SHEET ADDED BY REV 8

CALCULATION DESIGN VERIFICATION (INDEPENDENT REVIEW) FORM

WBPEVAR9001006	9
Calculation No.	Revision

Method of design verification (independent review) used (check method used):

1.	Design Review	X
2.	Alternate Calculation	NR
3.	Qualification Test	NR

Justification (explain below):

Method 1: In the design review method, justify the technical adequacy of the calculation and explain how the adequacy was verified (calculation is similar to another, based on accepted handbook methods, appropriate sensitivity studies included for confidence, etc.).

Method 2: In the alternate calculation method, identify the pages where the alternate calculation has been included in the calculation package and explain why this method is adequate.

Method 3: In the qualification test method, identify the QA documented source(s) where testing adequately demonstrates the adequacy of this calculation and explain.

Design verification has been performed by the design review method in accordance with the guidelines set forth by project procedure E-76-TVA.

[signature] 4-16-92

Design Verifier (Independent Reviewer) Date

THIS SHEET ADDED BY REVISION 9

CALCULATION DESIGN VERIFICATION (INDEPENDENT REVIEW) FORM

WBPEVAR9001006	10
Calculation No.	Revision

Method of design verification (independent review) used (check method used):

1.	Design Review	*
2.	Alternate Calculation	NR
3.	Qualification Test	NR

Justification (explain below):

Method 1: In the design review method, justify the technical adequacy of the calculation and explain how the adequacy was verified (calculation is similar to another, based on accepted handbook methods, appropriate sensitivity studies included for confidence, etc.).

Method 2: In the alternate calculation method, identify the pages where the alternate calculation has been included in the calculation package and explain why this method is adequate.

Method 3: In the qualification test method, identify the QA documented source(s) where testing adequately demonstrates the adequacy of this calculation and explain.

* Design verification has been performed by the design review method in accordance with the guidelines set forth by project procedure E-76-TVA.

8-8-92

P. VL (Att. U-19412-A only) 8-8-92

Design Verifier (Independent Reviewer) | Date

THIS SHEET ADDED BY REVISION 10

0052y

CALCULATION DESIGN VERIFICATION (INDEPENDENT REVIEW) FORM

WBPEVAR9001006	11
Calculation No.	Revision

Method of design verification (independent review) used (check method used):

1.	Design Review	*
2.	Alternate Calculation	NR
3.	Qualification Test	NR

Justification (explain below):

Method 1: In the design review method, justify the technical adequacy of the calculation and explain how the adequacy was verified (calculation is similar to another, based on accepted handbook methods, appropriate sensitivity studies included for confidence, etc.).

Method 2: In the alternate calculation method, identify the pages where the alternate calculation has been included in the calculation package and explain why this method is adequate.

Method 3: In the qualification test method, identify the QA documented source(s) where testing adequately demonstrates the adequacy of this calculation and explain.

* Design verification has been performed by the design review method in accordance with the guidelines set forth by project procedure E-76-TVA.

Robert L. Frust — 8/13/92

Design Verifier (Independent Reviewer) — Date

COMPUTED TmB DATE 5-3-90

CHECKED ______ DATE ______

R6 | PREPARED: MAC ROOPANI DATE: 9-19-91
| VERIFIED: DRHundley DATE: 10-2-91

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2.0	ASSUMPTIONS	7
* 3.0	SOURCES OF DESIGN INPUT / REFERENCES	7
4.0	DESIGN INPUT DATA	8
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6.0	METHODOLOGY	8
7.0	GRAPHICS	10
8.0	SUMMARY OF RESULTS	10
9.0	CONCLUSION	11
10.0	APPENDIXES/ATTACHMENTS	

APPENDIX A .... Tabulation of Protective Devices..A1

APPENDIX B .... Tabulation of Circuits and Determination of Pass/Fail B1

APPENDIX C .... Time Current Plots C1

APPENDIX D .... AC Short Circuit Analysis D1
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APPENDIX E ..... DC Short Circuit Analysis E1
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ATTACHMENT E2
ATTACHMENT E3
ATTACHMENT E4

ATTACHMENT NO. P5297A - EVALUATION OF DCN MOD | R2

APPENDIX F ....F1 | R3

THIS CALCULATION PACKAGE CONTAINS ~~369~~ TOTAL PAGES | R5
ATTACHMENT P-5833-A | R4
~~619~~ WJH 8-26-91
~~615~~ 609/9/91

Attachment No. MPE110007 | R5
ATTACHMENT NOs. M14174A & ~~P01219D & S16808A~~ | R6 9/19/91
Attachment No. P01219D'

~~APPENDIX G~~ ~~G1~~ | R7

ATTACHMENT NO. M1642SA | R8 7-13-92 | R7 11/27/91
ATTACHMENT NO. M12051C

* REFER TO SECTION 3.0 FOR COMPUTER PROGRAM(S) UTILIZED.

ATTACHMENT NO M1642SA-1 | R9

TABLE OF CONTENTS (Continued)

Attachment FIR103A

Attachment FIR103B

Attachment FIR103C

Attachment M-19412-A

THIS PAGE ADDED BY REVISION 10

R1: COMPUTED TMB DATE 4-27-90

CHECKED TAD DATE 4-27-90

R2: COMPUTED TMB DATE 5-3-90

CHECKED ______ DATE ______

PREPARED: T. M. Barker DATE: 2-2-90
VERIFIED: T. A. Jemmer DATE: 2-2-90

FSAR COMPLIANCE REVIEW

R0: This FSAR review has been performed to comply with PM87-31 (EEB), FSAR Compliance. R

FSAR Section 8.3.1.4.3, Appendix 8C, and Appendix 8E were reviewed.

This calculation and the FSAR are in compliance with the following notations:

Section 8.3.1.4.3
Revision of this section is suggested to remove the references to specific numbers of associated circuits and their protective devices. This calculation along with the other associated circuit calculations will adequately encompass the circuits and their protective devices. Specific numbers shown in the FSAR serve no useful purpose and would require revision due to the corrective actions based on the calculation(s) results.

This section requires revision to note that in addition reviewing Non-Class 1E cables routed in nondivisional trays that Non-Class 1E cables routed in conduits were also included in this calculation. This change would be dependent upon TVA's position concerning cables routed in dedicated conduits and the requirement to periodically test the protective devices.

Appendix 8C
This section should be removed. The methodology of calculating fault currents is adequately addressed in the appropriate TVA calculations.

R1: FSAR SECTIONS 8.3.1.4.3, APP. 8C, & APP. 8E WERE REVIEWED. NO DISCREPANCIES WERE NOTED. R1

R2: FSAR SECTIONS 8.3.1.4.3, APP. 8C & 8E WERE REVIEWED. NO DISCREPANCIES NOTED. R2

R3: FSAR SECTIONS 8.3.1.4.3, APP. 8C & 8E WERE REVIEWED. NO DISCREPANCIES NOTED. R3

R4: FSAR SECTIONS 8.3.1.4.3, APP 8C & 8E WERE REVIEWED NO DISCREPANCIES NOTED R4

JAY
9-6-90

WBN UNIT 1

CALC : WBPEVAR9001006 REV. 5

FSAR COMPLIANCE REVIEW

This review has been performed to comply with PM 87-31 (EEB) - FSAR COMPLIANCE. The following FSAR sections have been reviewed:

FSAR SECTION 8 WAS REVIEWED

RESULTS OF REVIEW

This Calculation is (X), is not ( ) in compliance with the FSAR sections identified above.

PREPARER: Michael Hertzman DATE: 08-26-91

WBN UNIT 1
CALC: WBPEVAR9001006 REV. 7

FSAR COMPLIANCE REVIEW

This review has been performed to comply with PM 87-31 (EEB) - FSAR COMPLIANCE.
The following FSAR sections have been reviewed:

FSAR SECTION 8 WAS REVIEWED

RESULTS OF REVIEW

This Calculation is (X), is not ( ) in compliance with the FSAR sections identified above.

PREPARER: Gil P. Guevara DATE: 11-25-91

WBN UNIT 1

CALC: WBPEVAR9001006 REV. 9

FSAR COMPLIANCE REVIEW

This review has been performed to comply with PM 87-31 (EEB) - FSAR COMPLIANCE
The following FSAR sections have been reviewed:

FSAR SECTION 8 WAS REVIEWED

RESULT OF REVIEW

This Calculation is (X), is not ( ) in compliance with the FSAR sections identified above.

PREPARER: ____________________ DATE: 4-16-92

THIS SHEET ADDED BY REVISION 9

PREPARED: T.M. Baker DATE: 2-2-90
VERIFIED: T.A. Dem DATE: 2-2-90

1.0 PURPOSE & SCOPE

IEEE Standard 384-1974 which has been endorsed by the NRC in Regulatory Guide 1.75 requires that all Non-Class 1E associated circuits comply with one of the following:

1. They shall be uniquely identified as such and shall remain with or be separated the same as those Class 1E circuits with which they are associated.
2. They shall be in accordance with the above (1) from the Class 1E circuit to and including an isolation device. Beyond the isolation device the circuit is treated as a Non-Class 1E associated circuit provided it does not again become associated with a Class 1E circuit.
3. Associated circuits shall be analyzed or tested to demonstrate that the Class 1E circuits are not degraded below an acceptable level.

In addition, Non-Class 1E circuits shall be separated from the Class 1E and associated circuits by a minimum separation distance. If the minimum separation distance is not maintained, the Non-Class 1E circuits must be analyzed to demonstrate that the Class 1E circuits are not degraded below an acceptable level.

Since Watts Bar does not meet criteria 1 or 2 for associated circuits, or the minimum separation criteria for Non-Class 1E circuits, this calculation will analyze all Non-Class 1E and Associated circuits (120VAC & 250VDC) which could interface with a Category 1 structure to verify that Class 1E circuits are not degraded.

Also, since this calculation will examine cables to ensure that insulation damage does not occur it will also verify that the cable will not ignite therefore satisfying Appendix R concerns for Type III associated circuits within the scope of this calculation.

The circuits will be considered adequately protected if the cables are prevented from reaching thermal damage by any one of the following device schemes

1. A single circuit breaker periodically tested
2. Two breakers in series
3. A circuit breaker and fuse in series
4. A single fuse

R1: COMPUTED TMB DATE 4-27-90
CHECKED TAD DATE 4-27-90

PREPARED: T. M. Barker DATE: 2-2-90
VERIFIED: T. O. Dennis DATE: 2-2-90

Since the minimum separation criteria between Class 1E and individual Non-Class 1E and associated circuits could not be verified without extensive analysis a less complex approach is required. This calculation will encompass all 120VAC and 250VDC Non-Class 1E circuits which could possibly become associated or fail to meet the minimum separation criteria.

2.0 ASSUMPTIONS

2.1 It is assumed that the manufacturer's time-current plots for the various protective devices utilized in this analysis adequately represent the devices installed since some variance between the manufacturer's standard curves and equipment supplied on TVA contracts could exist. ~~THIS IS AN UNVERIFIED ASSUMPTION.~~ 8-29-91 R5

2.2 Many of the circuits in Appendix B identify only the first cable connected to the protective device. For those circuits where the first cable does not terminate at the end device it is assumed that the conductor size of any additional cables does not decrease. ~~THIS IS AN UNVERIFIED ASSUMPTION.~~ 8-29-91 R5

2.3 Bussman KAZ actuators will be replaced per Ref. ~~3.8~~ 3.9 8-29-91 ~~THIS IS AN UNVERIFIED ASSUMPTION.~~ 8-29-91

2.4 PROTECTIVE DEVICES ARE QUALIFIED FOR THE ENVIRONMENT THEY ARE LOCATED IN. ~~THIS IS AN UNVERIFIED ASSUMPTION.~~ (0-MCC-217-A, 0-MCC-217-B, 0-BD-229-4) 8-29-91 R1 R5

3.0 SOURCES OF DESIGN INPUT / REFERENCES

3.1 Regulatory Guide 1.75, Rev. 2

3.2 IEEE Standard 384-1974

3.3 Watts Bar Design Criteria WB-DC-30-5, Rev.3, (B26880713055)

3.4 Walkdown data for Non-Class 1E Equipment, (B26900201400)

3.5 Computerized Cable Routing System (CCRS)

3.6 Numerous TVA As Designed drawings and manufacturer drawings were utilized in this analysis and are noted were applicable in Appendix A thru E.

PREPARED: Michael Gutzin DATE: 08-28-91
VERIFIED: D.J. Cibulka DATE: 08-29-91

3.7 SKM Systems Analysis, Inc. Computer Aided Plotting for Time Overcurrent Reporting (CAPTOR), version 2.1, Electrical Engineering Computer Software

3.8 Watts Bar Nuclear Plant Safety Evaluation Report

3.9 Design Change Notice No. P-03388-B (B26900302801) R5

3.10 UL Standard 489, Molded-Case Circuit Breakers and Circuit Breaker Enclosures

3.11 TVA Electrical Design Standard DS-E12.6.3, Rev. 1

3.12 TVA Electrical Design Standard DS-E12.6.2, Rev. 0

4.0 DESIGN INPUT DATA

The Design input data consists of the data sources and references listed in Section 3.0.

5.0 JUSTIFICATION OF ASSUMPTIONS

5.1 The assumption (2.1) that the manufacturer's time-current plots for various protective devices adequately represents the variance between the manufacture's standard curves and equipment supplied on TVA contracts is justified because the manufacture's time-current plots utilized are for the manufacturer and model number of the device. Variations in equipment characteristics are generally accounted for in the operating band shown on the time-current plots. In addition to the margin included in the plots, most cases analyzed have considerable margin between the protective device characteristic and the short time heating limits. R5

In those cases where the protective device characteristic is in close proximity to the short time heating limit, the following conditions would have to occur simultaneously to have a potential for cable damage: (1) the cable would have to be loaded to its maximum limit, (2) the ambient temperature would have to be at its maximum value, (3) the installed configuration (i.e., raceway fill, fire barriers, etc.) would have to be in the most limiting condition, (4) the protective device would have to operate outside

DJC 8-29-91

PREPARED: Michael Yutzy DATE: 8-28-91
VERIFIED: D.J. Caballer DATE: 8-29-91

its maximum tolerance and (5) the magnitude of the fault current would have to be coincident with the region of proximity. Therefore, the probability of cable damage is negligible.

5.2 Not Applicable.

5.3 The assumption (2.3) that Bussman KAZ actuators will be replaced may be removed upon implementation of DCN #P-03388-B to replace the KAZ actuators which are unsuitable for their intended use. R5

5.4 The assumption (2.4) that protective devices are qualified for the environment they are located in may be removed upon implementation of open item #1 (punchlist item number BKRA-002-006) of EQ binder #WBNEQ-BKRA-002 Rev. 2. This requires that all breakers in the EQ binder be replaced or an analysis demonstrating that non-1E cables that are associated with 1E cables are protected by breakers located in mild environments.

6.0 METHODOLOGY

6.1 IDENTIFICATION OF NON-CLASS 1E PROTECTIVE DEVICES

The identification of all Non-Class 1E Protective devices for cables that could become associated or routed near a Class 1E cable was performed by walkdown (Ref. 3.3).

For each board the different types of devices were then identified and are shown in Appendix A.

Time-current plots were developed for each device type and rating showing both the protective device and the short time heating limits for various cable sizes. Each plot will show the minimum conductor size which may be used with the device (See Appendix C).

PREPARED:_____________ DATE:_________
VERIFIED:_____________ DATE:_________

For those devices which protect a number 14 AWG with 75C insulation, no further analysis is required since any smaller conductor size is not permitted (Ref. 3.3).

For those devices that will not protect the minimum size cable, further analysis is required and was accomplished as follows.

Each device which required further analysis is tabulated in Appendix B. This listing will identify (by board)

1. The device curve number from Appendix C
2. Cable(s) protected by the device (See Sec. 2.2)
3. The cable size and Mark No., from CCRS (Ref. 3.5)
4. Applicable notes and/or references

By comparison of the cable data shown and the minimum acceptable cable for the device it was determined whether the circuit passed or failed and noted in the appropriate block.

Protective devices for which a time-current plot could not be determined, the circuit was considered "FAIL" except for small devices (ie. fuses rated 10A or less). Justification for this exception is based on the fact that none of the 10A fuses where a plot was available failed to protect the minimum cable size.

Later confirmation of the device documentation may result in a change to "PASS".

Refer to Appendix F for clarification of how concerns identified in PIRWBNEEB8659 and PIRWBNEEB8662 were addressed in this calculation. R3

6.2 LIGHTING CIRCUITS

For lighting circuits the minimum conductor size is 12 AWG (Ref. 3.3). A review of the protective devices for lighting cabinets indicate that the majority of the circuit breakers are 15A & 20A (Appendix C - CURVES 2 & 22). The curves verify that the devices will provide adequate protection for this size wire. Therefore, only lighting circuits with protective devices larger than 20A require further analysis.

PREPARED: T. M. Baker DATE: 2-2-90
VERIFIED: T. A. Lemm DATE: 2-2-90

An examination of interfaces between the Category 1 and non-siesmic areas show that there are no lighting circuits that originate in the Turbine, Service, or Office buildings and subsequently enter a Category 1 area. Therefore, no further analysis is required for circuits originating in these areas.

6.3 KAZ ACTUATORS

Panels containing Bussman Type KAZ actuators do not require analysis since the actuators are being replaced with Bussman Type FLAS-5 fuses (Ref 3.9 & Section 2.3) and will provide adequate cable protection (Appendix C, Curve No. 108).

6.4 SHORT CIRCUIT ANALYSIS

Analyses to determine the adequacy of protective devices short circuit current interrupting ability are presented in Appendix D and E.

6.5 See Page 10A. R5

7.0 GRAPHICS

Graphics for this calculation consists of the time-current plots described earlier and shown in Appendix C.

The plots were generated using computer software (Ref. 3.7) Each curve was checked (except as noted in Appendix C) using manufacturer's published curves for the protective device for accuracy. Minor deviations not adversely affecting the results of this calculation were ignored.

8.0 SUMMARY OF RESULTS

The result of this analysis is that the Non-Class 1E cables within the scope previously outlined have been determined to either pass or fail as indicated in Appendix B or ~~Appendix C~~. R7

ATTACHMENT M16428A-1

R9 RS 4/17/92

6.5 CABLE TEMPERATURE RATINGS

Cable temperature ratings used in this analysis are obtained using DS-E12.6.3, "Ampacity Table 1, 2 and 3 for Auxiliary and Control Power Cables". In the event cable mark numbers are not listed, DS-E12.1.13, "Class IE Cable ODs and Weights" or DS-E12.1.14, "Class NC Cable ODs and Weights", is used to determine the cable construction type code for the cable being evaluated. A cable with the identical construction type code is then found in DS-E12.6.3 and the corresponding temperature rating is used to complete the circuit evaluation. R5

PREPARED: TMBaker DATE: 2-2-90
VERIFIED: T.A.Denim DATE: 2-2-90

9.0 CONCLUSION

For those circuits identified as "PASS" in Appendix B the protective device installed will provide adequate cable protection against thermal damage. For those cases where full coordination between the cable damage curve and the breaker instantaneous trip curve cannot be attained, credit is taken for UL Standard 489 (Ref ~~3.9~~) 3.10 TAD 2/5/90 to show that the cables are adequately protected against short circuits up to the breaker interrupting rating. It is therefore demonstrated that:

1. Non-Class 1E circuits will not degrade a Class 1E or associated circuit

2. Associated circuits will not degrade a Class 1E circuit

For those circuits identified in Appendix B as "FAIL":

1. Corrective action must be taken to adequately protect the cable(s) identified.

OR

2. Further evaluation must be made to assure that the cable(s) meet the minimum separation requirements.

Determination of specific protective devices that will require periodic testing will be performed in a later revision to this calculation and the appropriate documents revised (Design drawings, Technical Specifications, etc) as described in the FSAR and noted in the Safety Evaluation Report.

Refer to Appendix D and E for conclusions of short circuit analyses.

10.0 APPENDIXES AND ATTACHMENTS

See Table of Contents.

MFR	GOULD SHAWMUT	BUSSMANN	BUSSMANN	GOULD SHAWMUT	BUSSMANN	GOULD SHAWMUT	GOULD SHAWMUT	GOULD SHAMUT	BUSSMANN
MDL	A6Y10	KLC15	KLC6	A6Y6	KLC10	OT6	OT15	OT20	FRN15
TYPE	TYPE II			TYPE II					
RTG	10A	15A	6A	6A	10A	6A	15A	20A	15A
BOARD									
6.9 KV START BOARD A WBN-0-BD-200-SA	0-FU-200-SA6/2 -SB6/3 -SA5/1 -SA5/2 -SA2/1 -SA1/1	0-FU-200-SA5/4 -SA5/3 -SA2/3 -SA1/2 NO UNID FOR FUSE FOR BKR 1512	RMN 2-2-90		0-FU-200-SA2/2	0-FU-200-SA1/3	0-FU-200-SA1/4 SA1/6	0-FU-200-SA1/5 -SA1/6	0-FU-200-SA1/5
	BREAKER 1514 "UC", ~~"UT"~~, ~~"UL"~~ RMN 1-23-90	BREAKER 1514 "UT", "UL" 2512 "UT"	BREAKER 2512 "UC", "UL"	BREAKER 2512 "UL"					

1-25-90

1-23-90

	GOULD SHAWMUT	BUSSMANN	BUSSMANN	BUSSMANN	GOULD SHAWMUT			
MFR	GOULD SHAWMUT	BUSSMANN	BUSSMANN	BUSSMANN	GOULD SHAWMUT			
MDL	A6Y10	KLC15	KLC6	FRN15	OT15			
TYPE	TYPE 11 AMPTRAP							
RTG	10A	15A	6A	15A	15A			
BOARD								
6.9 KV START BOARD B WBN-0-BD-200-SB	0-FU-200-SB5/3 -SB1/2 -SB2/2 -SB2/1 -SB1/2	0-FU-200-SB5/4 SB5/1 -SB2/3 -SB1/1		0-FU-200-SB1/5 -SB1/4 -SB1/6	0-FU-200-SB1/5 -SB1/4			
		BREAKER 2C14 "UT"	BREAKER 2C14 "UL" 2C12 "UL"					

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REVIEWED [illegible] 1-23-90

MFR	BUSSMANN	GOULD SHAWMUT	GOULD SHAWMUT	GOULD SHAWMUT	BUSSMANN	BUSSMANN	BUSSMANN	BUSSMANN
MDL	KLC15	A6Y10	A6Y6	OT6	NON10	KWN6	KLC6	FRN15
TYPE		TYPE 11	TYPE II					
RTG	15A	10A	6A	6A	10A	6A	6A	15A
BOARD								
6.9 COMMON BDA WBN-0-BD-200-A	0-FU-200-A1/1	0-FU-200-A1/2	0-FU-200-A1/3	0-FU-200-A1/3	0-FU-200-A3/2	0-FU-200-A8/3	0-FU-200-A3/2	COMPT 16 TRIP FUSE
	-A3/1	-A4/2	-A2/4	-A15/3	-A8/2			
	-A4/1	-A5/2	-A2/3					
	-A5/1	-A6/2	-A3/3					
	-A6/1	-A7/2	-A4/3					
	-A7/1	-A9/2	-A5/3					
	-A8/1	-A10/2	-A6/3					
	-A9/1	-A11/2	-A7/3					
	-A10/1	-A12/2	-A8/3					
	-A11/1	-A14/2	-A9/3					
	-A12/1	-A15/2	-A10/3					
	-A13/1	COMPT 16 CLOSE FUSE	-A11/3					
	-A14/1	~~COMPT 16 ELEVATE FUSE~~ RMN 1-25-90	-A12/3					
	-A15/1		-A14/3					
			COMPT 16 ELEVATOR FUSE					

CHECKED: 1-25-90

COMPILED: 1-23-90

MFR	BUSSMANN	GOULD SHAWMUT	GOULD SHAWMUT	BUSSMANN	GOULD SHAWMUT	BUSSMANN	BUSSMANN
MDL	KLC 15	A6Y6	A6Y10	NON10	OT6	KTN6	KLC6
TYPE		TYPE 11	TYPE 11				
RTG	15A	6A	10A	10A	6A	6A	6A
BOARD							
6.9 KV COMMON BDB WBN-0-BD-200-B							
	0-FU-200-B1/1	0-FU-200-B1/2	COMPT 2 CLOSE FUSE	COMPT 3 CLOSE FUSE	0-FU-200-B5/3	0-FU-200-B8/3	0-FU-200-B12/1
	0-FU-200-B2/1	COMPT 2 ELEVATE FUSE	COMPT 3 CLOSE FUSE	0-FU-200-B11/2	-B7/3		
	COMPT 3 TRIP FUSE	0-FU-200-B3/3	0-FU-200-B4/2		-B14/3		
	0-FU-200-B4/1	-B4/3	-B5/2				
	-B5/1	-B5/3	-B6/2				
	-B6/1	-B6/3	-B7/2				
	-B7/1	-B9/3	-B8/2				
	-B8/1	-B10/3	-B9/2				
	-B9/1	-B12/2	-B10/2				
	-B10/1	-B13/3	-B11/2				
	-B11/1	COMPT 15 ELEVATE FUSE	-B11/3				
	-B13/1		-B13/2				
	-B14/1		COMPT 14 CLOSE FUSE				
	COMPT 15 TRIP FUSE		0-FU-200-15/2				

1-23-90

1-25-90

	MFR	BUSSMANN	BUSSMANN	BUSSMANN	BUSSMANN
	MDL	KWN15	FRN15	KWN10	NON10
	TYPE				
	RTG	15A	15A	10A	10A
BOARD					
6.9 KV COMMON SWITCHGEAR BOARD C WBN-0-BD-200-C					
	*	0-FU-200-CB2/2	0-FU-200-CB2/7	0-FU-200-CB2/7	0-FU-200-CB1/5
	*	0-FU-200-CB2/1	0-FU-200-CB1/1	-CB1/3	-CB2/5
		0-FU-200-CB2/3	-CB1/3	-CB2/6	
	*	0-FU-200-CB1/2			

* FUSE INFO FROM FUSE PROGRAM NOT WALKDOWN

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COMP. BY [illegible] 1-23-90

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TVA 10930 (WEL 7-84)

	MFR	BUSSMANN	BUSSMANN	BUSSMANN	BUSSMANN	BUSSMANN			
	MDL	NON 10	KWN10	KLC15	KWN15	FRN15			
	TYPE								
	RTG	10A	10A	15A	15A	15A			
BOARD									
6.9 KV COMMON SWITCHGEAR BOARD D WBN-0-BD-200-D		0-FU-200-DA1/5 -DA2/5	0-FU-200-DA1/1 -DA2/7 -DA2/6	0-FU-200-DA1/2	0-FU-200-DA1/3	0-FU-200-DA2/1 DA2/2 DA2/3			

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BOARD	G.E	G.E	BUSSMANN	GOULD SHAWMUT	GOULD SHAWMUT	BUSSMANN	BUSSMANN	BUSSMANN	GE
MDL		TEB122020	KLC15	A6Y10	A6Y6	KLC6	NON10	FRN15	
TYPE	AM-7.2-500-6HB	TEB		TYPE 11	TYPE 11				EJ1
RTG	2000A	20A	15A	10A	6A	6A	10A	15A	B(IE AMP)
6.9KV UNIT BD 1A WBN-1-BD-201-A									
	COMPT NO.1 2,	COMPT NO.2	1-FU-201-A2/1	1-FU-201-A2/2	1-FU-201-A2/3	1-FU-201-A5/3	1-FU-201-A7/2	1-FU-201-A8/4	1-FU-201-A3/4
1200A RATING	4, 5, 6, 7, 8, 9,		-A3/1	-A4/2	-A3/2				-A3/9
	10		-A4/1	-A5/2	-A3/3	-A8/3*			
			-A5/1	-A6/2	-A4/3				
			-A6/1	-A8/2	-A5/3				
			-A6/4	-A9/2	-A6/3				
			-A7/1	-A10/2	-A9/3				
			-A8/1	-A12/2	-A9/4				
			-A9/1		-A10/3				
			-A9/5		-A12/3				
			-A10/1		-A7/3				
			-A12/1						

* FUSE INFO FROM FUSE PROGRAM NOT WALKDOWN

COMPUTED: [illegible] DATE 1-23-90

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BOARD	MFR / MDL / TYPE / RTG	GOULD SHAWMUT A6Y6 TYPE 11 6A	GE AM-7.2-500-6HB 2000A	BUSSMANN KLC15 15A	GOULD SHAWMUT A6Y10 TYPE 11 10A	BUSSMANN NON10 10A	BUSSMANN KLC6 6A	GOULD SHAWMUT OT6 6A	BUSSMANN KLC10 10A	GE EJI
6.9 KV UNIT BD 1B										
WBN-1-BD-201-B										
		1-FU-201-B1/1	COMPT NO. 2,10	1-FU-201-B2/1	1-FU-201-B2/2	1-FU-201-B5/2	1-FU-201-B5/3	1-FU-201-B5/4	1-FU-201-B/2*	1-FU-201-B1/2
		B2/3	1200A RATING BKR	B3/1	B3/2	B8/2	B7/3			B9/3
		B3/3		B4/1	B4/2		B10/3			
		B4/3	3,4,5,7,8,11	B5/1	B6/1		B11/3			
		B5/3		B7/1	B6/3					
		B9/2		B8/1	B7/2					
		B10/3		B8/3	B10/2					
				B9/1	B11/2					
				B10/1						
				B11/1						

* FROM FUSE LIST NOT WALKDOWN

1-25-90

1-23-90

BOARD	MFR / MDL / TYPE / RTG	G.E / AM-7.2-500-6HB / 2000A	BUSSMANN / KLC15 / 15A	GOULD SHAWMUT / A6Y10 / TYPE 11 / 10A	GOULD SHAWMUT / A6Y6 / TYPE 11 / 6A	G.E / TEB 122020 / TEB / 20A	BUSSMANN / KLC10 / 10A	GOULD SHAWMUT / OT30 / 30A	BUSSMANN / NON10 / 10A	G.E / 5J1 / 8 (1E AMP)
6.9KV UNIT BD 1C WBN-1-BD-201-C		COMPT 2, 11	1-FU-201-C2/1	1-FU-201-C2/2	1-FU-201-C2/3	COMPT 2	COMPT 2 TEST FUSE	1-FU-201-C3/1	1-FU-201-C10/2	1-FU-201-C3/3
		1200 A RATING BKR	C5/1	C5/2	C3/2					-C12/2
		5, 7, 8, 9, 10	C7/1	C7/2	C5/3					
			C8/1	C8/2	C7/3					
			C9/1	C9/2	C8/3					
			C10/1	C11/2	C9/3					
			C11/1		C9/4					
					C10/3					
					C11/3					
					C12/1					

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TVA 10830 (WB 7-...)

	GE	BUSSMANN	BUSSMANN	GOULD SHAWMUT	GOULD SHAWMUT	BUSSMANN	GOULD SHAWMUT	GE
MDL		KLC15	NON10	A6Y6	A6Y10	KLC10	OT30	~~EJI~~ AMW 1/24/90
TYPE	AM-7.2-500-6HB			TYPE 11	TYPE 11			EJI
RTG	2000A	15A	10A	6A	10A	10A	30A	B (1.E AMP)
BOARD								
6.9 KV UNIT BD 1D WBN-1-BD-201-D	COMPT 1, 10	1-FU-201-D1/1	1-FU-201-D1/2	1-FU-201-D1/3	1-FU-201-D3/2	1-FU-201-D4/2	1-FU-201-D5/4	1-FU-201-D9/4
	1200A RATING BKR	D3/1		D3/3	D5/2			-D9/5
		D4/1		D4/3	D6/2			
	3,4,5,6,7,	D5/1		D5/3	D7/2			
		D6/1		D6/3	D10/2			
		D7/1		D7/3				
		D9/1		D9/2				
		D10/1		D9/3				
				D10/3				

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JBPEVAR 9001006

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	MFR	G.E	G.E.	GOULD SHAWMUT	BUSSMANN	BUSSMANN	GOULD SHAWMUT	GOULD SHAWMUT	BUSSMANN	GOULD SHAWMUT
	MDL		TEB 122020	OT 15	KLC15	KLC10	A6Y6	A6Y10	KLC6	OT10
	TYPE	EJ1	TEB				TYPE 11	TYPE 11		
	RTG	B(1E AMP)	20A	15A	15A	10A	6A	10A	6A	10A
BOARD										
6.9 KV UNIT BD 2A WBN-2-BD-201-A		2-FU-201-A3/5 -A3/4	COMPT 2	COMPT 2	2-FU-201-A2/1 -A3/1 -A5/1 -A6/1 -A6/4 -A7/1 -A8/1 -A9/1 -A9/4* -A12/1	2-FU-201-A2/2	2-FU-201-A3/2 -A3/3 -A5/3 -A7/3 -A8/3 -A9/3 -A12/3	2-FU-201-A5/2 -A6/2 -A7/2 -A8/2 -A9/2 -A12/2	1-FU-201-A2/3 -A6/3 -A9/3	COMPT 2 TESTING FOR BKR

* FUSE INFO FROM FUSE PROGRAM NOT WALKDOWN

COMPUTED [signature] DATE 1-24-90

CHECKED [signature] DATE 1-25-90

BOARD	MFR	G.E.	GOULD SHAWMUT	BUSSMANN	GOULD SHAWMUT	BUSSMANN	GOULD SHAWMUT	BUSSMANN	BUSSMANN
	MDL		A6Y6	KLC15	A6Y10	KLC10	OT30	KWN10	KLC6
	TYPE	EJ1	TYPE 11						
	RTG	8(1E AMP)	6A	15A	10A	10A	30A	10A	6A
6.9 KV. UNIT BD 2B WBN-2-BD-201-B									
		2-FU-201-B1/2	2-FU-201-B1/1	2-FU-201-B2/1	2-FU-201-B2/2	*2-FU-201-B4/2	2-FU-201-B5/4	2-FU-201-B8/1	2-FU-201-B9/2
		-B9/3	-B2/3	-B3/1	-B3/2				
			-B3/3	-B4/1	-B5/2				
			-B4/3	-B5/1	-B6/2				
			-B5/3	-B6/1	-B8/2				
			-B6/3	-B9/1	-B10/2				
			-B8/3	-B10/1					
			-B9/2						
			-B10/3						

* FUSE INFO FROM FUSE PROGRAM NOT WALKDOWN

COMPLETED [signature] DATE 1-24-90

CHECKED [signature] DATE 1-25-90

EVA 11030 (WBT 7-[illegible])

	MFR	G.E.	BUSSMANN	GOULD SHAWMUT	BUSSMANN	GOULD SHAWMUT	GOULD SHAWMUT	BUSSMANN
	MDL		KLC15	A6Y10	KLC10	A6Y6	OT30	KWN6
	TYPE	EJ1		TYPE 11		TYPE 11		
	RTG	B (1E AMP)	15A	10A	10A	6A	30A	6A
BOARD								
6.9KV UNIT BD 2D WBN-2-BD-201-D								
		2-FU-201-D9/4	2-FU-201-D1/1	2-FU-201-D1/2	2-FU-201-D1/3	2-FU-201-D4/3	2-FU-201-D5/4	2-FU-201-D9/3
		-D9/5	-D3/1	-D3/2	~~-D3/3~~	-D5/3		
			-D4/1	-D4/2	~~-D4/3~~ Del 1-24-90 RMW 1-25-90	-D6/3		
			-D5/1	-D5/2		-D7/3		
			-D5/4	-D7/2		-D9/1		
			-D6/1	-D10/2		-D9/3		
			-D6/2			-D10/3		
			-D7/1			-D3/3		
			-D9/2					
			-D10/1					

COMP. TED [signature] DATE 1-24-90

CHECKED A. Butler DATE 1-25-90

* OTHER FUSES FOR THIS BOARD ARE SHOWN ON ANOTHER SHEET

BOARD	MFR / MDL / TYPE / RTG	G.E. / — / EJ1 / B(1E AMP)	G.E. / TEB122020 / TEB / 20A	BUSSMANN / KLC15 / — / 15A	GOULD SHAWMUT / A6Y10 / TYPE 11 / 10A	GOULD SHAWMUT / A6Y6 / TYPE 11 / 6A	GOULD SHAWMUT / OT10 / — / 10A	BUSSMANN / KLC6 / — / 6A	RELIANCE / KON15 / — / 15A.
6.9 KV UNIT BD 2C WBN-2-BD-201-C*		2-FU-201-C3/3 -C12/2	COMPT 2	2-FU-201-C2/1 -C3/1 -C5/1 -C8/1 -C9/1 -C10/1 -C11/1	2-FU-201-C2/2 COMPT 2 TEST FUSE 2-FU-201-C5/2 -C7/2 -C8/2 -C10/2 -C11/2	2-FU-201-C2/3 -C3/2 -C5/3 -C7/3 -C8/3 -C9/3 -C10/3 -C11/3 -C12/1	COMPT 2 TEST FUSE	2-FU-201-C5/3 -C9/3	2-FU-201-C7/1

CHECKED [signature] DATE 1-25-90

COMP. BY [signature] DATE 1-24-90

WBN ZVAR 9001006

*OTHER FUSES AND BREAKERS FOR THIS BOARD ARE SHOWN ON ANOTHER SHEET

TVA 11030 (WM 7-75)

	MFR	BUSSMANN	BUSSMANN						
	MDL	KLC10	KLC30						
	TYPE								
	RTG	10A	30A						
BOARD									
6.9 KV UNIT BD 2C* WBN-2-BD-201-C		2-FU-201-C9/2 -C10/2	2-FU-201-C9/4						

COMP. TED [illegible] DATE 1-24-90

CHECKED [illegible] DATE 1-24-90

WBPEVAR 9001006

TVA 11930 (WM 7-75)

** INDICATES TYPE NO. APPLIES THESE BKRS
SIMILARLY MARKED WITH ** ...ER ...
BKRS IN THE COLUMN DID NO... ...VE
THE TYPE IDENTIFIED IN THE
WALKDOWN.

MFR	GOULD SHAWMUT	BUSSMANN	GOULD SHAWMUT	BUSSMANN	BUSSMANN	GOULD SHAWMUT	BUSSMANN	BUSSMANN	BUSSMANN
MDL	A6Y6	KLC10	A6Y10	KLC15	NON 20	A6Y30	KLC6	NON10	F61C
TYPE	TYPE II		TYPE II	LIMITRON**	ONE TIME	TYPE II ONE TIME		ONE TIME	
RTG	6A	10A	10A	15A	20A	30A	6A	10A	15A
BOARD									
RCP SWITCHGEAR STATION A BOARD 1A WBN-1-BD-202-A									
	1-FU-202-A1/4	1-FU-202-A1/2A	1-FU-202-A1/2A	1-FU-202-A1/1N	1-FU-202-A2/4	1-FU-202-A2/3	1-FU-202-A3/3	1-FU-202-A3/2N	1-FU-2b2-…
	-A1/3	-~~A2/9~~ RAN 1-25-90		-A1/1A					
	-A2/10	-A3/2A		-A2/1					
	-A2/2			-A2/8					
	-A3/4			-A2/7					
				-A2/5					
				** -A3/1N					
				-A3/1A					

COMP. TECH. [signature] DATE 1-24-90

CHECKED [signature] DATE 1/26/90

TVA 10630 (WE 7-79)

	MFR	GOULD SHAWMUT								
	MDL									
	TYPE	ONE TIME								
	RTG	10 AMP								
BOARD										
RCP SWITCHGEAR STATION A BOARD 1A WBN-1-BD-202-A		1-FU-202-A2A								

1/26/90

WBPEVAR 9001006

TVA 10930 (WBT 7-83)

BOARD	MFR / MDL / TYPE / RTG: BUSSMANN KLC15, 15A	BUSSMANN KLC10, 10A	GOULD SHAWMUT A6Y6 TYPE 11, 6A	BUSSMANN NON10 ONE TIME, 10A	BUSSMANN KLC6, 6A	GOULD SHAWMUT OT6 ONE TIME, 6A		
RCP SWITCHGEAR STATION A BOARD 1B WBN-1-BD-202-B	1-FU-202-B1/1N -B1/1A -B1/2N -B2/6 -B2/5 -B3/1N -B3/1A -B3/2A	1-FU-202-B1/3 -B1/2A -B2/1 -B3/2N	1-FU-202-B1/4 -B2/7 -B2/2	1-FU-202-B2/4	1-FU-202-B3/3	1-FU-202-B3/4		

1/26/90

1-24-90

BOARD	MFR	BUSSMANN	GOULD SHAWMUT	BUSSMANN	BUSSMANN	BUSSMANN	GOULD SHAWMUT	GOULD SHAWMUT	
	MDL	KLC15	A6Y6	KWN10	KLC10	FRN15	TR30R	A6Y30	
	TYPE		TYPE II					TYPE II	
	RTG	15A	6A	10A	10A	15A	30A	30A	
RCP SWITCH GEAR STATION B, BOARD K WBN-1-BD-202-C		1-FU-202-C1/1N	1-FU-202-C1/3	1-FU-202-C1/2A	1-FU-202-C2/9 *	1-FU-202-C2/8	1-FU-202-C2/5 FOR ** LIGHTS (FUSE)	1-FU-202-C2/3	
		-C1/1A	-C1/4	-C2/7	-C3/2A				
		-C1/2N	-C2/10	-C2/2	-C3/2N				
		* -C2/1	-C3/3						
		-C3/1N	-C3/4						
		-C3/1A							

* FUSE INFO FROM FUSE PROGRAM NOT WALKDOWN

** ADDITIONAL FUSE HAS AN UNKOWN UNID PER WALKDOWN DATA

1-24-90

1/26/90

[illegible]PEVAR 9001006

TVA 10930 (WEL 7-[illegible])

MFR	GOULD SHAWMUT	GOULD SHAWMUT	GOULD SHAWMUT	BUSSMANN	BUSSMANN	BUSSMANN
MDL	OT15	OT30	A6Y6	KLC10	KWN10	KLC15
TYPE			TYPE 11			
RTG	15A	30A	6A	10A	10A	15A
BOARD						
RCP SWITCHGEAR STATION B, BOARD ID WBN-1-BD-202-D	1-FU-202-D2/1N	1-FU-202-D2/1A	1-FU-202-D2/3	1-FU-202-D2/2A*	1-FU-202-D2/2N	1-FU-202-D4/1N
			-D2/4	-D3/2	-D3/1*	-D4/1A
			-D3/7	-D4/2N	-D3/6	
			-D3/5		-D3/4	
			-D4/3		-D4/2A	
			-D4/4			

* FUSE INFO FROM FUSE PROGRAM NOT WALKDOWN

CHECKED: [signature] 1/26/90

PREPARED: [signature] 1-24-90

WBPEVAR 9001006

** INDICATES TYPE NO. APPLIES TO THOSE BKRS SIMILARLY MARKED WITH **. OTHER BKRS IN THE COLUMN DID NOT HAVE THE TYPE IDENTIFIED IN THE WALKDOWN.

	MFR / MDL / TYPE / RTG							
	MFR	GOULD SHAWMUT	BUSSMANN	BUSSMANN	GOULD SHAWMUT	BUSSMANN	ECONOMY FUSE DIV.	BUSSMANN	GOULD SHAWMUT
	MDL	A6Y6	KLC15	KWN10	OT10	KLC6	EON30	NON15	OT6
	TYPE	TYPE 11						ONE TIME**	
	RTG	6A	15A	10A	10A	6A	30A	15A	6A
BOARD									
RCP SWITCHGEAR STATION A, BOARD 2A WBN-2-BD-202-A		Z-FU-202-A4/3	Z-FU-202-A4/2A	Z-FU-202-A4/1N	Z-FU-202-A3/7	Z-FU-202-A3/8 *	Z-FU-202-A3/4	Z-FU-202-A2/1N **	Z-FU-202-A2/3
		-A4/4	-A4/1A	-A4/2N		-A2/4		-A2/2N	
				-A3/1					
				-A3/5					
				-A3/2					
				-A2/1A					
				-A2/2A					

* FUSE INFO FROM FUSE PROGRAM NOT WALKDOWN

NOTE! WALKDOWN DATA AND FUSE PROGRAM DO NOT CONTAIN REQUESTED INFORMATION FOR Z-FU-202-A3/6

[illegible] 1/26/90

[illegible] 1-24-90

BPEVAR 9001006

TVA 10930 (WBT 7/...)

MFR	BUSSMANN	BUSSMANN	BUSSMANN	GOULD SHAWMUT	GOULD SHAWMUT				
MDL	KLC15	KLC6	KWN10	A6Y6	OT6	**			
TYPE				TYPE 11					
RTG	15A	6A	10A	6A	6A				
BOARD									
RCP SWITCHGEAR STATION A, BOARD 2B WBN-2-BD-202-B	2-FU-202-B3/1N	2-FU-202-B3/3	2-FU-202-B3/2A	2-FU-202-B3/4	2-FU-202-B1/3	2-FU-202-B2/1			
	-B3/1A	-B2/1*	-B3/2N		-B1/4				
	-B2/5	-B2/2*	-B2/6						
	-B1/1N		-B2/4						
	-B1/1A		-B1/2A						
			-B1/2N						

* FUSE INFO FROM FUSE PROGRAM NOT WALKDOWN

** WALKDOWN DATA AND FUSE PROGRAM DO NOT CONTAIN REQUESTED INFORMATION FOR

RMD 1-25-90
KWR 1/26/90

R. Schultz 1/26/90
[illegible] 1-24-90

Δ INDICATES TYPE NO. APPLIES TO THOSE BKRS
SIMILARLY MARKE[illegible]H Δ, OTHER BKRS
IN THE COLUMN DI[illegible] HAVE THE TYPE
IDENTIFIED IN THE WALKDOWN.

WBPEVAR 9001006

TVA 10630 (WRE 7-?)

BOARD	MFR	BUSSMANN	GOULD SHAWMUT	GOULD SHAWMUT	BUSSMANN	BUSSMANN	GOULD SHAWMUT		
	MDL	KLC15	A6X6	OT6 Δ	KWN10	KLC10	OT15	**	
	TYPE		TYPE 11	ONE TIME					
	RTG	15A	6A	6A	10A	10A	15A		
RCP SWITCHGEAR STATION B BOARD 2C WBN-2-BD-202-C		2-FU-202-C3/1N	2-FU-202-C3/3	Δ 2-FU-202-C3/4	2-FU-202-C2/1	2-FU-202-C2/7*	2-FU-202-C1/1N	2-FU-202-C3/2A	
		-C3/1A	-C2/2	-C2/8	-C2/5		-C1/1A	-C3/2N	
			-C1/3	-C1/4	-C1/2A			-C2/6	
					-C1/2N			-C2/4	

* FUSE INFO FROM FUSE PROGRAM NOT WALKDOWN

** WALKDOWN DATA AND FUSE PROGRAM DO NOT CONTAIN REQUESTED INFORMATION

CHECKED: [illegible] 1/26/90

COMPILED: [illegible] 1-24-90

WBPEVAR 9001006

MFR	BUSSMANN	BUSSMANN	BUSSMANN	GOULD SHAWMUT	BUSSMANN	GOULD SHAWMUT	BUSSMANN	**
MDL	KLC6	FRN15	KLC10	OT6	KLC15	A6Y6	KWN10	
TYPE						TYPE II		
RTG	6A	15A	10A	6A	15A	6A	10A	
BOARD								
RCP SWITCH GEAR STATION B BOARD 2D WBN-2-BD-202-D	*2-FU-202-D4/3 *-D4/4	2-FU-202-D3/1 -D3/4	*2-FU-202-D3/6	2-FU-202-D3/7 -D3/2	*2-FU-202-D2/1N *-D2/1A -D2/2A	2-FU-202-D2/3 -D2/4	2-FU-202-D2/2N	2-FU-202-D4/1N -D4/1A -D4/2A -D4/2N -D3/5

* FUSE INFO FROM FUSE PROGRAM NOT WALKDOWN

** WALKDOWN DATA AND FUSE PROGRAM DO NOT CONTAIN REQUESTED INFORMATION

1/26/90

1-24-90

WBPEVAR 2001006

	MFR	BUSSMANN	BUSSMANN	SHAWMUT AMPTRAP	BUSSMANN	SHAWMUT AMPTRAP	BUSSMANN	BUSSMANN	BUSSMANN
	MDL	KTN 6	KWN 6	A6Y 10	KLC 10	A6Y6	KWN10	KLC30	KLC 6
	TYPE	CLASS K1	CLASS K1	TYPE 11	KLC	TYPE 11	CLASS K1	KLC	KLC
	RTG	6A	6A	10A	10A	6A	10A	30A	6A
BOARD									
1-BD-203-A		X	X	X	X	X	X	X 1-FU-203-A7/1	
1-BD-203-B		X	X		X	X			X
2-BD-203-A		X			X	X	X		
2-BD-203-B		X	X		X	X	X		
0-BD-205-1 (CONT ON NEXT PAGE)					X		X		

1-24-90

1-24-90

WBPEVAR9001006

MFR	SHAWMUT	BUSSMANN	SHAWMUT	SHAWMUT	BUSSMANN	BUSSMANN	BUSSMANN	BUSSMANN
MDL	A4J3	KTN 6	A6Y6	A6Y10	KLC 6	JKS 3	KLC 15	KWN6
TYPE		KTN	TYPE 11	TYPE 11	KLC		KLC	KWN
RTG	3A	6A	6A	10A	6A	3A	15A	6A
BOARD								
0-BD-205-1 (CONT ON NEXT PAGE)	X	X	X	X	X	X	X	X

CHECKED OMN DATE 1-24-90

COMPLETED WAL DATE 1-24-90

MFR	BUSS	BUSS	SHAWMUT	BUSS	BUSS				
MDL	KWN10	KLC10	OT10	KLC6	KTN6				
TYPE	LIMITRON								
RTG	10 AMP	10 AMP	10 AMP	6 AMP	6 AMP				
BOARD									
0-BD-206-1	X COMPT: (6C)Δ (6D)Δ (13A)□								
Δ FUSES FOR THESE COMPT'S ARE LOCATED IN COMPT. 4 □ FUSES LOCATED IN COMPT 10									
0-BD-226-1	X COMPT *(4D)	X COMPT: *(4B) *(4C) *(4D) **(6B) **(6C) **(6D) **(7C) ***(-15/2B)	X *(4D)	X 1D ***(-15/1B)	X 1D ***(-15/5B) ***(-15/7B)				

* FUSES LOCATED IN COMPT 3A

** 7A

*** 5A

CHECKED BY [illegible] DATE 1/24/90

COMPILED BY [illegible] DATE 1-20-90

W JAR8001006

VA 11030 (WM-7-75)

	MFR	SHAWMUT	SHAWMUT	SHAWMUT	ITE	SHAWMUT	SHAWMUT		
	MDL	TRM-1.6	TRM-1	A6Y15	BQ1-B015	TRM2.5	A6Y5		
	TYPE	TRIONIC	TRIONIC	AMPTRAP TYPE 2	1 POLE (K2-532)	TRIONIC	AMPTRAP TYPE 2		
	RTG	1.6 AMP	1 AMP	15 AMP	15 AMP	2.5 AMP	5 AMP		
BOARD									
0-MCC-225-A		X	X						
0-MCC-225-B		X	X				X		
0-MCC-207-A		X	X	X (5B)	X (5C)				
0-MCC-207-B		X	X	X (5B)	X (5C)				
0-MCC-218-1		X	X			X			
0-MCC-222-1			X						
0-MCC-222-2			X						

COMPUTED [signature] DATE 1-24-90

CHECKED RMN DATE 1-24-90

SHEET OF

MFR	GOULD SHAWMUT	GOULD SHAWMUT	BUSS	ITE	ITE	GOULD-SHAWMUT	GOULD-SHAWMUT	GOULD-SHAWMUT
MDL	TRM1	TRM1.6	FNM1.6	BQ1-B015	BQ1-B020	TRIR	ATM5	A6Y5
TYPE	TRIONIC	TRIONIC	FUSETRON	—	—	TRIONIC	AMP-TRAP	AMP-TRAP
RTG	1 AMP	1.6 AMP	1.6 AMP	15 AMP	20 AMP	1 AMP	5 AMP	5 AMP
BOARD								
0-MCC-208-A	X	X		BKR 1,2,3,4 X (5C)	BKR 5,6 X (5C)			
-B	X	X	X					
-C	X	X	X	X (5C) BKR 2,4,5,6	X (5C) BKR 1,3			
0-MCC-216-A	X	X				X	X (8A)	
-B	X					X		X (5E)
0-MCC-217-A	X	X						
-B	X	X						
0-MCC-226-1	X	X						

CHECKED [signature] DATE 1-22-90

COMPLETED Tom B DATE 1-20-90

SHEET OF

BOARD	MFR: SHAWMUT AMPTRAP MDL: A6Y15 TYPE: 2 RTG: 15A	ITE BQ1-B015 (SOME ARE KZ-532) 15A	GOULD SHAWMUT TRM 1 TRIONIC 1A	GOULD SHAWMUT TRM 1.6 TRIONIC 1.6A	GOULD SHAWMUT TRM 2.5 TRIONIC 2.5A	BUSSMANN FNM 15 FNM 15A	ITE BQ1-B020 (SOME ARE KZ-542) 20A	BUSSMANN FNA 1.6 FNA 1.6A
1-MCC-210-A	X 5B	X, 5C	X	X	X			
1-MCC-210-B	X 5B	X, 5C	X	X	X			X
2-MCC-210-A	X 5B	X, 5C	X	X	X	X, 5B		
2-MCC-210-B	X 5B	X, 5C	X	X	X		X, 5C	
1-MCC-209-A	X 5B	X 5C	X	X			X, 5C	
1-MCC-209-B	X 5B	X, 5C	X	X			X, 5C	
2-MCC-209-A	X, 5B	X, 5C	X	X			X, 5C	
2-MCC-209-B	X, 5B	X, 5C, 5D	X	X			X, 5C, 5D	
2-MCC-209-C	X, 5B	X, 5C	X	X			X, 5C	

CHECKED BY [illegible] DATE 1-24-90

COMPLETED BY [illegible] DATE 1-24-90

PEVAR9001006

	MFR	SHAWMUT AMPTRAP	SHAWMUT AMPTRAP	GOULD SHAWMUT	GOULD SHAWMUT	ITE	UNKNOWN	BUSS	
	MDL	A6Y15	A6Y15	TRM 1	TRM 1.6	BQ1-B015	BQ1-B020	FNM 1.6	
	TYPE	2	1	TRIONIC	TRIONIC	KZ 532	N/A	FUSETRON	
	RTG	15	15A	1A	1.6A	15A	20A	1.6 A	
BOARD									
1-MCC-209-C		X, 5B	X, 5B	X	X	X, 5C	X, 5C	X	

CHECKED RMN DATE 1-24-90

COMPILED UMZ DATE 1-24-90

3PEVAR9001006

	BUSSMANN	BUSSMANN	BUSSMANN	SHAWMUT	BUSSMANN	SHAWMUT		
MDL	KTN 6	KLC 6	JKS 3	A4J3	KWN10	FTGR		
TYPE	LIMITRON	—	LIMITRON	AMPTRAP CLASS J	LIMITRON	FALT TRAP		
RTG	6A	6A	3A	3A	10A	6A		
BOARD								
O-BD-221-1	X	X	X	X	X			
O-BD-221-HS						X		

CHECKED RJM DATE 1-24-96

COMPLETED WAL DATE 1-24-96

JBPEVAR 9001006

TVA 11030 (WM 7-85)

	C-H	C-H	C-H	C-H	C-H	C-H	C-H	
MFR	C-H	C-H	C-H	C-H	C-H	C-H	C-H	
MDL	FC3070	FC3080	FC3020	FC3015	FC3040	FC3030	FC3050	
TYPE	FC	FC	FC	FC	FC	FC	FC	
RTG	70A	80A	20A	15A	40A	30A	50A	
BOARD								
O-DPL-221-HS1	X (1)	X(2)	X (3)(5)(7) SPARE X (4)(6)(8)(9)	X (10)	X (11)			
O-DPL-221-HS2	X (1)(2)		X (6) SPARE (7)(8)	X(9)(10)		X (3)(5)	X (4)	

COMPLETED WOM DATE 1-29-90

CHECKED [illegible] DATE 1-29-90

WBPE[illegible]7001006

* ADDITIONAL DEVICES FOR THESE BOA
SHOWN ON ANOTHER SHEET.

BOARD	MFR	W	GOULD SHAWMUT	ITE	ITE	W
	MDL	DB1-W1015	A6Y1	BQ1-B030	BQ3-B030	QBHW
	TYPE	–	AMP-TRAP	–	–	–
	RTG	15 AMP	1 AMP	30 AMP	30 AMP	30 AMP
0-MCC-222-HS*		X BKR(5→12)				X BKR(1→4)
0-MCC-257-1*			X	X (6A) BKR(7) (11)	X(5C) BKR(1) (2) (7) (8) (13) (14)	

COMPLETED [signature] DATE 1-24-90
CHECKED [signature] DATE 1-24-90

WBP R9001006 * ADDITIONAL DEVICES FOR THESE RDS SHOWN ON ANOTHER SHEET.

BOARD	MFR / MDL / TYPE / RTG	GOULD SHAWMUT / TRM 1 / TRI-ONIC / 1 AMP	ITE / BQ1-B020 / — / 20AMP	ITE / BQ1-B015 / — / 15AMP	GOULD SHAWMUT / TRM 1.6 / TRI-ONIC / 1.6 AMP	GOULD SHAWMUT / ATM3 / AMP-TRAP / 3 AMP	BUSSMANN / FNA 1.6 / FUSETRON / 1.6 AMP	BUSSMANN / BAF 1 / — / 1 AMP	GOULD SHAWMUT / A6Y15 / TYPE 2 AMP-TRAP / 15AMP
0-MCC-220-1		X	BKR 1,3 X (5C)	BKR 2,4 X (5C)	X	X			X (5B)
0-MCC-223-1		X			X				
0-MCC-223-2		X							
0-MCC-222-HS*					X		X	X	
0-MCC-257-1*			X (6A) BKR(1→6) (8→10) (12)		X				

Schuller 1-24-90
W.A. Lambert 1-24-90

WB[illegible] AR 900(006

TVA 11030 (WM-7-75)

	MFR	BUSSMANN	BUSSMANN	FPE	GOULD SHAWMUT				
	MDL	KWN10	KTN6	LEN 10	A6Y10				
	TYPE	LIMITRON CLASS K1	LIMITRON CLASS K1		AMP-TRAP				
	RTG	10A	6A	10A	10A				
BOARD									
480V CONDENSER CIRCULATING WATER PUMPING STATION BOARD WBN-0-BD-225-1		X	X	X	X				

CHECKED [illegible] 1-27-90

COMPLETED [illegible] 1-24-90

WBR 9001006

VA 11030 (WM-...)

* INDICATES TYPE NO. APPLIES TO THOSE BKRS SIMILARLY MARKED WITH *. OTHER BKRS IN COLUMN DID NOT HAVE THE TYPE IDENTIFI... IN THE WALKDOWN DATA.

MFR	W	W	W	W
MDL	JA3125W	JA3175W	JA3125W	FB 3020
TYPE	KX-420 (3P)	KX-786 (3P)	LA-88 (3P)	KV-216 *
RTG	125 A	175 A	125 A	20 A
BOARD				
O-BD-227-1	X (2B1) SET AT HI	X (2B2) SET AT HI		
		X (2C1) SET AT HI		
O-BD-227-2	X (2B1) SET AT HI	X (2C1) SET AT HI	X (2B2) SET AT HI	
		X (2C2) SET AT HI		
O-BD-227-4		X (2B2) SET AT HI	X (2B1) SET AT HI	X (1D2)*
		X (2C1) SET AT HI		
		X (2D1) SET AT HI		
O-BD-227-3	X (2B2) SET AT HI	X (2C2) SET AT HI	X (2B1) SET AT HI	X (1D2)
		X (2C1) SET AT HI		

COMPUTER [signature] DATE 1/24/90

CHECKER [signature] DATE 1/24/90

WBP [illegible] e9001006

FA 11030 (WM-7-75)

* INDICATES TYPE NO. APPLIES TO THOSE BKRS SIMILARLY MARKED WITH *. OTHER BKR [illegible]E COLUMN DID NOT HAVE THE TYPE IDEN. IN THE WALKDOWN DATA.

MFR	FPE	FPE	FPE	FPE
MDL	NE233020	NE113020	—	NE233030
TYPE	NE (3 POLE)	(1 POLE)	*NE (3 POLE)	NE (3 POLE)
RTG.	20A	20A	20A	30A
BOARD				
-LAC-227-100	X (BKR 7→12)	X (BKR 2→6)		
-LAC-227-101	X (BKR 8)	X (BKR 1)	X (BKR 7)	
	(BKR 9)	(BKR 2)		
	(BKR 13)	(BKR 3)		
	(BKR 17)	(BKR 5)		
	(BKR 18)	(BKR 6)		
-LAC-227-102	X (BKR 7→14)	X (BKR 1→6)		
	(BKR 17)			
	(BKR 18)			
-LAC-227-103	X (BKR 7→17)	X (BKR 1→6)		X (BKR 18)
-LAC-227-104	X (BKR 7→9)	X (BKR 1)	X (BKR 10)*	
	(BKR 11→18)	(BKR 3→6)		
-LAC-227-105	X (BKR 7→11)	X (BKR 1)	X (BKR 12)*	
	(BKR 13→15)	(BKR 3→6)	(BKR 17→18)*	

COMP. [illegible] DATE 1/24/90

CHECKED [illegible] DATE 1/24/90

* INDICATES TYPE NO. APPLIES TO THOSE SIMILARLY MARKED WITH *. OTHER[illegible] IN THE COLUMN DID NOT HAVE THE TYPE I[illegible]IED IN THE WALKDOWN DATA.

/A 11030 (WM-7-75)

	MFR	FPE	FPE	FPE	FPE	C-H	C-H	C-H	
	MDL	NE233020	NE113020	—	E233020	EC3100			
	TYPE	NE (3 POLE)	(1 POLE)	*NE (3 POLE)	(3 POLE)	EC	CHB (1P)	CHB (3P)	
	RTG	20A	20A	20A	20A	100A	20A	20A	
BOARD									
)-LAC-227-106		X BKR (7)	X BKR (1→4)	X BKR (8)*	X (BKR 12)				
		(9)		(16)					
		(10)							
		(13)							
		(15)							
		(17)							
		(18)							
)-LAC-227-107						X (MAIN BKR)	X BKR (1→5)	X BKR (13)	
							(7)	(14)	
							(9)	(16→18)	
)-LAC-227-200		X BKR (7→17)	X BKR (1→6)						
)-LAC-227-201		X BKR (7→18)	X BKR (1→3)						
			(5)						
			(6)						
)-LAC-227-202		X BKR (7→14)	X BKR (1→6)						

COMPLETED [signature] DATE 1/24/90

CHECKED [signature] DATE 1/24/90

MFR	FPE	FPE	FPE
MDL	NE 233020*	NE 113020	—
TYPE	NE (3 POLE)*	(1 POLE)	(3 POLE)
RTG	20A	20A	20A
BOARD			
)-LAC-227-203	X BKR (7→15)*	X BKR (1→6)	
	(17)*		
)-LAC-227-204	X BKR (7→18)*	X BKR (1→6)	
)-LAC-227-205	X BKR (7)*	X BKR (1→3)	
	(8)*	(5)	
	(12)*		
	(14)*		
	(18)*		
	(9→11)		
	(13)		
	(16)		
	(17)		
)-LAC-227-206	X BKR (11)*	X BKR (3)	X BKR (7→10)
	(12)*	(5)	
	(17)*		
	(18)*		

COMPLETED [illegible] DATE 1/24/90

CHECKED [illegible] DATE 1/24/90

?PEVAR 900/006

VA 11030 (WM-7-73)

BOARD				
MFR	SQUARE D	SQUARE D	SQUARE D	SQUARE D
MDL	–	–	–	–
TYPE	QO (2 POLE)	QO (1 POLE)	QO (1 POLE)	QO (2 POLE)
RTG	30A	20A	15A	60A
)-LAC-227-211	X BKR (1) (10)	X BKR (2) (4→8) (11)	X BKR (9)	
)-LAC-227-212		X BKR (1→8)		X (MAIN BKR)

COMPUTED [signature] DATE 1/24/90

CHECKED [signature] DATE 1/24/90

WBPEVAR9001006

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TVA 11030 (WM 7-85)

	MFR	FPE	FPE							
	MDL	NE233020	NE113020							
	TYPE	NE-3P	NE-1P							
	RTG	20A	20A							
BOARD										
O-LSC-227-1		X (BKR 8) THRU (BKR 11)	X (BKR 1) (BKR 2) (BKR 4) (BKR 6)							

COMPUTED WDM DATE 1-24-9[illegible]

CHECKED RMR DATE 1-24-90

EVAR 9001006

TVA 11030 (WM-...) * FUSES INACCESSIBLE PER WALKDOWN DATA

MFR	WESTINGHOUSE	WESTINGHOUSE	WESTINGHOUSE	WESTINGHOUSE	BUSS			
MDL	JA3175W	LA3400PF	JA3125W	JA3070	-			
TYPE	3 POLE	3 POLE	3 POLE	3 POLE	LAR H02			
RTG	175 AMP	175 AMP	125 AMP	70 AMP	NA			
BOARD								
O-BD-228-1	X (2A2) SET AT 4	X (2B2) SET AT 5			X (2B2)			
	X (2A1) SET AT 4	X (2C2) SET AT 4-HI-2			X (2C2)			
	X (2B1) SET AT 4							
	X (1D1) SET AT 4							
	X (1D2) SET AT 4							
	X (2D2) SET AT 4							
O-BD-228-2	X (1D2) SET AT HI	X (2C2) SET AT HI-2-1			*			
	X (1D1) SET AT HI	X (2B2) SET AT HI-5-5			*			
	X (2B1) SET AT HI							
	X (2A2) SET AT HI							
	X (2A1) SET AT HI							

COMPUTED [illegible] DATE 1/23/90

CHECKED [illegible] DATE 1/23/90

DEVAR 9001006

TVA 11030 (W...)

BOARD				
MFR	WESTINGHOUSE	WESTINGHOUSE	WESTINGHOUSE	WESTINGHOUSE
MDL	JA3175W	LA3400PF	JA3125W	JA3070
TYPE	3 POLE	3 POLE	3 POLE	3 POLE
RTG	175 AMP	175 AMP	125 AMP	70 AMP
0-BD-228-3	X (2A1) SET AT HI		X (2C1) SET AT HI	X (1D1) SET AT HI
	X (2A2) SET AT HI			
	X (2B1) SET AT HI			
	X (2B2) SET AT HI			
	X (1D2) SET AT HI			
	SET AT HI X (2D1)			
0-BD-228-4	X (2A1) SET AT HI		X (1D1) SET AT HI	
	X (2A2) SET AT HI			
	X (2B1) SET AT HI			
	X (2B2) SET AT HI			
	X (1D2) SET AT HI-2-HI (1 PHASE SET AT 2)			

CHECKED [signature] DATE 1/23/90

COMPUTED [signature] DATE 1/23/90

SHEET OF

WBPEV 106

* INDICATES MODEL NO. APPLIES TO THOSE BKRS SIMILARLY MARKED WITH *. OTHER BKRS IN TH COLUMN DID NOT HAVE THE MODEL IDENTIFIED IN THE WALKDOWN DATA.

MFR / MDL / TYPE / RTG	FPE NE113020 * NE(1 POLE) 20 AMP	FPE NE233020 NE (3POLE) 20 AMP	FPE NE233030 NE(3POLE) 30 AMP	FPE NA(1 POLE) 20 AMP	FPE NAH (3POLE) 20 AMP	FPE NA (3POLE) 20 AMP	FPE NA(3POLE) 30 AMP	
BOARD								
0-LAC-228-130				X BKR(3→5) (7)		X BKR(9) (11)		
0-LAC-228-131	X BKR(3→8)				X BKR(9→14) (18)		X BKR(1)	
0-LAC-228-132	X BKR(3→8)*	X BKR(2) (9→18)	X BKR(1)					
JCB 1-20-90 RDK 1/24/90 ~~0-LAC-228-150~~ 0-LAC-228-150 RMN 1/31/90 DWM 1-31-90	X BKR (1→6)*	X BKR (7→13) (18						
0-LAC-228-151	X BKR(1→6)*	X BKR(7→12) (18)						
0-LAC-228-152	X BKR(1→6)*	BKR(7→13) (16) (17)						

COMP. BY JCB DATE 1-20-90
CHECKED BY RDK DATE 1/24/90

WBP[illegible]01006

* INDICATES MODEL NO. APPLIES TO THOSE BKRS SIMILARLY MARKED WITH *. OTHER BKRS IN THE COLUMN DID NOT HAVE THE MODEL IDENTIFIED IN THE WALKDOWN DATA.

	MFR	FPE	FPE	FPE	FPE	FPE			
	MDL	NE113020*	NE233020	NE233030					
	TYPE	NE (1 POLE)	NE (3 POLE)	NE (3 POLE)	NA (1 POLE)	NAH (3 POLE)			
	RTG	20 AMP	20 AMP	30 AMP	20 AMP	20 AMP			
BOARD									
0-LAC-228-153		X BKR(1) * (3→6)*	X BKR(7→13) (17)						
0-LAC-228-154		X BKR(1→6)*	X BKR(7→18)						
0-LAC-228-155		X BKR(1) * (2) * (4→6)*	X BKR(7→11) (17) (18)						
0-LAC-228-156		X BKR(1→6)*	X BKR(7→15) (17) (18)						
0-LAC-228-157		X BKR(1) * (2) * (4→6)*	X BKR(7→11) (14) (16→18)						

COMPLETED [signature] DATE 1-20-90

CHECKED [signature] DATE 1/24/90

* INDICATES MODEL NO. APPLIES TO THOSE BKRS SIMILARLY MARKED WITH *. OTHER BKRS IN 1 COLUMN DID NOT HAVE THE MODEL IDENTIFIED IN THE WALKDOWN DATA.

** THIS BKR IS TO BE REMOVED PRI TO FUEL LOAD PER TAO 1-86-77

MFR	FPE	FPE	FPE	FPE	FPE	**		
MDL	NE113020*	NE233020	NE233030					
TYPE	NE(1 POLE)	NE (3 POLE)	NE (3 POLE)	NA (1 POLE)	NAH (3 POLE)			
RTG	20 AMP	20 AMP	30 AMP	20 AMP	20 AMP	20AMP		
BOARD								
0-LAC-228-158	X BKR(1) * (2) *	X BKR(7→9) (12→15)						
0-LAC-228-159	X BKR(1→5)	X BKR(7→14) (18)						
0-LAC-228-180	X BKR(1→6)	X BKR(7→12)						
0-LAC-228-181	X BKR(1→4)	X BKR(7) (8) (10) (11) (13→18)	X BKR (12)			X BKR(9)		
0-LAC-228-230				X BKR(3→7)	X BKR(9→13) (17) (18)			

J.C. Butler DATE 1-21-90

R.S. [illegible] DATE 1/24/90

PEVAR 9001 006

	FPE	FPE	FPE	FPE	FPE	FPE		
MFR	FPE	FPE	FPE	FPE	FPE	FPE		
MDL	NE113020	NE233020	NE233030					
TYPE	NE(1 POLE)	NE (3 POLE)	NE (3 POLE)	NA (1 POLE)	NAH (3 POLE)	NA (3 POLE)		
RTG.	20 AMP	20 AMP	30 AMP	20 AMP	20 AMP	30 AMP		
BOARD								
0-LAC-228-231				BKR(3→8)	BKR(9→14) (18)	BKR (1) (2)		
0-LAC-228-232	BKR(4→8)	BKR(2) (9→18)	BKR(1)					
0-LAC-228-250	BKR(1→4)	BKR(7→10) (17) (18)						
0-LAC-228-251	BKR(2→6)	BKR(8→15) (17) (18)						
0-LAC-228-252	BKR(1→6)	BKR(7→18)						

1-21-90

1/24/90

3PEVAR 9001006

* DESIGNATES BKRS AND FUSES WHICH WERE N[illegible]ENTIFIED
BY MODEL/CATOLOG NO. AND/OR TYPE IN WALKDOWN DATA

MFR	FPE	SQ D							
MDL	NE223020	Q0							
TYPE	NE (2 POLE)	—							
RTG	20 AMP	20 AMP							
BOARD									
0-LAD-228-1-A	X BKR(1)*								
	(2)*								
	(5→8)*								
0-LAD-228-2-B	BKR(1)*								
	(2)*								
	(5→8)*								
0-LAD-228-3-A	X BKR(1→10)*								
0-LAD-228-4-B	X BKR(1→10)*								
1-L-234		X BKR(1→4)							
2-L-234		X BKR(1→4)							

COMPLETED [signature] DATE 1-21-90

CHECKED [signature] DATE 1/24/90

PEVAR 9001006

MFR	FPE	FPE	FPE	FPE	FPE	FPE
MDL	NE113020	NE233020	NE233030			
TYPE	NE(1 POLE)	NE (3 POLE)	NE (3 POLE)	NA (1 POLE)	NAH (3 POLE)	NE (3 POLE)
RTG	20 AMP	20 AMP	30 AMP	20 AMP	20 AMP	30 AMP
BOARD						
0-LAC-228-253	X BKR(1→6)	X BKR(7→17)				X BKR(18)
0-LAC-228-254	X BKR(1) (3→6)	X BKR(7→18)				
0-LAC-228-255	X BKR(1) (2) (4) (5)	X BKR(7→11) (17) (18)				

COMP. BY: DATE 1-21-90

CHECKED BY: 1/24/90

?EVAR 9001006

* DESIGNATES BKRS AND FUSES WHICH WE... NOT IDENTIFIED BY MODEL/CATALOG NO. AND/OR TYPE IN WALKDOWN DATA

	MFR	FPE	FPE
	MDL	NE 113020	NE 233020
	TYPE	NE (1 POLE)	NE (3 POLE)
	RTG	20 AMP	20 AMP
BOARD			
0-LAC-228-256		X BKR(1→6)	X BKR(7→13) (15) (17) (18)
0-LAC-228-257		X BKR(1→6)	X BKR(8-18)
0-LAC-228-280		X BKR(1→6)	X BKR(7→12)
0-LAC-228-281			X BKR(1→4) (7) (8) (10→18)
0-LSC-228-2		X BKR(1→3) (5) * (6)	X BKR(7→13) (16) (18)

COMPUTED [signature] DATE 1-21-90

CHECKED [signature] DATE 1/24/90

WBPEVAR 9001006

	MFR	FPE	FPE	BUSS	GOULD SHAWMUT
	MDL	NE 113020	NE 233020	KTK	A6Y
	TYPE	NE (1 POLE)	NE (3 POLE)	LIMITRON	AMP-TRAP
	RTG	20 AMP	20 AMP	15 AMP	15 AMP
BOARD					
0-LSC-228-4		X BKR (2)	X BKR (7+16)	X CKT (10A, B)	X CKT (10C)
		(4)	(18)	(11A, B, C)	
		(6)		(12A, B, C)	

COMPUTED [signature] DATE 1-21-90

CHECKED [signature] DATE 1/24/90

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WD, VAR 9001006

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TVA 11030 (WM 7-75)

	MFR	W	W
	MDL	JA3175W	JA3125W
	TYPE	3 POLE	3 POLE
	RTG	175 AMP	125 AMP
BOARD			
0-BD-230-1		X BKR(1+6) BKR(10) (SET@ H1)	X BKR 9 (set @ H1)

1-24-90

1-24-90

EVAR 9001006

TVA 11030 (WM-7-75)

MFR	SQUARE D	SQUARE D	SQUARE D	SQUARE D	SQUARE D	
MDL						
TYPE	QOB	QOB	QOB	QOU	QOB	
RTG	15 AMP	20 AMP	25 AMP	20 AMP	35 AMP	
BOARD						
0-DPL-234-A1/CVCS	X BKR: (1)	X (BKR 40)	X BKR: (3)	X (ALARM BKR)		
	(2)		(7)			
	(4→6)		(23)			
	(8→22)		(27)			
	(24→26)					
	(28→42)					
0-DPL-234-A2/CVCS	X	X (BKR 37)	X BKR (8)	X (ALARM BKR)		
	BKR: (1→7)		(42) SPARE ~~(15)~~			
	(9→14)		(22)			
	(16→21)		(30)			
	(23→29)		(41)			
	(31→36)					
	(38→40)					
	(15) ~~(42)~~					EXCHANGED BKR 42 & 15
0-DPL-234-A3/CVCS	X	X BKR (5)	X BKR (6)	X (ALARM BKR)	X (BKR 9)	
	BKR: (1→4)	(35)	(19)			
	(7→8)		(21)			
	(10→18)					
	(20)					
	(22→34)					
	(36→42)					

R3

R3

RO:
COMPUTED [signature] DATE 1-20-90
CHECKED [signature] DATE 1-22-90

SHEET OF

	SQUARE D	SQUARE D	SQUARE D	SQUARE D	SQUARE D			
MFR	SQUARE D	SQUARE D	SQUARE D	SQUARE D	SQUARE D			
MDL								
TYPE	QOB	QOU	QOB	QOB	QOB			
RTG	15 AMP	20 AMP	20 AMP	25 AMP	35 AMP			
BOARD								
0-DPL-234-A4/CVCS	X (BKRS 1→24)	X (ALARM BKR)						
0-DPL-234-B1/CVCS	X BKR: (1) (2) (4→6) (8→22) (24→26) (28→39) (41)	X (ALARM BKR)	X (BKR 40)	X BKR: (3) (7) (23) (27)				
0-DPL-234-B2/CVCS	X BKR: (1→7) (9→21) (23→29) (31→35) (38→42)	X (ALARM BKR)	X (BKR 37)	X CKT BKR: (8) (22) (30) (36)				
0-DPL-234-B3/CVCS	X BKRS: (1→4) (7) (8) (10→18) (20) (22→34) (36→41)	X (ALARM BKR)	X (BKR: (5) (35)	X BKR (6) (19) (21)	X (BKR 9)			
0-DPL-234-B4/CVCS	X (BKR 1→24)	X (ALARM BKR)						

COMPUTED [signature] DATE 1-28-90

CHECKED [signature] DATE 1-22-90

SHEET OF

W /AR 9001006

TVA 11030 (WM-7-75)

BOARD		
MFR	SQUARE D	SQUARE D
MDL		
TYPE	QOB	QOU
RTG	20 AMP	20 AMP
0-DPL-234-A1/IPS	X (BKR 1→24)	X (ALARM BKR)
0-DPL-234-A2/IPS	X (BKR 1→24)	X (ALARM BKR)
0-DPL-234-A3/IPS	X (BKR 1→24)	X (ALARM BKR)
0-DPL-234-B1/IPS	X (BKR 1→24)	X (ALARM BKR)
0-DPL-234-B2/IPS	X (BKR 1→24)	X (ALARM BKR)
0-DPL-234-B3/IPS	X (BKR 1→24)	X (ALARM BKR)
0-DPL-234-1	X (BKR 1→20)	
0-DPL-234-2	X (BKR 1→20)	

CHECKED JCRuttle DATE 1-22-90

COMPUTED [illegible] DATE 1-20-90

SHEET OF

TVA 11030 (WM 7 75)

	SQUARE D	SQUARE D	SQUARE D	SQUARE D	BUSS	BUSS	SQUARE D	SQUARED
MDL				(2 POLE)	FRN15	(A) KLC15		
TYPE					FUSETRON	(B) KTK15		
RTG	15 AMP	20 AMP	25 AMP	30 AMP	15 AMP	15 AMP	20 AMP	40 AMP
BOARD								
0-DPL-234-A1/SIS	X (BKR 1→38)	X (ALARM BKR)			X (8 SETS)		X BKR (39)	
0-DPL-234-A2/SIS	X BKR: (1) (3) (5) (7→24) (27) (28)	X (ALARM BKR)	X BKR: *(2) (4) (6) * BKR & FUSE IN SERIES	X BKR: ~~(30)~~ *(30/32) ~~(34)~~ *(34/36) ~~(32)~~ ~~(36)~~ * BKR & FUSE IN SERIES		X (B) FUSES IN SERIES WITH BKR 30/32 & 34/36, & 2	X BKR (25) (26)	
0-DPL-234-B1/SIS	X BKR: (1→38) (40→42)	X (ALARM BKR)			X (5 SETS)	X (A) X (B) FUSE IN SERIES w/ BKR 39		X (BKR 39)
0-DPL-234-B2/SIS	X BKR: (1) (3→7) (9) (11→24) (27)(28)	X (ALARM BKR)	X (BKR 2)	X BKR: ~~(30)~~ *(30/32) ~~(32)~~ *(34/36) ~~(34)~~ ~~(36)~~ * BKR & FUSE IN SERIES		X (B) FUSES IN SERIES WITH BKR 30/32 & 34/36	X BKR: (8) (10) (25) (26)	
0-DPL-234-1/WDS	X BKR: (2→4) (6→8) (10→24)	X (ALARM BKR)	X BKR: (1) (9)					X (BKR 5)
0-DPL-234-2/WDS	X BKR: (1)(2) (4→24) (ALARM BKR)						X (BKR 3)	

R3

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COMPUTED [signature] DATE 1-20-90

CHECKED [signature] DATE 1-22-90

VAR9001006

MFR	FPE	FPE	FPE	FPE	FPE	FPE	FPE	
MDL	NEJ223125 BAJ	NEJ223150 BAJ	NEJ223175 BAJ	NE223015BEF	NE223020BEF	NE223050BEF	NE223060BEF	
TYPE	NEJ 2 POLE	NEJ 2 POLE	NEJ 2 POLE	NE, AB	NE, AB	NE, AB	NE, AB	
RTG	125 AMP	150 AMP	175 AMP	15 AMP	20 AMP	50 AMP	60 AMP	
BOARD	X	X	X	X	X	X	X	
BD-237-A *	BKR (5) (6)	BKR (3) (4)	BKR (1) (2)	BKR 11→28	BKR (9) (10)	BKR 8	BKR 7	
1-BD-237-B		X BKR (3) (4)	X BKR (1) (2)	X BKR (11→17) (19→22) (24) (25) (27)	X BKR (10)		X BKR 7	
2-BD-237-A *	X BKR (5) (6)	X BKR (3) (4)	X BKR (1) (2)	X BKR (11→28)	X BKR (9)	X BKR (8)	X BKR (7)	
2-BD-237-B		X BKR (3) (4)	X BKR (1) (2)	X BKR (11→18) (20) (22→26) (27)	X BKR (10)		X BKR (7)	

* FUSES FOR THESE BDS SHOWN ON SEPARATE SHEET

COMPLETED [illegible] DATE 1-20-90

CHECKED R.D. Roberts DATE 1/24/90

WBPEVAR9001006

BOARD								
MFR	SHAWMUT	GOULD	SHAWMUT	HEINEMANN	HEINEMANN	HEINEMANN	GE	ENGLISH ELEC
MDL		D-800	TR7R				TED124Y100	BR.5
TYPE	TRIONIC			KL798	KU793	KU793		
RTG	7 AMP	7 AMP	7 AMP	15 AMP	30 AMP	15 AMP	100 AMP	5 AMP
1-BD-237-A *	X	X						
2-BD-237-A *			X					
0-DBD-238-3				X BKR (1→12) (15→20) (22→30) (33→35)	X BKR: (13) (14)	X BKR: (21) (36)	X BKR: (31) (32)	X

* CIRCUIT BREAKERS FOR THESE BD'S SHOWN ON SEPARATE SHEET

COMPLETED Jim B DATE 1-20-90

CHECKED [signature] DATE 1/29/90

W R 9001006

* DESIGNATES BKR TYPE SHOWN APPLIES TO THOSE BKRS SIMILARLY MARKED WITH *. OTHER BKRS IN THE COLUMN HAVE THE SAME ID NUMBER BUT TYPE WAS NOT SPECIFIED IN THE WALKDOWN DATA

R3

	①							
MFR	HEINEMANN	W	W	W	W	W	W	
MDL	CD2-G2G3-U CD2-Z85-3	ID 60E3356	ID 60E3355	ID 58E2407	ID 60E2246	ID 53E9227		
TYPE	KU793	AB DE-ION EHB2060 *	AB DE-ION *	AB DE-ION *	AB DE-ION *	AB DE-ION *	EHB2015	
RTG	15 AMP	60 AMP	40 AMP	30 AMP	20 AMP	15 AMP	15 AMP	
BOARD								
1-BD-238-M7								
PREFERRED POWER RACK	X (BKR 1→32)							
1-BD-237-M7A INST PWR A RACK		X BKR (1) (2)	X BKR (3) (4)	X BKR (5) (6)	X BKR (7→10)	X BKR (11→32)		
1-BD-237-M7B INST PWR B RACK		X BKR (1)* (2)*	X BKR (3)* (4)*	X BKR (5)* (6)*	X * BKR (7→10)	X * BKR (11→32)		
-BD-238-M7								
PREFERRED POWER RACK	X (BKR 1→32)							
2-BD-237-M7A INST PWR A RACK		X BKR (1) (2)	X BKR (3) (4)	X BKR (5) (6)	X BKR (7→10)	X BKR (12→32)	X BKR (11)	
2-BD-237-M7B INST PWR B RACK		X BKR (1)* (2)*	X BKR (3) (4)	X BKR (5) (6)	X BKR (7→10)	X BKR (11→32)		

① PER PUBLISHED HEINEMANN DATA 'CD', 'CE', & 'CF' BKRS ARE ALL SERIES CF (BULLETIN CF-3104)

R3

RO: COMPLETED [signature] DATE 1-20-90

CHECKED [signature] DATE 1/24/90

* INDICATES MDL NO APPLIES TO THOSE BKRS SIMILARLY MARKED WITH *. OTHER BKRS IN THE COLUMN WERE NOT ACCESSIBLE IN THE WALKDOWN

	MFR	HEINEMANN	HEINEMANN	BUSS	HEINEMANN	HEINEMANN			
	MDL	KU-793 TYPE CF ①	KU-793 TYPE CF ①	KTN100	CF2-G2G3-PU *	CF2-G2G3-DU *			
	TYPE	2 POLE	2 POLE	LIMITRON	2 POLE	2 POLE			
	RTG	60 AMP	15 AMP	100 AMP	15 AMP	60 AMP			
BOARD		X	X	X					
1-BD-238-1		(BKR 101→105)	(BKR 106→124)						
2-BD-238-1				X	X (BKR: 206→212) (213)* (214→223)	X (BKR 202→205) (201)*			

R3

① BKR TYPE PER 45N707-1 & REVISED WALKDOWN DATA (SEE REF. 3.4)

R3

R0: COMPUTED T.A.A. DATE 1-21-90
CHECKED R.J. Roberts DATE 1/24/90

BOARD	MFR ITE * MDL N/A TYPE K600 RTG 800A DC	ITE ET93838 ET 50A
0-DPL-239-1 250V DC TURBINE BLDG DIST BD 1	X PNL 1 (BKR102) (BKR103)	X PNL 2 (BKR 201) THRU (BKR 230)
0-DPL-239-2 250V DC TURBINE BLDG DIST BD 2	X PNL 1 (BKR 102) (BKR 103)	X PNL 2 (BKR 201) THRU (BKR 230) (EXCEPT BKR 213 EMPTY)

* BD FEEDER BKRS

CHECKED ______ DATE ______

COMPUTED WOM DATE 1-24-90

W[illegible] JAR9001006

A 11030 (WM-7-75)

	BUSS	ECON	BUSS	SHAWMUT	ECON	GE	GE	
MFR	BUSS	ECON	BUSS	SHAWMUT	ECON	GE	GE	
MDL	KLC10	ECN10	CLASS K1 KWN10	TR10	ECN12	THED. 126015	THED126030	
TYPE			LIMITRON					
RTG	10 AMP	10 AMP	10 AMP	10 AMP	12 AMP	15 AMP	30 AMP	
BOARD								
0-BD-239-1 (PANEL 1)	X	X	X	X				
0-BD-239-2 (PANEL 1)	X	X			X			
0-DBD-239-6						X BKR (1) (3) (4) (25→27) (29) (30) (33→38)	X BKR (8) (9) (17)	
0-DBD-239-7						X BKR: (1) (2) (7)	X BKR: (5) (11) (12)	
0-DBD-239-8						X BKR: (1) (3→6) (25→27) (29→31) (33→36)	X BKR: (8→10) (17)	

COMPLETED [signature] DATE 1-21-90

CHECKED [signature] DATE 1-23-90

SHEET OF

EVAR 900/006

VA 11030 (WM ...)

PA...

BKR LIMITER	MFR	W	W	W	W	W	W	W	
	MDL	LA2400PRF	1500LAP20		600LAP09		600LAP09	600LAP09	
	TYPE	TRI-PAC	TRI-PAC	TRI-PAC	TRI-PAC	TRI-PAC	TRI-PAC	TRI-PAC	
BKR	RTG	400 AMP	400 AMP	225 AMP	225 AMP	350 AMP	150 AMP	90 AMP	
BOARD									
-BD-239-1 (PANEL 2)		X BKR:(201)	X BKR:(202)	X BKR:(203)	X BKR:(204)	X BKR:(205)	X BKR:(208)	X BKR:(213→216)	
						(206)	(209)		
							(210)		
							(211)		
							(212)		
							(218)		

CHECKED [signature] DATE 1-23-90

COMPLETED [initials] DATE 1-21-90

SHEET ___ OF ___

EVAR 9001006

EVA 1100 (WM 7/7)

BKR LIMITER	MFR	W	W	W	W
	MDL	FB 2020PL	FB2040PL	FB2030PL	FB2050PL
	TYPE	TRI-PAC	TRI-PAC	TRI-PAC	TRI-PAC
BKR	RTG	20 AMP	40 AMP	30 AMP	50 AMP
BOARD					
0-BD-239-1 (PANEL 3)		X BKR: (320→323)	X BKR: (312)	X BKR (316) (317)	X BKR (302) (303→306)

CHECKED [illegible] 1-23-90

COMPILED Tm [illegible] 1-21-90

W /AR 9001006

A 1100 (WM

PA

BKR LIMITER / BKR		W	W	W	W	W	W	W	
	MFR	W	W	W	W	W	W	W	
	MDL	LA2400PRF	1500LAP20	1500LAP20	600LAP09		600LAP09	600LAP09	
	TYPE	TRI-PAC	TRI-PAC	TRI-PAC	TRI-PAC	TRI-PAC	TRI-PAC	TRI-PAC	
	RTG	400 AMP	400 AMP	350 AMP	225 AMP	350 AMP	150 AMP	90 AMP	
BOARD									
)-BD-239-2 PANEL 2)		X BKR:(201)	X BKR:(202)	X BKR:(206)	X BKR:(204) (203)	X BKR:(205)	X BKR:(208) (209) (210) (211) (212) (218)	X BKR:(213+216)	

CHECKED J.C. Butler DATE 1-23-90

COMPUTED [illegible] DATE 1-21-90

SHEET OF

3PEVAR 9001006

PAG A

BKR LIMITER					
	MFR	W	W	W	W
	MDL	FB 2020PL	FB2040PL	FB2030PL	FB2050
	TYPE	TRI-PAC	TRI-PAC	TRI-PAC	TRI-PAC
BKR	RTG	20 AMP	40 AMP	30 AMP	50 AMP
BOARD					
0-BD-239-2 (PANEL 3)		X BKR: (320→ 323)	X BKR: (312)	X BKR (316) (317)	X BKR (302) (303→306)

CHECKED [signature] 1-23-90

COMPILED [signature] 1-21-90

EVAR 9001006

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	MFR	GE	ENGLISH ELECTRIC					
	MDL	TED 124015	–					
	TYPE	–	B.R. 5					
	RTG	15 AMP	5 AMP					
BOARD								
0-DBD-240-5		X BKR(1→3)	X					
		(5→7)						
		(9→11)						
		(16→23)						
		(25→27)						
		(29)						
		(30)						

COMPUTED [signature] DATE 1-24-90
CHECKED [signature] DATE 1-24-90

EVAR 9001006

VA 11030 (WM-7-75)

PAGE

	BUSS	GOULD-SHAWMUT	FUSES NOT IDENTIFIED (PEN PROT)
MFR	BUSS	GOULD-SHAWMUT	
MDL	KTK	AT-DE-30R	
TYPE	LIMITRON	AMP TRAP	
RTG	20 AMP	30 AMP	
BOARD			
1-DPL-242-1 *	X (FUSES FOR BKR 11→13)		
2-DPL-242-1 *			X
1-BD-242-1 *		X	
2-BD-242-1 *		X	

* ADDITIONAL ~~DEVECES~~ SHOWN ON ANOTHER SHEET

CHECKED [signature] DATE 1-22-90

COMPUTED JMB DATE 1-22-90

SHEET OF

JBPEVAR 9001006

	GOULD SHAWMUT	GOULD SHAWMUT	ITE	ITE	ITE	(W)	BUSS	FPE	
MFR	GOULD SHAWMUT	GOULD SHAWMUT	ITE	ITE	ITE	(W)	BUSS	FPE	
MDL	TRM1	TRM1.6	BQ3-B020	BQ1-B030	BQ1-B020	EHB1015		**	***
TYPE	TRIONIC	TRIONIC	—	—	—	EHB	MBO		NE
RTG	1 AMP	1.6 AMP	20 AMP	30 AMP	20 AMP	15 AMP	5 AMP	15 AMP	30 AMP
BOARD									
0-MCC-249-1	X	X	X (7A) BKR 1, 2, & 5	X (7C) BKR 1, 2	X (7E) BKR 3, 5, 9, 10, 11, & 12				
0-DPL-13-1						X (BREAKERS 1 THRU 36)	X		
1-DPL-242-1 *								X	
2-DPL-242-1 *								X	
1-BD-242-1 *								X BKR: (8-12) (14-19)	X BKR 1-5
2-BD-242-1 *								X BKR: (8) (9) (11) (15+19)	X BKR: (1→6)

*ADDITIONAL DEVICES FOR THESE BOARDS SHOWN ON ANOTHER SHEET

**NE223015BEF

***NE223030BEF

CHECKED JCButler DATE 1-22-90

COMPLETED TW13 DATE 1-20-90

EVAR 9001006

TVA 11030 (WM-7-75)

	MFR	HEINEMANN	HEINEMANN						
	MDL	CF2-Z70-3	CF2-Z70-4						
	TYPE	2 POLE	2 POLE						
	RTG	15 AMP	30 AMP						
BOARD									
1-DPL-264-1		X (BKR 113→136)	X (BKR 101→112)						
2-DPL-264-1		X (BKR 213→236)	X (BKR 201→212)						

COMPUTED [signature] DATE 1-20-90

CHECKED [signature] DATE 1-22-90

SHEET OF

EVAR 9001006

FVA 11030 (WM-7-75)

PAGE A2

	MFR	Buss	Buss	Buss	Buss	Buss	Buss		
	MDL								
	TYPE	MIN	SC	MIN	MIN	SC	MIN		
	RTG	3 Amp	10 Amp	10 Amp	1 Amp	3 Amp	5 Amp		
BOARD									
O-PNL-276-L2		X	X	X	X	X	X		

COMPUTED 1/23/90 DATE 1/23/90

CHECKED [signature] DATE 1/23/90

WBPEVAR9001006

VA 11030 (WM-7-75)

MFR	HEINEMAN	BUSS	HEINEMAN	BUSS	BUSS	BUSS		
MDL		MDX 2	AM2-A3	AGC5	3AG	AGC-1		
TYPE	2 POLE							
RTG	35 AMP	2 AMP	25 AMP	5 AMP	5 AMP	1 AMP		
BOARD								
1-PNL-278-M18	X	X	X	X	X	X		

COMPUTED RDR DATE 1/23/90

CHECKED RC Butler DATE 1/23/90

'EVAR 9001006

VA 11030 (WM 7-75)

	MFR	HEINEMAN	BUSS	HEINEMAN	BUSS	BUSS		
	MDL		AGC-1	AM2-A3	313 3AG	3AG	3A2	AG5
	TYPE	2 POLE						
	RTG	35 AMP	1 AMP	25 AMP	2 AMP	2 AMP	4 AMP	5 AMP
BOARD								
2-PNL-278-M18		X	X	X	X	X	X	X

COMPUTED RDR DATE 1/23/90

CHECKED [illegible] DATE 1/23/90

WBPEVAR 9001006

MFR	BUSS	SHAWMUT	SHAWMUT	HEINEMANN					
MDL	NON 15	TR15	TR30	X0411TSHK					
TYPE		TRIONIC	TRIONIC						
RTG	15 AMP	15 AMP	30 AMP	15 AMP					
BOARD									
0-MCC-61-1	X	X (3DR)	X (1KR)	X BKR1→8 (5HF) BKR1 (2KR)					
	(1HF)	(3MR)							
	(1MF)	(6HF)							
	(2DF)								
	(4BF)								
	(4DF)								
	(4FF)								
	(4HF)								
	(4KF)								
	(6HF)								
	(6MF)								
	(1KR)								
	(3MR)								
	(4DR)								
	(4HR)								
	(4MR)								
	(5HR)								
	(6BR)								

CHECKED JC Butler DATE 1-22-90

COMPUTED [illegible] DATE 1-20-90

WBPEVAR9001006

VA 11030 (WM-7-75)

	MFR	Bryant	Bryant	Bryant					
	MDL	BD2020							
	TYPE	BR	BR	BR					
	RTG	20A	15A	30A					
BOARD									
1-CMPT-261-R103		Bkr (5-12)	BKR 1	BKR 2					
FRONT & Rear		Bkr 4							
2-cmpt-261-R103		Bkr (5-12)	Bkr 1	Bkr 2					
Front & Rear		Bkr 4							

CHECKED [illegible] DATE 2/1/90 COMPUTED [illegible] DATE 2/1/90 SHEET OF

WBPEVAR9001006

APPENDIX B

BOARD: 1. 0-DPL-13-1 2. ______ 3. ______
4. ______ 5. ______ 6. ______

D.R.McNEIL 1-28-90 DRM Wonnyer 1/31/90

BOARD REF #	CURVE NO.	COMPT/BKR #/FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/REF.
1	10	BKR 1	FE1425	WGB-1	#12	✓		45N708-5R13
1	10	BKR 2	FE1429	WGB-1	#12	✓		
1	10	BKR 3	FE1433	WDD-1	#8	✓		
1	10	BKR 4	FE1437	WGB-1	#12	✓		
1	10	BKR 5	FE1441	WDD-1	#8	✓		
1	10	BKR 6	FE1446	WDD-1	#8	✓		
1	10	BKR 7	FE1451	WDD-1	#8	✓		
1	10	BKR 8	FE1455	WDD-1	#8	✓		
1	10	BKR 9	FE1460	WGB-1	#12	✓		
1	10	BKR 10	FE1464	WGB	#12	✓		
1	10	BKR 11	FE1468	WGB-1	#12	✓		
1	10	BKR 12	FE1472	WGB-1	#12	✓		
1	10	BKR 13	FE1476	WGB-1	#12	✓		
1	10	BKR 14	FE1480	WFB	#10	✓		
1	10	BKR 15	FE1484	WFB	#10	✓		
1	10	BKR 16	FE1488	WFB	#10	✓		
1	10	BKR 17	FE1493	WGB-1	#12	✓		

WBPEVAR 9001006 — APPENDIX B — SHEET B1A

REV. # 5

PREPARED BY: [signature] DATE 4-15-91

CHECKED BY: [signature] DATE 4/30/91

BOARD: 1. 0-DPL-13-1   2. ______   3. ______

4. ______   5. ______   6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
					FE1425					(REV. H) 45N708-5 / (REV V.) 45W1699-26
4	13	1	10	1	FE1426	WGB	12	✓		
4	13	1	10	1	FE1427	WGB	12	✓		
					FE1429					
4	13	1	10	2	FE1430	WGB	12	✓		
4	13	1	10	2	FE1431	WGB	12	✓		
					FE1433					
4	13	1	10	3	FE1434	WDD-1	8	✓		(REV PP) -27
					FE1437					
4	13	1	10	4	FE1438	WGB-1	12	✓		(REV PP) -27
					FE1460					
4	13	1	10	9	FE1461	WGB	12	✓		(REV PP) -27
					FE1464					
4	13	1	10	10	FE1465	WGB	12	✓		(REV PP) -27
					FE1468					
4	13	1	10	11	FE1469	WGB	12	✓		(REV PP) -27

WBPEVAR9001006 APPENDIX B SHEET B1B

REV. # 5 PREPARED BY: [signature] DATE 4-15-91

CHECKED BY: [signature] DATE 4/30/91

BOARD: 1. 0-DPL-13-1 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE No.	CMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES/ REF. DWG.
					FE1472					(REV H) 45N708-5/(REV PP) 45W1699-27
4	13	1	10	12	FE1473	WGB-1	12	✓		PP 45W1699-27
4	13	1	10	12	FE1474	WGB	12	✓		PP 45W1699-27
					FE1476					(REV H) 45N708-5/(REV PP) 45W1699-27
4	13	1	10	13	FE1477	WGB-1	12	✓		45W1699-27
					FE1480			✓		(REV H) 45N708-5/(REV PP) 45W1699-27
4	13	1	10	14	FE1481	WFB	10	✓		(REV PP) 45W1699-27
4	13	1	10	14	FE1482	WFB	10	✓		"
					FE1484					(REV H) 45N708-5/(REV PP) 45W1699-26
4	13	1	10	15	FE1485	WFB	12	✓		(REV V) 45W1699-26/(REV PP) 45W1699-27
					FE1488					REV H (45N708-5) REV V 45W1699-26
4	13	1	10	16	FE1489	WFB	10	✓		45W1699-26
4	13	1	10	16	FE1490	WFB	10	✓		REV V. 45W1699-26/REV PP 45W1699-27
					FE1493					(REV H) 45N708-5/(REV V) 45W1699-27
4	13	1	10	17	FE1494	WGB	12	✓		(REV PP) 45W1699-27
4	13	1	10	17	FE1495	WGB	12	✓		REV PP 45W1699-27

WBPEVAR9001006

BOARD: 1. 0-DPL-13-1 2. ______ 3. ______
4. ______ 5. ______ 6. ______

COMP. DLMcl... 1-31-90 CHECKED: WO Myer 1-31-90

BOARD REF #	CURVE NO.	COMPT/ BKR #/ FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/REF.
1	10	BKR 18	FE 1498	WGB	#12	✓		45N708-5 R13
1	10	BKR 19	FE 1504	WGB-1	#12	✓		
1	10	BKR 20	FE 1510	WFB	#10	✓		0-FU-13-DPL/F20 INLINE FUSE, secondary protection.
1	10	BKR 21	FE 1518	WGB-1	#12	✓		
1	10	BKR 22	FE 1524	WGB-1	#12	✓		
1	10	BKR 23	FE 1530	WGB-1	#12	✓		
1	10	BKR 24	FE 1535	WGB-1	#12	✓		
1	10	BKR 25	FE 1542	WGB-1	#12	✓		
1	10	BKR 26	FE 1548	WGB-1	#12	✓		
1	10	BKR 27	FE 1555	WGB-1	#12	✓		
1	10	BKR 28	FE 1552	WGB-1	#12	✓		
1	10	BKR 29	FE 5780	WGB-1	#12	✓		
1	10	BKR 30	FE 5781	WGB-1	#12	✓		
1	10	BKR 31	FE 1448	WDD-1	#8	✓		
1	10	BKR 32	FE 1507	WDD-1	#8	✓		
1	10	BKR 33	FE 5000	WGB-1	#12	✓		
1	10	BKR 34	FE 5004	WGB-1	#12	✓		

WBPEVAR9001006 APPENDIX B SHEET B2A

REV.# 5

PREPARED BY: [signature] DATE 4-15-91

CHECKED BY: [signature] DATE 4/30/91

BOARD: 1. 0-DPL-13-1 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES/ REF. DWG.
					FE1510					(REV H) 45N708-5/ REV V 45W1699-26
4	13	1	10	20	FE1511	WGB	12	✓		REV V 45W1699-26/ REV PP 45W1699-27
4	13	1	10	20	FE1512	WGB	12	✓		(REV PP) 45W1699-27
					FE1518					(REV H) 45N708-5/ REV V. 45W1699-26
4	13	1	10	21	FE1519	WGB	12	✓		(REV V.) 45W1699-26
4	13	1	10	21	FE1520	WGB	12	✓		(REV V.) 45W1699-26
					FE1524					REV H 45N708-5/ REV V 45W1699-26
4	13	1	10	22	FE1525	WGB	12	✓		REV V 45W1699-26
4	13	1	10	22	FE1526	~~WGB-X~~ RB 4/24/91	12	✓		45W1699-26
					FE1530					(REV H 45N708-5) (REV PP) 45W1699-27
4	13	1	10	23	FE1531	WGB-1	12	✓		45W1699-27
4	13	1	10	23	FE1532	WGB-1	12	✓		" "
					FE1535					REV H 45W708-5/ (REV PP) 45W1699-27
4	13	1	10	24	FE1536	WGB-1	12	✓		REV PP 45W1699-27
4	13	1	10	24	FE1537	WGB-1	12	✓		REV PP 45W1699-27
					FE1542					REV H 45W708-5 REV PP 45W1699-27
4	13	1	10	25	FE1543	WGB-1	12	✓		REV PP 45W1699-27
4	13	1	10	25	FE1544	WGB-1	12	✓		"
					FE1548					REV H 45W708-5/ (REV PP) 45W1699-27
4	13	1	10	26	FE1549	WGB-1	12	✓		45W1699-27/45W1699-26
4	13	1	10	26	FE1550	WGB	12	✓		45W1699-26

WBPEVAR9001006
REV. # 5

APPENDIX B

PREPARED BY: [signature] DATE 4-15-91
CHECKED BY: [signature] DATE 4/30/91

SHEET B2B

BOARD: 1. O-DPL-13-1 2. ____ 3. ____
4. ____ 5. ____ 6. ____

GROUP	SYS.	BOARD REF. #	CURVE No.	COMPT./BKR.#/FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES/REF. DWG.
					FE1555					(REV H) 45N708-5/45W1699-27 REV PP
4	13	1	10	27	FE1556	WGB-1	12	✓		45W 1699-27 REV PP
					FE1448					45W1698-11 REV L
4	13	1	10	31	FE1449	WGB-1	12	✓		
4	13	1	10	31	FE1450	WDD-1	8	✓		
4	13	1	10	31	FE5461	WGB-1	12	✓		45W1699-27
					FE1507					45N 703-5 / 45W 1698-11 REV L
4	13	1	10	32	FE5462	WGB-1	12	✓		
4	13	1	10	32	FE1508	WGB-1	12	✓		
4	13	1	10	32	FE1509	WDD ~~WDD~~-1 RB 4/24/91	8	✓		
					FE 5000					45W 1699-41 REV H
4	13	1	10	33	FE 5002 R. 04-30-91	WGB-1	12	✓		
4	13	1	10	33	FE 5003	WGB-1	12			
					FE1498					REV-H 45N708-5 / REV PP 45W1699-27
4	13	1	10	18	FE1499	WGB	12	✓		
4	13	1	10	18	FE1500	WGB	12	✓		
					FE1504					REV H 45N708-5 / REV PP 45W1699-27
4	13	1	10	19	FE1505	WGB	12	✓		REV PP 45W1699-27
4	13	1	10	19	FE1506	WDD-1	8	✓		45W1699-27

WBPEVAR 9001006
REV. # 5

APPENDIX B

WY910-22-91 SHEET ~~B3 A~~ B2C

PREPARED BY: [signature] DATE 4-15-91

CHECKED BY: [signature] DATE 4/30/91

BOARD: 1. O-DPL-13-1 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
					FE 5004					
4	13	1	10	34	FE 5006	WGB-1	12	✓		45N708-5 / 45W1699-41 REV H
4	13	1	10	34	FE 5007	WGB-1	12	✓		↓ ↓

WBPEVAR9001006

BOARD: 1. 0-DPL-13-1 2. 0-MCC-208-A 3. 0-MCC-208-C
4. ______ 5. ______ 6. ______

D.R.McNEIL 1-29-90 DRM WOMyer 1/31/90

BOARD REF #	CURVE NO.	COMPT/ BKR #/ FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES / REF.
1	10	BKR 35	FE7248	WDF-1	#4	✓		45N708-5 R13
1	10	BKR 36	FE7249	WDF-1	#4	✓		45N708-5 R13
2	–	5C/1	NA / INTERNAL	–	–	–	–	45W744-1R14, 45B724-5C R2, TO COMPT C
2	46	5C/2	PL957	WGD	#12	✓		45W744-1R14, 45B774-5C R2
2		5C/3	NA / INTERNAL	–	–	–		45W744-1R14, 45B774-5C R2, TO COMPT 6C
2		5C/4	NA / SPARE					
2		5C/5	NA / SPARE					
2		5C/6	NA / SPARE					
3		5C/1	NA / SPARE					45W744-5, 45B776-5C
3		5C/2	NA / INTERNAL					(WIRING TO COMPT 10B)
3		5C/3	NA / SPARE					
3		5C/4	NA / INTERNAL					(WIRING TO COMPT 10E)
3		5C/5	NA / SPARE					
3		5C/6	NA / SPARE					

wgl 08-22-91

WBREVAR 9001006

REV. # ~~6~~ 5 LMG 1-9-91

APPENDIX B

SHEET ~~B3-B~~ B3A

PREPARED BY: Louis Dryer DATE 12-11-90

CHECKED BY: Louis MacGivern DATE 12-12-90

BOARD: 1. 0-MCC-208-A 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG. RC SDK 02-19-91
2A	31	1	46	5C/2	PL957	WGD	12	X		45B774-5C, ~~R4~~/45W774-2, R5
↓	↓	↓	↓	↓	PL958	WGC-1	12	X		45W774-2, R5
↓	↓	↓	↓	↓	PL959	WGB-1	12	X		↓

WBPEVAR9001006

COMPUTED JCButler DATE 1-27-90

CHECKED TMB DATE 2-1-90

BOARD: 1. 0-MCC-061-1 2. 3.

4. 5. 6.

BOARD REF #	CURVE NO.	COMPT/ BKR #/ FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/REF.
1	77	6HF/2FU	PL4231	WGB	12	X		45W782-6(R5) -3(R5) (71C62-54114-1) W 7250D23 SH19 (R1)
			PL4228	WGB	12	X		
			PL4227	WGE	12	X		
			PL4226	WGB	12	X		
			PL4224	WGB	12	X		
			PL4225	WGB	12	X		
			PL4223	WGB	12	X		
			PL4232	WGE	12	X		
			PL4230	WGB	12	X		

COMPUTED TMB DATE 1-28-90

CHECKED gmn DATE 1-31-90

BOARD: 1. 0-MCC-207-A 2. 0-MCC-207-B 3. ______
4. ______ 5. ______ 6. ______

BOARD REF #	CURVE NO.	COMPT/ BKR #/ FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/REF.
1	46	5C (1)	PL439	WGB	12	X		45B784-5C (R2)
↓		5C (2)	PL520	WGB	12	X		↓
	↓	5C (3,4)	NA (SPARE)	—	—	—		
	47	5C (5,6)	NA (SPARE)	—	—	—		
2	46	5C (1)	PL438	WGB	12	X		45B785-5C (R2)
↓	↓	5C (2→4)	NA (SPARE)	—	—	—		↓
	47	5C (5,6)	NA (SPARE)	—	—	—		

WBPEVAR9001006 APPENDIX B SHEET B5A

REV. # 5

PREPARED BY: [signature] DATE 4-23-90

CHECKED BY: D. Nood[signature] DATE 4/30/91

BOARD: 1. 0-MCC-207-A 2. 0-MCC-207-B 3. ____

4. ____ 5. ____ 6. ____

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO. PL438, PL439	MK#	SIZE	PASS	FAIL	NOTES/ REF. DWG.
6	44	1+2	46	5C(1)	PL427	WGB	12	X		45W784-3
6	44	1+2	46	5C(1)	PL428	WGB	12	X		45W784-3, 45N1635-49
6	44	1+2	46	5C(1)	PL429	WGB	12	X		45W784-3, 45N1635-49
6	44	1+2	46	5C(1)	PL440	WGB	12	X		45W784-3
6	44	1+2	46	5C(1)	PL441	WGB	12	X		45W784-3
6	44	1+2	46	5C(1)	PL442	WGB	12	X		45W784-3
6	44	1+2	46	5C(1)	PL443	WGB	12	X		45W784-3
6	44	1+2	46	5C(1)	PL444	WGB	12	X		45W784-3
6	44	1+2	46	5C(1)	PL445	WGC	12	X		45W784-3
6	44	1+2	46	5C(1)	PL446	WGB	12	X		45W784-3
6	44	1+2	46	5C(1)	PL447	WGB	12	X		45W784-3
6	44	1+2	46	5C(1)	PL448	WGB	12	X		45W784-3
6	44	1+2	46	5C(1)	PL449	WGB	12	X		45W784-3, 45B784-2C
6	44	1+2	46	5C(1)	PL450	WGB	12	X		45W784-3, 45B785-2C
6	44	1+2	46	5C(1)	PL451	WGB	12	X		45W784-3
6	44	1+2	46	5C(1)	PL452	WGB	12	X		45W784-3
6	44	1+2	46	5C(1)	PL453	WGB	12	X		45W784-3
6	44	1+2	46	5C(1)	PL454	WGB	12	X		~~46~~ 45W784-3 [initials] 5-29-91

WBPEVAR9001006
REV. # 5

APPENDIX B

SHEET B5B

PREPARED BY: [signature] DATE 23 APR

CHECKED BY: [signature] NGO DATE 4/30/91

BOARD: 1. 0-MCC-207-A 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO. PL520	MK#	SIZE	PASS	FAIL	NOTES/ REF. DWG.
6	24	1	46	5C(2)	PL521	WGB	12	X		45W784-4, 45N1635-43
6	24	1	46	5C(2)	PL522	WGB	12	X		45W784-4, 45N2635-43
6	24	1	46	5C(2)	PL523	WGB	12	X		45W784-4

WBPEVAR9001006

COMPUTED [illegible] DATE 1-28-[illegible]
CHECKED [illegible] DATE 1-31-9[illegible]

BOARD: 1. 1-MCC-209-A 2. 1-MCC-209-B 3. 1-MCC-209-
4. 5. 6.

BOARD REF #	CURVE NO.	COMPT/BKR #/FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/REF.
1	46	5C (1)	1PL2287	WGB-1	12	X		45B1752-5C (R3)
			1PL2294	WGB	12	X		
			1PL2296	WGB	12	X		
			1PL2289	WGB	12	X		
		5C (2)	1PL2280	WGB	12	X		
			1PL2282	WGB	12	X		
		5C (3)	1V195	WGB	12	X		
		5C (4+6)	NA (SPARE)	—	—	—		
	47	5C (7,8)	NA (SPARE)	—	—	—		
2	46	5C (1)	1PL2281	WGB	12	X		45B1753-5C (R1)
		5C (2)	1PL2305	WGB	12	X		
			1PL2288	WGB-1	12	X		
			1PL2295	WGB	12	X		
		5C (3)	1V100	WGB	12	X		
	47	5C (4)	NA (SPARE)	—	—	—		
		5C (5)	1PL2015	WGB	12	X		
		5C (6)	NA (SPARE)	—	—	—		
3	46	5C (1)	1PL2310	WGB	12	X		45B1754-5C (R2)
			1PL2300	WGB	12	X		
		5C (2+4)	NA (SPARE)	—	—	—		
	47	5C (5)	NA (SPARE)	—	—	—		
		5C (6)	1PL158	WFB	10	X		

W3PEVAR 9001006 APPENDIX B SHEET 56A

REV. # 5

PREPARED BY: [signature] DATE 3-28-91

CHECKED BY: G. McCarthy DATE 4-23-91

BOARD: 1. 1-MCC-209-A 2. 1-MCC-209-B 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE No.	COMPT. BKR. #/ FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES / REF. DWG.
					1PL2305					
6	6	2	46	5C(2)	1PL2306	WGB	12	X		45W1753-1

WBPEVAR 9001006 APPENDIX D SHEET

REV. # 5

PREPARED BY: [signature] DATE 3-29-91

CHECKED BY: J. McCarthy DATE 4-23-91

BOARD: 1. 1-MCC-209-A 2. 1-MCC-209-B 3. ____

4. ____ 5. ____ 6. ____

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES/ REF. DWG.
					1V100					
6	6	2	46	5C(3)	1V101	WGB	12	X		45W1721-3 45W1752-4
					1V102			X		
					1V103			X		
					1V104			X		

WBPEVAR9001006 APPENDIX B SHEET 136C

REV. # 5

PREPARED BY: [signature] DATE 3-28-91

CHECKED BY: [signature] DATE 4-23-91

BOARD: 1. 1-MCC-209-A 2. 1-MCC-209-B 3. 1-MCC-209-C

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES/ REF. DWG.
					1PL2310					
6	6	3	46	~~1B~~ 5C(1)	1PL2311	WGB	12	X		45N1754-2

WBPEVAR 9001006 APPENDIX B SHEET B6D

REV. # 5

PREPARED BY: [signature] DATE 4-1-91

CHECKED BY: [signature] McCarthy DATE 4-23-91

BOARD: 1. 1-MCC-209-A 2. 1-MCC-209-B 3. 1-MCC-209-C

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
					1PL2300					
6	6	3	46	~~1B~~ SC(1)	1PL2301	WGB	12	X		45W1745-2

JD 4-23-91

WBPEVAR900/006

COMPUTED [illegible] DATE 1-28-[illegible]

CHECKED [illegible] DATE 1-31-9[illegible]

BOARD: 1. 2-MCC-209-A 2. 2-MCC-209-B 3. 2-MCC-209-[illegible]

4. 5. 6.

BOARD REF #	CURVE NO.	COMPT/BKR #/FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/REF.
1	46	5C (1)	2PL2287	WGB	12	X		45B2752-5C (R1)
			2PL2294	WGB	12	X		
			2PL2296	WGB	12	X		
			2PL2289	WGB	12	X		
		5C (2)	2PL2280	WGB	12	X		
			2PL2282	WGB	12	X		
		5C (3)	2V195	WGB	12	X		
		5C (4→6)	NA (SPARE)	—	—	—		
	47	5C (7,8)	NA (SPARE)	—	—	—		
2	46	5C (1)	2PL2281	WGB	12	X		45B2753-5C (R1)
		5C (2)	2PL2305	WGB	12	X		
			2PL2288	WGB	12	X		
			2PL2295	WGB	12	X		
		5C (3)	2V100	WGB	12	X		
	47	5C (4,6)	NA (SPARE)	—	—	—		
		5C (5)	2PL2015	WGB	12	X		
3	46	5C (1)	2PL2300	WGB	12	X		45B2754-5C (R3)
			2PL2310	WGB	12	X		
		5C (2→4)	NA (SPARE)	—	—	—		
	47	5C (5)	NA (SPARE)	—	—	—		
		5C (6)	2PL158	WFB	10	X		

WBPEVAR900100
REV.# 5

APPENDIX B

PREPARED BY: [signature] DATE 23 APR 91
CHECKED BY: [signature] DATE 4-29-91

SHEET B 7A

BOARD: 1. 2-MCC-209-B   2. ________   3. ________
4. ________   5. ________   6. ________

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
					2 PL 2305					
6	6	1	46	5C(2)	2 PL 2306	WG.B	12	X		45B 2753-5C
										45W2753-1

WBPEVAR9001006
REV. # 5

APPENDIX B

SHEET B7B

PREPARED BY: [illegible signature] DATE 24 APR 91

CHECKED BY: J. McCarthy DATE 4-29-91

BOARD: 1. 2-MCC-209-B 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE No.	COMPT./BKR.#/FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES/REF. DWG.
					2V 100					
6	27	1	46	5C (3)	2V 101	WG.B	12	X		45W2721-3
					2V 102			X		45W2752-4
					2V 103			X		
					2V 104			X		

WBPEVAR 9001006
REV. # 5

APPENDIX B

SHEET B7C

PREPARED BY: [signature] DATE 25 APR 91

CHECKED BY: [signature] DATE 5/2/91

BOARD: 1. 2-MCC-209-C 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES / REF. DWG.
					2PL 2300					
6	6	1	46	5C(1)	2PL 2301	WGB	12	X		45W2754-2 R1 ¢ 45B2754-5C
↓	↓	↓	↓	↓	2PL 2311	↓	↓	X		

WBPEVAR 9001006

COMPUTED YAWS DATE 1-28-90
CHECKED JMA DATE 1-31-90

BOARD: 1. 1-MCC-210-A 2. 1-MCC-210-B 3. 2-MCC-210-A
4. 2-MCC-210-B 5. 0-MCC-220-1 6.

BOARD REF #	CURVE NO.	COMPT/BKR #/FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/REF.
1	46	5C (1)	1PL1450	WGB	12	X		45B1757-5C (R0)
↓	↓	5C (3)	1PL2440	WGB	12	X		↓
		5C(2,4)	NA (SPARE)	—	—	—		
↓	47	5C(5,6)	↓	—	—	—		↓
2	46	5C (1)	1PL2460	WGB	12	X		45B1758-5C (R1)
↓	↓	5C(2,4)	NA (SPARE)	—	—	—		↓
	47	5C(3,5)	↓	—	—	—		
↓	46	5C (6)	NA (NO CABLE)	—	—	—		↓
3	46	5C (1)	2PL1450	WGB	12	X		45B2757-5C (R1)
↓	↓	5C (3)	2PL2440	WGB	12	X		↓
↓	↓	5C(2,4,6)	NA (SPARE)	—	—	—		↓
4	46	5C (1)	2PL2460	WGB	12	X		45B2758-5C (R0)
↓	↓	5C (6)	1PL1180	WGB	12	X		↓
	↓	5C(2,4)	NA (SPARE)	—	—	—		
↓	47	5C(3,5)	NA (SPARE)	—	—	—		↓
5	47	5C1 (1)	PL1551	WGK	12	X		45B796-5C1 (R3); 45B796-5C2 (R3)
↓	46	5C1 (2)	PL6133	WGB-1	12	X		↓
	47	5C1 (3)	PL5963	WGB-1	12	X		45B796-5C2 (R3)
↓	46	5C1 (4)	PL1597	WHB	14		X GRG 11/21/91	↓ 45B796-100 (R5)
	46	5C1(5,6)	NA (SPARE)	—	—	—		

X SEE NOTE ON ATTACHED SHEET B8H1 ~~APPENDIX G~~ DJR 12/11/91 & ATTACHMENT M1642SA | R7

WBPEVAR9001006

REV. # ~~8~~ ~~8~~ 5 fmG 1-9-91

APPENDIX B

SHEET B8A

PREPARED BY: Do Moris Woods DATE 12/11/90

CHECKED BY: Louis MacGovern DATE 12-13-90

BOARD: 1. 1-MCC-210-A 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT./BKR. #/FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
2A	30	1	46	5C/3	1PL2440	WGB	12	X		DK 02-19-91 45B1757-5C, ~~R0~~ RB / 45W1757-3, ~~R10~~ RG
					1PL2441	WGB	12	X		45W1757-3, ~~R10~~ RG DK 02-19-91
					1PL2442	WGB	12	X		
					1PL2443	WGB	12	X		
					1PL2444	WGB	12	X		
					1PL2445	WGB	12	X		
					1PL2446	WGB	12	X		
					1PL2447	WGB	12	X		
					1PL2448	WGB	12	X		
					1PL2449	WGB	12	X		
					1PL2450	WGB	12	X		
					1PL2451	WGB	12	X		
					1PL2452	WGB	12	X		
					1PL2453	WGB	12	X		
					1PL2454	WGB	12	X		
					1PL2455	WGB	12	X		
					1PL2456	WGB	12	X		
										DK 02-19-91
2A	30	1	46	5C/1	1PL1450	WGB	12	X		45B1757-5C, ~~R0~~ RB / 45W1757-4, ~~R5~~ RC
					1PL1451	WGE	12	X		45W1757-4, ~~R5~~ RC
					1PL1454	WGO	12	X		45W1757-4, ~~R5~~ RC / 45W1757-5, ~~R0~~ RB
					1PL1455	WGC	12	X		45W1757-5, ~~R0~~ RB
					1PL1456	WGB	12	X		DK 02-19-91
					1PL1457	WGD	12	X		45W1757-4, ~~R5~~ RC / 45W1757-5, ~~R0~~ RB
					1PL1458	WGC	12	X		45W1757-5, ~~R0~~ RB
					1PL1459	WGB	12	X		
					1PL1460	WGB	12	X		
					1PL1461	WGB	12	X		
					1PL1462	WGB	12	X		
					1PL1463	WGB	12	X		
					1PL1464	WGB	12	X		
				CONT'D	1PL1465	WGB	12	X		

WBPEVAR 9001006 | APPENDIX B | SHEET B8B

REV. # ~~4~~ 5 LMG 1-9-91

PREPARED BY: De Noris Woods DATE 12-11-90

CHECKED BY: Louis MacGivern DATE 12-13-90

BOARD: 1. 1-MCC-210-A 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES/ REF. DWG. JK 02-19-91
2A	30	1	46	5C/1	1PL1466	WGB	12	X		45W1757-5, ~~20~~ RB
					1PL1467	WGB	12	X		
					1PL1468	WGB	12	X		
					1PL1469	WGB	12	X		
					1PL1470	WGB	12	X		
					1PL1471	WGB	12	X		
					1PL1472	WGB	12	X		
					1PL1473	WGB	12	X		
					1PL1474	WGB	12	X		
					1PL1475	WGB	12	X		
					1PL1476	WGB	12	X		
					1PL1477	WGB	12	X		
					1PL1478	WGB	12	X		
					1PL1479	WGB	12	X		
					1PL1840	WGB	12	X		
					1PL1841	WGB	12	X		
					1PL1842	WGB	12	X		
					1PL1843	WGB	12	X		
					1PL1844	WGB	12	X		
					1PL1845	WGB	12	X		
					1PL1846	WGB	12	X		
					1PL1847	WGB	12	X		
					1PL1848	WGB	12	X		
					1PL1849	WGB	12	X		
					1PL1850	WGB	12	X		
					1PL1851	WGB	12	X		
					1PL1852	WGB	12	X		
					1PL1853	WGB	12	X		
					1PL1854	WGB	12	X		
					1PL1855	WGB	12	X		
					1PL1856	WGB	12	X		
					1PL1857	WGB	12	X		

WBPEVAR9001006

REV. # ~~4~~ 5 LMG 1-9-91

APPENDIX B

SHEET B8C

PREPARED BY: De Noris Woods DATE 12-11-90

CHECKED BY: Louis MacGivini DATE 12-13-90

BOARD: 1. 1-MCC-210-A 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT./BKR. #/FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
2A	30	1	46	5C/1	1PL1858	WGB	12	X		45W1757-5, ~~BO~~ RB JDK 02-19-91
					1PL1859	WGB	12	X		
					1PL1860	WGB	12	X		
					1PL1861	WGB	12	X		
					1PL1862	WGB	12	X		
					1PL1863	WGB	12	X		
					1PL1864	WGB	12	X		
					1PL1865	WGB	12	X		
					1PL1866	WGB	12	X		
					1PL1867	WGB	12	X		
					1PL1868	WGB	12	X		
					1PL1869	WGB	12	X		
					1PL1870	WGB	12	X		
					1PL1871	WGB	12	X		
					1PL1872	WGB	12	X		
					1PL1873	WGB	12	X		
					1PL1874	WGB	12	X		
					1PL1875	WGB	12	X		
					1PL1876	WGB	12	X		
					1PL1877	WGB	12	X		
					1PL1878	WGB	12	X		
					1PL1879	WGB	12	X		
2A	30	1	46	5C/1	1PL1452	~~WGB~~ WGS 12-20-91 DL	12	X		45W1757-4, R/C JR 2/19/91

WBPEVAR9001006 APPENDIX B SHEET B8D

REV. # ~~4~~ 5 RMG 1-9-91

PREPARED BY: [signature] DATE 12-12-90

CHECKED BY: Louis MacGivern DATE 12-13-90

BOARD: 1. 1-MCC-210-B 2. 2-MCC-210-B 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES/ REF. DWG. RK 02-19-91
2A	30	1	46	5C/1	1PL2460	WGB	12	X		45B1758-5C, ~~R1~~ RB / 45W1758-2, ~~R4~~ RC
↓	↓	↓	↓	↓	1PL2461	WGB	12	X		45W1758-2, ~~R4~~ RC
					1PL2462	WGB	12	X		↓
					1PL2463	WGB	12	X		
					1PL2464	WGB	12	X		
					1PL2465	WGB	12	X		
					1PL2466	WGB	12	X		
					1PL2467	WGB	12	X		
					1PL2468	WGB	12	X		
					1PL2469	WGB	12	X		
					1PL2470	WGB	12	X		
					1PL2471	WGB	12	X		
					1PL2472	WGB	12	X		
					1PL2473	WGB	12	X		
					1PL2474	WGB	12	X		
					1PL2475	WGB	12	X		
					1PL2476	WGB	12	X		
2A	30	2	46	5C/6	1PL1180	WGB	12	X		45B2758-5C, RC / 45B1758-5C, RB
↓	↓	↓	↓	↓	1PL1181	WGB	12	X		45B1758-5C, RB / 55W630-1, RG
										55W630-2, RF

APPENDIX B

WBPEVAR 9001006
REV. # ~~4~~ 5 RMG 1-9-91

SHEET B8E
PREPARED BY: Wesley A. White DATE 12/13/90
CHECKED BY: L. McGuire DATE 12/13/90

BOARD: 1. 2-MCC-210-A 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	CUMPT. BKR. #/FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/ REF. DWG.
2A	30	1	46	5C/1	2PL1450	WGB	12	X		45B2757-5C REV. D 45W2757-2 REV. E
					2PL1451	WGE	12	X		45W2757-2 REV. E
					2PL1454	WGD	12	X		45W2757-2 REV. E 45W2757-4 REV. C
					2PL1455	WGC	12	X		45W2757-4 REV. C
					2PL1456	WGB	12	X		45W2757-4 REV. C
					2PL1457	WGD	12	X		45W2757-2 REV. E 45W2757-4 REV. C
					2PL1458	WGC	12	X		45W2757-4 REV. C
					2PL1459	WGB	12	X		
					2PL1460	WGB	12	X		
					2PL1461	WGB	12	X		
					2PL1462	WGB	12	X		
					2PL1463	WGB	12	X		
					2PL1464	WGB	12	X		
					2PL1465	WGB	12	X		
					2PL1466	WGB	12	X		
					2PL1467	WGB	12	X		
					2PL1468	WGB	12	X		
					2PL1469	WGB	12	X		
					2PL1470	WGB	12	X		
					2PL1471	WGB	12	X		
					2PL1472	WGB	12	X		
					2PL1473	WGB	12	X		
					2PL1474	WGB	12	X		
					2PL1475	WGB	12	X		
					2PL1476	WGB	12	X		
					2PL1477	WGB	12	X		
					2PL1478	WGB	12	X		
					2PL1479	WGB	12	X		
					2PL1840	WGB	12	X		
					2PL1841	WGB	12	X		
					2PL1842	WGB	12	X		
					2PL1843	WGB	12	X		

APPENDIX B

SHEET B8F

WBPEVAR9001006
REV. # ~~4~~ 5 LMG 1-9-91

PREPARED BY: [signature] DATE 12/13/90
CHECKED BY: L. MacGinnis DATE 12/14/90

BOARD: 1. 2-MCC-210-A 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	CUMPT. BKR. #/ FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/ REF. DWG.
2A	30	1	46	5C1	2PL1844	WGB	12	X		45W2757-4 REV. C
					2PL1845	WGB	12	X		
					2PL1846	WGB	12	X		
					2PL1847	WGB	12	X		
					2PL1848	WGB	12	X		
					2PL1849	WGB	12	X		
					2PL1850	WGB	12	X		
					2PL1851	WGB	12	X		
					2PL1852	WGB	12	X		
					2PL1853	WGB	12	X		
					2PL1854	WGB	12	X		
					2PL1855	WGB	12	X		
					2PL1856	WGB	12	X		
					2PL1857	WGB	12	X		
					2PL1858	WGB	12	X		
					2PL1859	WGB	12	X		
					2PL1860	WGB	12	X		
					2PL1861	WGB	12	X		
					2PL1862	WGB	12	X		
					2PL1863	WGB	12	X		
					2PL1864	WGB	12	X		
					2PL1865	WGB	12	X		
					2PL1866	WGB	12	X		
					2PL1867	WGB	12	X		
					2PL1868	WGB	12	X		
					2PL1869	WGB	12	X		
					2PL1870	WGB	12	X		
					2PL1871	WGB	12	X		
					2PL1872	WGB	12	X		
					2PL1873	WGB	12	X		
					2PL1874	WGB	12	X		
					2PL1875	WGB	12	X		

APPENDIX B

SHEET B8G

WBPEVAR 9001006
REV. # ~~4~~ 5 LMG 1-9-91

PREPARED BY: Wesley A. Whittat DATE 12/13/90
CHECKED BY: L. MacGuinn DATE 12/14/90

BOARD: 1. 2-MCC-210-A 2. ________ 3. ________

4. ________ 5. ________ 6. ________

GROUP	SYS.	BOARD REF. #	CURVE NO.	CMPT./BKR. #/FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/REF. DWG.
2A	30	1	46	5C/1	2PL1876	WGB	12	X		45W2757-4 REV. C
					2PL1877	WGB	12	X		
					2PL1878	WGB	12	X		
					2PL1879	WGB	12	X		
										45B2757-5C REV. D
2A	30	1	46	5C/3	2PL2440	WGB	12	X		45W2757-3 REV. E
					2PL2441	WGB	12	X		45W2757-3 REV. E
					2PL2442	WGB	12	X		
					2PL2443	WGB	12	X		
					2PL2444	WGB	12	X		
					2PL2445	WGB	12	X		
					2PL2446	WGB	12	X		
					2PL2447	WGB	12	X		
					2PL2448	WGB	12	X		
					2PL2449	WGB	12	X		
					2PL2450	WGB	12	X		
					2PL2451	WGB	12	X		
					2PL2452	WGB	12	X		
					2PL2453	WGB	12	X		
					2PL2454	WGB	12	X		
					2PL2455	WGB	12	X		
					2PL2456	WGB	12	X		
2A	30	1	46	5C/1	2PL1452	~~WGB~~ WGC LM 12-20-90	12	X		45W2757-2 REV. E

WBPEVAR9001006 APPENDIX B SHEET B8H

REV. # ~~3~~ 5 LMG 1-9-91

PREPARED BY: [signature] /D. Wood DATE 12-12-90

CHECKED BY: Louis MacGovern DATE 12-13-90

BOARD: 1. 2-MCC-210+B 2. 0-MCC-220-1 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT./BKR. #/FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
										GDK 02-19-91
2A	30	1	46	5C/1	2PL2460	WGB	12	X		45B2758-5C,~~R0~~ RC / 45W2758-2,R3
					2PL2461	WGB	12	X		45W2758-2,R3
					2PL2462	WGB	12	X		
					2PL2463	WGB	12	X		
					2PL2464	WGB	12	X		
					2PL2465	WGB	12	X		
					2PL2466	WGB	12	X		
					2PL2467	WGB	12	X		
					2PL2468	WGB	12	X		
					2PL2469	WGB	12	X		
					2PL2470	WGB	12	X		
					2PL2471	WGB	12	X		
					2PL2472	WGB	12	X		
					2PL2473	WGB	12	X		
					2PL2474	WGB	12	X		
					2PL2475	WGB	12	X		
					2PL2476	WGB	12	X		
2C	36	2	47	5C1/1	PL1551	WGK	12	*		45B796-5C2,R/C / 45W796-1,R/0
					PL1552	WGC	12	X		45W796-1,R/0
					PL1553	WGC	12	X		
					PL1554	WGC	12	X		
					PL1555	WGC	12	X		
					PL1556	WGC	12	X		
					PL1557	WGC	12	X		
					PL1558	WGB	12	X		
										Lwgy 9-4-91
										~~* REF. QIR LEEWBN90056, R/0~~

APPENDIX B

Prepared by: J.R. [signature] Date: 11-25-91
Checked by: __________ Date: ______

Note:

Circuit fed from compartment 5C1 of board 0-MCC-220-1 contains cable PL1597 (mark number WHB) which has a insulation temperature rating of 75 degrees C (DS E12.6.3). The primary protective device for this circuit is a 15A circuit breaker (curve 46). The 15A breaker on curve 46 does not protect a 14AWG cable rated at 75 degrees C. However, the failure of this cable will not degrade Class IE safety related cables or equipment since they are located entirely in the turbine building (non-category I structure).

COMPUTED J C Butler DATE 1-31-90
CHECKED ORS DATE 2/1/90

BOARD: 1. 0-MCC-222-HS 2. ______ 3. ______
4. ______ 5. ______ 6. ______

BOARD REF #	CURVE NO.	COMPT/ BKR #/ FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/REF.
1	*	BN/1	SPARE					45B792-1BN1(R1), -1BN2(R1)
		BN/2	SPARE					
		BN/3	SPARE					
		BN/4	SPARE					
	**	BN/5	SPARE					
		BN/6	SPARE					
		BN/7	SPARE					
		BN/8	PLS4152	WGB-1	12	~~X~~	X	▲
		BN/9	PLS4155	WGB-1	12	~~X~~	X	▲
		BN/10	PLS4158	WGB-1	12		X	TMB 2-2-90 JCB 2-5-90 ▲ R1
		BN/11	PLS4161	WGB-1	12		X	▲
		BN/12	PLS4121	WHB-1	14		X	▲

* WESTINGHOUSE MODEL QBHW, 30 AMP

** WESTINGHOUSE MODEL DB1-W1015, 15 AMP

▲ SEE ~~APPENDIX G~~ ATTACHMENT M16428A DJZ 12/11/91 R1

WBPEVAR 9001006 APPENDIX B SHEET B9A

REV. # 5

PREPARED BY: [signature] DATE 4-29-91

CHECKED BY: [signature] DATE 5-1-91

BOARD: 1. O-MCC-222-HS 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE No.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
					PLS 4152					
6	222	1	*	BN/8	PLS 4132	WGB1	12		X	45W 792-2 ▲ R7
										45B 792-1DN2
										45B 792-1DN1
										DJR 10/11/91
										▲ SEE ~~APPENDIX G~~ ATTACHMENT M16428A R7
										* NO CURVE NUMBER
										FOR REF. SEE CALC. #
										WBPEVAR 9001006, R3
										SECTION 6.1 WJH 9-4-91
										PARAGRAPH 8 ~~(ATTACHED~~
										BREAKER IS WESTING-
										HOUSE MODEL DB1-
										W1015, 15 AMP

WBPEVAR9001006

 ~~DRM~~ 1-31-90

COMPUTED DRM DATE 1-28-90

CHECKED WOM DATE 1-31-90

BOARD: 1. 0-BD-228-1 2. ______ 3. ______
4. ______ 5. ______ 6. ______

BOARD REF #	CURVE NO.	COMPT/BKR #/FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/REF.
1	82	1D1	L132	WDK-1	4/0	✓		45W735R12
1	82	1D2	L154	WDK-1	4/0	✓		
1	82	2A1	L155	WDK-1	4/0	✓		
1	82	2A2	L156	WDK-1	4/0	✓		
1	82	2B1	L157	WDK-1	4/0	✓		
1	85	2B2	L437	WDN-1	300	✓		(IN LINE FUSE
1	—	2C1	NA/SPARE	—	—	—	—	
1	85	2C2	L438	WDN-1	300	✓		(IN LINE FUSE
1	—	2D1	NA/Future	—	—	—	—	(NO BREAKER)
1	82	2D2	L159	WDK	4/0	✓		
1	—	2E1	NA/SPARE	—	—	—	—	— (NO WALKDOWN PKG
1	-	2E2	NA/FUTURE	—	—	—	—	(NO BREAKER
1	83	1E1	L210	WDJ-1	2/0	✓		This is a 125a breaker like 0-BD-228-4 comp 1-D1 DRM (NO WALKDOWN PKG
1	~~8~~ DRM 1-31-90	1E2	NA/SPARE	-	-	-	-	

WBPEVAR9001006
REV. # 5

APPENDIX B

SHEET B10A
PREPARED BY: [signature] DATE 5-14-91
CHECKED BY: [signature] DATE 5/17/91

BOARD: 1. 0-BD-228-1 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
					L437					
6	228	1	85	282	L180	WDN-1	300	X		45W735

WBPEVAR9001006

COMPUTED DKM DATE 1-31-90
CHECKED WOM DATE 1-31-90

BOARD: 1. 0-BD-228-2 2. 0-BD-228-3 3. ______
4. ______ 5. ______ 6. ______

BOARD REF #	CURVE NO.	COMPT/ BKR #/ FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/REF.
1	82	1D1	L232	WDK-1	4/0	✓		45W735 R12
1	82	1D2	L254	WDK	4/0	✓		
1	82	2A1	L255	WDK	4/0	✓		
1	82	2A2	L256	WDK-1	4/0	✓		
1	82	2B1	L257	WDK-1	4/0	✓		
1	85	2B2	L439	WDN-1	300	✓		(INLINE FUSE)
1	83	2C1	NA/SPARE	—	—	—	—	
1	85	2C2	L440	WDN-1	300	✓		(IN LINE FUSE)
1	—	2D1	NA/SPARE	—	—	—	—	(NO WALKDOWN PKG)
1	—	2D2	NA/SPARE	—	—	—	—	(NO WALKDOWN PKG)
1	—	1E1	NA/SPARE	—	—	—	—	(NO WALKDOWN PKG
2	84	1D1	L130	WDG	2	✓		
2	82	1D2	L131	WDK	4/0	✓		
2	82	2A1	L150	WDK-1	4/0	✓		
2	82	2A2	L151	WDH	1/0	✓		
2	82	2B1	L152	WDK-1	4/0	✓		
2	82	2B2	L153	WDK	4/0	✓		

WBPEVAR9001006
REV. # 5

APPENDIX B

SHEET B11A

PREPARED BY: [signature] DATE 5-14-91

CHECKED BY: [signature] DATE 5/20/91

BOARD: 1. 0-BD-228-2 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	CCMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES/ REF. DWG.
					L 439					
6	228	1	85	2B2	L 280	WDN-1	300	X		45W735

WBPEVAR 9001006
REV. # 5

APPENDIX B

SHEET B11B

PREPARED BY: [signature] DATE 5-14-91

CHECKED BY: [signature] DATE 5/20/91

BOARD: 1. 0-BD-228-2   2. ______   3. ______

4. ______   5. ______   6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
					L440					
6	228	1	85	2C2	L 281	WDN-1	300	X		45 W 735

WBPEVAR9001006

 COMPUTED DRM DATE 1-31-90
CHECKED WOM DATE 1-31-90

BOARD: 1. 0-BD-228-3 2. 0-BD-228-4 3. ______
4. ______ 5. ______ 6. ______

BOARD REF #	CURVE NO.	COMPT/ BKR #/ FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/REF.
1	83	2C1	M21	WDJ	2/0	✓		45W735 R12
1	82	2D1	L158	WDK	4/0	✓		
1	–	2D2	NA/SPARE	–	–			(NO WALKDOWN PKG
1	–	1E1	NA/SPARE	–	–			(NO WALKDOWN PKG.
1	84	1E2	P3220	WDF-1	4	✓		70a like 1D1 on same Board. (NO WALKDOWN PKG.)
2	83	1D1	L230	WDG	2	✓		45W735 R12
2	82	1D2	L231	WDK	4/0	✓		
2	82	2A1	L250	WDK	4/0	✓		
2	82	2A2	L251	WDK	4/0	✓		
2	82	2B1	L252	WDK	4/0	✓		
2	82	2B2	L253	WDN-1	300	✓		
2	84	2C1	P3225	WDF-1	4	✓		70a like 1D1 on Board 0-BD-228-3 (NO WALKDOWN PKG
2	–	2C2	NA/SPARE	–	–	–	–	
2	–	2D1	NA/SPARE	–	–	–	–	
2	–	2D2	NA/SPARE	–	–	–	–	
2	–	1E1	NA/SPARE	–	–	–	–	
2	84	1E2	PL2066	WDF-1	4	✓		70a like 1D1 on Board 0-BD-228-3

WBPEVAR 9001006
REV. # 5

APPENDIX B

PREPARED BY: [signature]
CHECKED BY: [signature]

SHEET B12A
DATE 5-16-91
DATE 5/20/91

BOARD: 1. 0-BD-228-3 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES/ REF. DWG.	
					M 21						
6	241	1	83	2C1	M 28	WDJ	2/0	X		45W735	
↓	↓	↓	↓	↓	M 29	WDF	4		X	45N704-1 ▲	R7
					M 38	WDJ	2/0	X		1-45W709-3	
					M 39	WDF	4		X	▲	R7
										DJC 12/1/91	
										▲ SEE ~~APPENDIX G~~ ATTACHMENT MIL428A	R7

WBPEVAR9001006

SHEET B13
PREPARED W A Lambert DATE 1-31-90
CHECKED RD Roberts DATE 1/31/90

BOARD: 1. 0-BD-227-1 2. 0-BD-227-2 3. 0-BD-227-3
4. 0-BD-227-4 5. 6.

BOARD REF #	CURVE NO.	COMPT/BKR #/FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/REF.
1	83	2B1	L102	WDH	1/0	X		45N734 R6
	82	2B2	L104	WDH	1/0	X		
	82	2C1	L105	WDK	4/0	X		
2	83	2B1	L200	WDJ	2/0	X		45N734 R6
	83	2B2	L202	WDH	1/0	X		
	82	2C1	L204	WDH	1/0	X		
	82	2C2	L206	WDK	4/0	X		
3	51	1D2	1R1580	WFB	10	X		45N734 R6
	51	1D2	1R1595	WFB	10	X		
	82	2C2	L106	WDK	4/0	X		
	82	2C1	L103	WDH	1/0	X		
	83	2B2	L101	WDG	2	X		
	83	2B1	L100	WDJ	2/0	X		
4	83	2B1	L201	WDH	1/0	X		45N734 R6
	82	2B2	L203	WDH	1/0	X		
	82	2C1	L205	WDK	4/0	X		
	82	2D1	L566	WDH-1	1/0	X		
	82	2D1	L567	WDH-1	1/0	X		
	51	1D2	2R1595	WFB	10	X		
	51	1D2	2R1580	WFB	10	X		

WBPEVAR9001006
REV. # 5

APPENDIX B

SHEET B13 A

PREPARED BY: De Noris Woods DATE 12/20/90

CHECKED BY: [signature] DATE 12/20/90

BOARD: 1. 0-BD-227-3 2. ____ 3. ____

4. ____ 5. ____ 6. ____

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES/ REF. DWG.
2C	43	1	51	102	1R1580	WFB	10	X		45N734, R/H; 45N1635-100 R/G
					1R1582	WHB-1	14		*	45N1635-100, R/G
					1R1584	WHB-1	14			
					1R1586	WHB-1	14			
					1R1587	WHB-1	14			
					1R1588	WHB-1	14			
					1R1589	WHB-1	14			
					1R1590	WHB-1	14			
					1R1591	WHB-1	14			
					1R1592	WHB-1	14			
					1R1640	WHH-1	14			
2C	43	1	51	102	1R1595	WFB	10	X		45N734, R/H; 45N1635-110, R/D
					1R1597	WHB-1	14		*	45N1635-110, R/D
					1R1599	WHB-1	14			
					1R1601	WHB-1	14			
					1R1602	WHB-1	14			
					1R1603	WHB-1	14			
					1R1604	WHB-1	14			
					1R1605	WHB-1	14			
					1R1606	WHB-1	14			
					1R1607	WHB-1	14			
					1R1608	WHB-1	14			
					1R1641	WHJ-1	14			

* See Attachment

(A) SEE NOTE ON PAGE ~~B13C~~ B13A1
[initials] 8-23-91

APPENDIX B

Prepared D. WOODS Date 12/20/90
Checked L. GUZMAN Date 12/20/90

Note:

Circuit fed from compartment 102 of board 0-BD-227-3 contains cables 1R1582, 1R1584 (MK# WHB-1), 1R1586 thru 1R1592 (MK# WHB-1), and 1R1640 (MK# WHH-1), which have an insulation temperature rating of 90 degrees C (DS E12.6.3). The primary protective device for this circuit is a 20A circuit breaker (Curve 51). The 20A breaker on curve 51 does not protect a #14 AWG cable rated at 90 degrees C. However, the failure of these cables will not degrade Class 1E safety related cables or equipment since they are located entirely in the Turbine Building (non-category I structure).

WBPEVAR 9001006 APPENDIX B SHEET B13B

REV. # 5

PREPARED BY: [signature] DATE 12/20/90

CHECKED BY: [signature] DATE 12/20/90

BOARD: 1. 0-BD-227-4 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE No.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
2C	43	1	51	102	2R1580	WFB	10	X		45N734, R/H; 45N2635-100 R/3
					2R1582	WHB-1	14		*	45N2635-100 R/3
					2R1584	WHB-1	14			
					2R1586	WHB-1	14			
					2R1587	WHB-1	14			
					2R1588	WHB-1	14			
					2R1589	WHB-1	14			
					2R1590	WHB-1	14			
					2R1591	WHB-1	14			
					2R1592	WHB-1	14			
					2R1640	WHB-1	14			
2C	43	1	51	102	2R1595	WFB	10	X		45N734, R/H; 45N2635-110 R/0
					2R1597	WHB-1	14		*	45N2635-110, R/0
					2R1599	WHB-1	14			
					2R1601	WHB-1	14			
					2R1602	WHB-1	14			
					2R1603	WHB-1	14			
					2R1604	WHB-1	14			
					2R1605	WHB-1	14			
					2R1606	WHB-1	14			
					2R1607	WHB-1	14			
					2R1608	WHB-1	14			
					2R1641	WHJ-1	14			

* See Attachment

(A) SEE NOTE ON PAGE ~~B13C~~ B13B1

WGL 08-23-91

WBPEVAR9001006

WMQ1 08-23-91

Sheet B13~~2~~ B1

APPENDIX B

Prepared [signature] Date 07/19/91
Checked [signature] Date 07/10/91

Note:

The primary protective device for this circuit is a 20A circuit breaker (WFB20, curve 51). This device inherently protects a #12 cable. A review of this circuit identified #14 AWG cables daisey-chained off the primary #10 cable. These #14 cables fail the daisey-chain evaluation. However, the failure of these cables will not degrade Class 1E safety-related cables or equipment since they are located entirely in the Turbine Building.

3483q

WDPEVAR900/006

SHEET B14
PREPARED W A Lambert DATE 1-29-90
CHECKED R D Roberts DATE 1/30/90

BOARD: 1. 0-LAC-227-211 2. 0-LAC-227-103 3. 0-LAC-228-253
4. 0-LAC-228-130 5. 0-LAC-228-230 6. 1-BD-203-A

BOARD REF #	CURVE NO.	COMPT/BKR #/FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/REF.
1	37	1	LTG	—	10	X		45W2422-4 R1
	37	10	LTG	—	10	X		
2	28	18	LTG	—	10	X		45W1424-4 R11
3	28	18	LTG	—	10	X		45W1416-4 R17
4	69	1	N/A SPARE	—	—			
	69	2	N/A SPARE	—	—			
5	69	1	N/A SPARE	—	—			
	69	2	N/A SPARE	—	—			
6	52	A7/1	1PL136	WHG	14		GRG 11/25/91 *	74-84647 → 6948D14 R905
			1PL139	WHB	14		X	6948 D12 R905 ▲

* SEE NOTE ON ATTACHED SHEET B14A2

▲ SEE ~~APPENDIX G~~ DJ2 12/11/91 ATTACHMENT M16428A

WBPEVAR 9001006
REV. # 5

APPENDIX B

SHEET B14A
PREPARED BY: Curtis [signature] DATE 4-9-91
CHECKED BY: [signature] DATE 4/24/91

BOARD: 1. 1-BD-203-A 2. ______ 3. ______
4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT./BKR. #/FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
					1PL136					
6	35	1	52	47/1	1PL137	WHD	14		✓	45N1604-2
6	35	1	52	47/1	1PL138	WHG	14		✓	↓

NOTE:
SEE ATTACHED PAGE B14A1

APPENDIX B

Prepared C. Turner Date 7-16-91
Checked [signature] Date 7/17/91

Note:

Circuit fed from compartment A7/1 of board 1-BD-203-A contains cables 1PL137 (MK# WHG) and 1PL138 (MK# WHD), which have an insulation temperature rating of 75 degrees C (DS E12.6.3). The primary protective device for this circuit is a 30A circuit breaker (Curve 52). The 30A breaker on curve 52 does not protect a #14 AWG cable rated at 75 degrees C. However, the failure of these cables will not degrade Class 1E safety related cables or equipment since they are located entirely in the Turbine Building (non-category I structure).

APPENDIX B

Prepared by: J.C. Juevan Date: 11-25-91
Checked by: ____________ Date: ______

Note:

Circuit fed from compartment A7/1 of board 1-BD-203-A contains cable 1PL136 (mark number WHG) which has a insulation temperature rating of 75 degrees C (SS-E25.013). The primary protective device for this circuit is a 30A circuit breaker (curve 52). The 30A breaker on curve 52 does not protect a 14AWG cable rated at 75 degrees C. However, the failure of this cable will not degrade Class IE safety related cables or equipment since they are located entirely in the turbine building (non-category I structure).

WBPEVAR9001006 ~~R0~~ WAC 1/31/90

SHEET B15
PREPARED WA Lambert DATE 1-31-90
CHECKED [illegible] DATE 1-31-90

BOARD: 1. 0-LAC-228-131 2. 0-LAC-228-132 3. 0-LAC-228-181
4. 0-LAC-228-232 5. 0-LAC-228-231 6. 0-LAC-228-107

BOARD REF #	CURVE NO.	COMPT/ BKR #/ FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/REF.
1	69	1	LTG SEE NOTE →	—	12	GRG 11/25/91	~~X~~	55W412-1 R18, D
		2	N/A SPARE	—	—	—	—	55B411-2 R9 DWG SHOWS DESIGN CHANGE TO 20A BKR
		15	↓	—	—	—	—	
		16		—	—	—	—	
3	28	12	LTG	—	10	X		45W1418-3 R17, G 45B1413-2 R3
4	28	1	LTG	—	10	X		55W416-2 R15, G 55B411-6 R8
5	69	1	SPARE N/A	—	—	—	—	55B411-5 R8
	69	2	SPARE N/A	—	—	—	—	
6	100	15	SPARE N/A	—	—	—	—	MOD CHB 3 POLE 45B1412-17 R2
2	28	1	LTG	—	10	X		55W416-1 R15, G 55B411-3 R9

D/C 12/11/91
~~X~~ SEE ~~APPENDIX G~~ ATTACHMENT M16428A | R1

WBPEVAR9001006

PAGE B16

COMPUTED TMB DATE 1-30-90
CHECKED [illegible] DATE 1-31-90

BOARD: 1. 0-DPL-234-1 2. 0-DPL-234-2 3. ___
4. ___ 5. ___ 6. ___

BOARD REF #	CURVE NO.	COMPT/ BKR #/ FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/REF.
1	3	17	NA (SPARE)	—	—			45W760-234-31 (R4)
↓	↓	18	↓	—	—			↓
↓	↓	19	↓	—	—			↓
↓	↓	20	↓	—	—			↓
2	3	1	P4972	WGB-1	12	X		↓
↓	↓	"	P4973	WGB-1	12	X		↓
↓	↓	2	P4976	WGB-1	12	X		↓
↓	↓	"	P4977	WGB-1	12	X		↓
↓	↓	3	P4980	WGB-1	12	X		↓
↓	↓	"	P4981	WGB-1	12	X		↓
↓	↓	4	P4984	WGB-1	12	X		↓
↓	↓	"	P4985	WGB-1	12	X		↓
↓	↓	5	P4988	WGB-1	12	X		↓
↓	↓	"	P4989	WGB-1	12	X		↓
↓	↓	6	P4992	WGB-1	12	X		↓
↓	↓	"	P4993	WGB-1	12	X		↓
↓	↓	7	P4996	WGB-1	12	X		↓
↓	↓	"	P4997	WGB-1	12	X		↓
↓	↓	8	P5000	WGB-1	12	X		↓
↓	↓	"	P5001	WGB-1	12	X		↓
↓	↓	9	P5004	WGB-1	12	X		↓
↓	↓	"	P5005	WGB-1	12	X		↓
↓	↓	10	P5008	WGB-1	12	X		↓
↓	↓	"	P5009	WGB-1	12	X		↓
↓	↓	11	P5012	WGB-1	12	X		↓
↓	↓	"	P5013	WGB-1	12	X		↓
↓	↓	12	P5016	WGB-1	12	X		↓
↓	↓	"	P5017	WGB-1	12	X		↓
↓	↓	13	P5020	WGB-1	12	X		↓
↓	↓	"	P5021	WGB-1	12	X		↓
↓	↓	14	P5024	WGB-1	12	X		↓
↓	↓	"	P5025	WGB-1	12	X		↓

TVA 489 (EN DES-11-76)

SHEET ___ OF ___

WBPEVAR9001006

PAGE B17

COMPUTED TMB DATE 1-30-90

CHECKED [illegible] DATE 1-31-90

BOARD: 1. 0-DPL-234-1 2. ___ 3. ___

4. ___ 5. ___ 6. ___

BOARD REF #	CURVE NO.	COMPT/BKR #/FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/REF.
1	3	1	P4900	WGB-1	12	X		45W760-234-31 (R4)
		"	P4901	WGB-1	12	X		
		2	P4904	WGB-1	12	X		
		"	P4905	WGB-1	12	X		
		3	P4908	WGB-1	12	X		
		"	P4909	WGB-1	12	X		
		4	P4912	WGB-1	12	X		
		"	P4913	WGB-1	12	X		
		5	P4916	WGB-1	12	X		
		"	P4917	WGB-1	12	X		
		6	P4920	WGB-1	12	X		
		"	P4921	WGB-1	12	X		
		7	P4924	WGB-1	12	X		
		"	P4925	WGB-1	12	X		
		8	P4928	WGB-1	12	X		
		"	P4929	WGB-1	12	X		
		9	P4932	WGB-1	12	X		
		"	P4933	WGB-1	12	X		
		10	P4936	WGB-1	12	X		
		"	P4937	WGB-1	12	X		
		11	P4940	WGB-1	12	X		
		"	P4941	WGB-1	12	X		
		12	P4944	WGB-1	12	X		
		"	P4945	WGB-1	12	X		
		13	P4948	WGB-1	12	X		
		"	P4949	WGB-1	12	X		
		14	P4952	WGB-1	12	X		
		"	P4953	WGB-1	12	X		
		15	P4956	WGB-1	12	X		
		"	P4957	WGB-1	12	X		
		16	P4960	WGB-1	12	X		
		"	P4961	WGB-1	12	X		

WBPEVAR 9001006

PAGE B18

COMPUTED TMB DATE 1-30-90

CHECKED AMM DATE 1-31-90

BOARD: 1. 0-DPL-234-2 2. ____ 3. ____
4. ____ 5. ____ 6. ____

BOARD REF #	CURVE NO.	COMPT/BKR #/FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/REF.
1	3	16	P5032	WGB-1	12	X		45W760-234-31 (R4)
		"	P5033	WGB-1	12	X		
		17	P5036	WGB-1	12	X		
		"	P5037	WGB-1	12	X		
		18	P5040	WGB-1	12	X		
		"	P5041	WGB-1	12	X		
		19	NA (SPARE)	—	—			
		20	NA (SPARE)	—	—			

WBPEVAR 9001006

RO: COMPUTED TWB DATE 1-30-90
CHECKED RMM DATE 1-31-90

BOARD: 1. 0-DPL-234-A1/CVCS 2. 0-DPL-234-A2/CVCS 3. ______
4. ______ 5. ______ 6. ______

BOARD REF #	CURVE NO.	COMPT/BKR #/FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/REF.
1	4	3	P517	WFC	10	X		45W760-234-1 (R14); 77-39A sh 49 (77K6-821608)
		"	P518	WFB-1	10	X		
		7	P543	WFC	10	X		
		"	P544	WFB-1	10	X		
		23	P674	WFC	10	X		
		"	P675	WFB	10	X		
		27	P662	WGC-1	12	X		
		"	P663	WDD-1	8	X		
	3	40	NA (SPARE)	—	—	—		
		ALARM BKR	P160	WGB-1	12	X		
2	4	8	P1406	WFC	10	X		DK 9-5-91 45W760-234-4 ~~(R12)~~; 77-39A SH 51 (77K6-821608
		"	P1407	WFB	10	X		
	2	15	P1232	WHC	14	X	~~X~~	EXCHANGED BKR 15 & 42 (SPARE) R3
		"	P1233	WHB-1	14	X		
		"	P1234	WHB-1	14	X		
	4	22	NA (SPARE)	—	—	—		
		30	P1517	WFC	10	X		
		"	P1518	WFB	10	X		
		41	P5320	WGC	12	X		
		"	P5321	WGB-1	12	X		
	3	37	P5077	WHC	14	X		
		"	P5078	WHB-1	14	X		
		ALARM BKR	NA (NO CABLE)	—	—	—		

WBPEVAR9001006

COMPUTED TMB DATE 1-30-90
CHECKED RMN DATE 1-31-90

BOARD: 1. 0-DPL-234-B1/CVCS 2. 0-DPL-234-B2/CVCS 3. ______
4. ______ 5. ______ 6. ______

BOARD REF #	CURVE NO.	COMPT/BKR #/USE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/REF.
1	4	3	P519	WFC	10	X		45W760-234-2 (R11); 77-39A sh. 50 (R… (77K6-821608)
		"	P520	WFB-1	10	X		
		7	P545	WFC	10	X		
		"	P546	WFB-1	10	X		
		23	P676	WFC	10	X		
		"	P677	WFB	10	X		
		27	P664	WGC-1	12	X		
		"	P665	WDD-1	8	X		
	3	40	NA (SPARE)	—	—	—		
		ALARM BKR	P161	WGB-1	12	X		
2	4	8	P1408	WFC	10	X		45W760-234-5 (R12); 77-39A sh. 52 (R… (77K6-821608)
		"	P1409	WFB	10	X		
		22	NA (SPARE)	—	—	—		
		30	P1519	WFC	10	X		
		"	P1520	WFB-1	10	X		
		36	P5323	WGC	12	X		
		"	P5324	WGB-1	12	X		
	3	37	P5087	WHC	14	X		
		"	P5088	WHB-1	14	X		
		ALARM BKR	NA (NO CABLE) ~~P5455~~	~~WGB-1~~	~~12~~ TMB 1-30-90 RMN 1-31-90	—		

WBPEVAR9001006

COMPUTED TMB DATE 1-30-90
CHECKED RNN DATE 1-31-90

BOARD: 1. 0-DPL-234-A3/CVCS 2. 0-DPL-234-A4/CVCS 3. 0-DPL-234-B3/CVCS
4. 0-DPL-234-B4/CVCS 5. 6.

BOARD REF #	CURVE NO.	COMPT/BKR #/FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/REF.
1	4	6	P1891	WGC-1	12	X		45W760-234-7 (R12); 77-39A sh 53 (R12) (77K6-821608)
			P1892	WGB-1	12	X		
		19	P1810	WFA-4	8	X		
			P1811	WDD-1	8	X		
		21	P1788	WFC	10	X		
			P1789	WFB-1	10	X		
	3	5	NA (SPARE)	–	–	–		
		35	P5300	WGC	12	X		
			P5301	WGB-1	12	X		
	5	9	NA (SPARE)	–	–	–		
	3	ALARM BKR	NA (NO CABLE)	–	–	–		
2	3	ALARM BKR	NA (NO CABLE)	–	–	–		45W760-234-32 (R5); 77-39A sh 107 (R2) (77K6-821608)
3	4	6	P1893	WGC-1	12	X		45W760-234-8 (R12); 77-39A sh 54 (R12) (77K6-821608)
		"	P1894	WGB-1	12	X		
		19	P1812	WFA-4	8	X		
		"	P1813	WDD-1	8	X		
		21	P1790	WFC	10	X		
		"	P1791	WFB	10	X		
	3	5	NA (SPARE)	–	–	–		
		35	P5303	WGC	12	X		
		"	P5304	WGB-1	12	X		
	5	9	NA (SPARE)	–	–	–		
	3	ALARM BKR	NA (NO CABLE)	–	–	–		
4	3	ALARM BKR	NA (NO CABLE)	–	–	–		45W760-234-33 (R5); 77-39A sh 108 (R2) (77K6-821608)

WBPEVAR9001006

COMPUTED TMB DATE 1-30-90

CHECKED [illegible] DATE 1-31-90

BOARD: 1. 0-DPL-234-A1/SIS 2. 0-DPL-234-B1/SIS. 3. ______

4. ______ 5. ______ 6. ______

BOARD REF #	CURVE NO.	COMPT/ BKR #/ FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/REF.
1	17	A1/1	P2547	WHB-1	14	X		45W760-234-10 (R8); 77-39A sh 55 (R9 (77K6-821608)
		"	P2548	WPA	14	X		(REDUNDANT PROTECTION)
		A1/2	P2567	WHB-1	14	X		
		"	P2568	WPA	14	X		
		A1/3	P2587	WHB-1	14	X		
		"	P2588	WPA	14	X		
		A1/4	P2607	WHB-1	14	X		
		"	P2608	WPA	14	X		
		A1/5	P2627	WHB-1	14	X		
		"	P2628	WPA	14	X		
		A1/6	P2647	WHB-1	14	X		
		"	P2648	WPA	14	X		
		A1/7	P2667	WHB-1	14	X		
		"	P2668	WPA	14	X		
		A1/8	P2687	WHB-1	14	X		
		"	P2688	WPA	14	X		
	3	39 ALARM BKR	NA (SPARE) NA (NO CABLE)	—	—	—		
2	17	B1/1	P2550	WHB-1	14	X		45W760-234-11 (R7); 77-39A sh 56 (R12 (77K6-821608)
		"	P2551	WPA	14	X		(REDUNDANT PROTECTION)
		B1/2	P2570	WHB-1	14	X		
		"	P2571	WPA	14	X		
		B1/3	P2590	WHB-1	14	X		
		"	P2591	WPA	14	X		
		B1/4	P2610	WHB-1	14	X		
		"	P2611	WPA	14	X		
		B1/5	P2630	WHB-1	14	X		
		"	P2631	WPA	14	X		
		B1/6	P2650	WHB-1	14	X		NO FUSES INSTALLED; ANALYZE TYPE SIMIL. TO OTHER SETS
		"	P2651	WPA	14	X		
		B1/7	P2670	WHB-1	14	X		2 TYPE FUSES INSTALLED (ANALYZED WORST CASE)
		"	P2671	WPA	14	X		
		B1/8	P2690	WHB-1	14	X		NO FUSES INSTALLED; ANALYZE TYPE SIMILAR TO OTHER SETS
		"	P2691	WPA	14	X		

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COMPUTED TMB DATE 1-30-90
CHECKED RMJ DATE 1-31-90

BOARD: 1. 0-DPL-234-B1/SIS 2. 0-DPL-234-1/WDS 3. 0-DPL-234-2/W
4. ______ 5. ______ 6. ______

BOARD REF #	CURVE NO.	COMPT/BKR #/FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/REF.
1	3	ALARM BKR	NA (NO CABLE)	—	—	—	—	45W760-234-11 (R7); 77-39A sh 56 (R12) (77K6-821608)
↓	~~12~~ 57	39	P5072	WHC	14	X	~~X~~	↓ R3
↓	~~1~~ 12	39	P5073	WFB-1	10	X		
2	4	1	NA (SPARE)	—	—	—	—	45W760-234-13 (R6); 77-39A sh 57 (R901) (77K6-821608)
↓	↓	13	↓	—	—	—		↓
	↓	9	↓	—	—	—		
	12	5	NA (SPARE)	—	—	—		
↓	3	ALARM BKR	NA (NO CABLE)	—	—	—		
3	3	3	P3009	WHC	14	X		45W760-234-16 (R3); 77-39A sh 85 (R901) (77K6-821608)
↓	↓	"	P3010	WDE-1	6	X		
↓	↓	"	P3011	WGB-1	12	X		

COMPUTED TMB DATE 1-30-90
CHECKED GMM DATE 1-31-90

BOARD: 1. 0-DPL-234-A2/SIS 2. 0-DPL-234-B2/SIS 3. ______
4. ______ 5. ______ 6. ______

BOARD REF #	CURVE NO.	COMPT/ BKR #/ FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/REF.	
1	~~4~~57	2	P5047	WHC	14	X	~~X~~	45W760-234-17 (R7); 77-39A Sh 83 (R10) (77K6-821608)	
	4	"	P5048	WFB-1	10	X			
		4	NA (SPARE)	–	–	–			
		6	NA (SPARE)	–	–	–			
	3	25	P6160	WDF-2	4	X		45W1635-76 (R7)	
			P6161	WFB-1	10	X			
			P6162	WFB-1	10	X			
			P6163	WFB-1	10	X			
		26	P6174	WDE-1	6	X		45W2635-76 (R3)	
			P6175	WFB-1	10	X			
			P6176	WFB-1	10	X			
			P6177	WFB-1	10	X			
	~~37~~57	30-32	P5528	WHC-2	14	X	~~X~~		R3
	38	"	P5529	WDE-1	6	X			
	~~4~~57	34-36	P5540	WHC-2	14	X	~~X~~		R3
	~~4~~38	"	P5541	WDE-1	6	X			
	3	BKR. (ALARM)	NA (NO CABLE)	–	–	–			
2	4	2	NA (SPARE)	–	–	–		45W760-234-18 (R7); 77-39A Sh 84 (R11) (77K6-821608)	
	3	8	P5500	WHC-2	14	X			
		"	P5501	WDE-1	6	X			
		10	P5504	WHC-2	14	X			
		"	P5505	WDE-1	6	X			
		25	P6164	WDF-2	4	X		45W1635-76 (R7)	
			P6165	WFB-1	10	X			
			P6166	WFB-1	10	X			
			P6167	WFB-1	10	X			
		26	P6170	WDE-1	6	X		45W2635-76 (R3)	
			P6171	WFB-1	10	X			
			P6172	WFB-1	10	X			
			P6173	WFB-1	10	X			
	57 ~~37~~	30-32	P5557	WHC-2	14	X	~~X~~		R
	38	"	P5558	WDD-1	8	X			
	57	34-36	P5569	WHC-2	14	X	~~X~~		R:
	38	"	P5570	WDE-1	6	X			
	3	ALARM BKR	NA (NO CABLE)	–	–	–			

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COMPUTED TMB DATE 1-30-90
CHECKED AMR DATE 1-31-90

BOARD: 1. 0-DPL-234-A1/IPS 2. 0-DPL-234-B1/IPS 3. ______
4. ______ 5. ______ 6. ______

BOARD REF #	CURVE NO.	COMPT/BKR #/FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/REF.
1	3	1→17	NA (SPARE)	–	–	–		45W760-234-20 (R6); 79-126A SH 13 (R902) (79K5-823897)
		18	P6109	WFC	10	X		
			P6110	WFB-1	10	X		
			P6111	WFB-1	10	X		
		19	(NA) SPARE	–	–	–		
		20	P6116	WFC	10	X		
			P6117	WFB-1	10	X		
			P6118	WFB-1	10	X		
		21	NA (SPARE)	–	–	–		
		22	P6122	WFC	10	X		
			P6123	WFB-1	10	X		
			P6124	WFB-1	10	X		
		23	NA (SPARE)	–	–	–		
		24	P6136	WFC	10	X		
			P6137	WFB-1	10	X		
			P6138	WFB-1	10	X		
		ALARM BKR	P4820	WFB-1	10	X		
2	3	1→17	NA (SPARE)	–	–	–		45W760-234-24 (R7); 79-126A SH 19 (R902) (79K5-823897)
		18	P6129	WFC	10	X		
			P6130	WFB-1	10	X		
			P6131	WFB-1	10	X		
		19	NA (SPARE)	–	–	–		
		20	P6149	WFC	10	X		
			P6150	WFB-1	10	X		
			P6151	WFB-1	10	X		
		21	NA (SPARE)	–	–	–		
		22	P6142	WFC	10	X		
			P6143	WFB-1	10	X		
			P6144	WFB-1	10	X		
		23	NA (SPARE)	–	–	–		
		24	NA (SPARE)	–	–	–		
		ALARM BKR	P4821	WFB-1	10	X		

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COMPUTED YMB DATE 1-30-90

CHECKED AMN DATE 1-31-90

BOARD: 1. 0-DPL-234-A2/IPS 2. ______ 3. ______

4. ______ 5. ______ 6. ______

BOARD REF #	CURVE NO.	COMPT/BKR #/FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/REF.
1	3	1	P3902	WFC	10	X		45W760-234-21 (R3); 79-126A sh. 15 (R901)
			P3903	WFB-1	10	X		(79K5-823897)
			P3904	WFB-1	10	X		
		3	P3910	WFC	10	X		
			P3911	WFB-1	10	X		
			P3912	WFB-1	10	X		
		5	P3918	WFC	10	X		
			P3919	WFB-1	10	X		
			P3920	WFB-1	10	X		
		7	P3926	WFC	10	X		
			P3927	WFB-1	10	X		
			P3928	WFB-1	10	X		
		9	P3934	WFC	10	X		
			P3935	WFB-1	10	X		
			P3936	WFB-1	10	X		
		11	P3942	WFC	10	X		
			P3943	WFB-1	10	X		
			P3944	WFB-1	10	X		
		13	P3950	WFC	10	X		
			P3951	WFB-1	10	X		
			P3952	WFB-1	10	X		
		15	P3958	WFC	10	X		
			P3959	WFB-1	10	X		
			P3960	WFB-1	10	X		
		17	P3966	WFC	10	X		
			P3967	WFB-1	10	X		
			P3968	WFB-1	10	X		
		19	P3974	WFC	10	X		
			P3975	WFB-1	10	X		
			P3976	WFB-1	10	X		
		21	P3982	WFC	10	X		
			P3983	WFB-1	10	X		
			P3984	WFB-1	10	X		

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BOARD: 1. 0-DPL-234-A2/IPS 2. ______ 3. ______

4. ______ 5. ______ 6. ______

BOARD REF #	CURVE NO.	COMPT/ BKR #/ FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/REF.
1	3	23	P3990	WFC	10	X		45W760-234-21 (R3); 79-126A sh 15 (R901) (79KS-823897)
			P3991	WFB-1	10	X		
			P3992	WFB-1	10	X		
		2	P3998	WFC	10	X		
			P3999	WFB-1	10	X		
			P4000	WFB-1	10	X		
		4	P4006	WFC	10	X		
			P4007	WFB-1	10	X		
			P4008	WFB-1	10	X		
		6	P6200	WFC	10	X		
			P6201	WFB-1	10	X		
			P6202	WFB-1	10	X		
		8	P4022	WFC	10	X		
			P4023	WFB-1	10	X		
			P4024	WFB-1	10	X		
		10	P4030	WFC	10	X		
			P4031	WFB-1	10	X		
			P4032	WFB-1	10	X		
		12	P6220	WFC	10	X		
			P6221	WFB-1	10	X		
			P6222	WFB-1	10	X		
		14	P4046	WFC	10	X		
			P4047	WFB-1	10	X		
			P4048	WFB-1	10	X		
		16	P6227	WFC	10	X		
			P6228	WFB-1	10	X		
			P6229	WFB-1	10	X		
		18	P4062	WFC	10	X		
			P4063	WFB-1	10	X		
			P4064	WFB-1	10	X		
		20	NA (SPARE)	—	—	—		
		22		—	—	—		
		24		—	—	—		
		ALARM BKR	NA (NO CABLE)	—	—	—		

COMPUTED YMB 1-30-90
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BOARD: 1. 0-DPL-234-B2/IPS 2. ____ 3. ____
4. ____ 5. ____ 6. ____

BOARD REF #	CURVE NO.	COMPT/ BKR #/ FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/REF.
1	3	1	P4402	WFC	10	X		45W760-234-25 (R3); 79-126A, sh21 (R90 (79K5-823897)
			P4403	WFB-1	10	X		
			P4404	WFB-1	10	X		
		3	P6207	WFC	10	X		
			P6208	WFB-1	10	X		
			P6209	WFB-1	10	X		
		5	P4418	WFC	10	X		
			P4419	WFB-1	10	X		
			P4420	WFB-1	10	X		
		7	P6234	WFC	10	X		
			P6235	WFB-1	10	X		
			P6236	WFB-1	10	X		
		9	P4434	WFC	10	X		
			P4435	WFB-1	10	X		
			P4436	WFB-1	10	X		
		11	P4442	WFC	10	X		
			P4443	WFB-1	10	X		
			P4444	WFB-1	10	X		
		13	P4450	WFC	10	X		
			P4451	WFB-1	10	X		
			P4452	WFB-1	10	X		
		15	P4458	WFC	10	X		
			P4459	WFB-1	10	X		
			P4460	WFB-1	10	X		
		17	P6240	WFC	10	X		
			P6241	WFB-1	10	X		
			P6242	WFB-1	10	X		
		19	P4474	WFC	10	X		
			P4475	WFB-1	10	X		
			P4476	WFB-1	10	X		
		21	P4482	WFC	10	X		
			P4483	WFB-1	10	X		
			P4484	WFB-1	10	X		

COMPUTED TMB DATE 1-30-90
CHECKED gmn DATE 1-31-90

BOARD: 1. 0-DPL-234-B2/IPS 2. ______ 3. ______
4. ______ 5. ______ 6. ______

BOARD REF #	CURVE NO.	COMPT/BKR #/FUSE	CABLE No.	MK #	SIZE	PASS	FAIL	NOTES/REF.
1	3	23	P4490	WFC	10	X		45W760-234-25 (R3); 79-126A, sh 21 (R901) (79K5-823897)
			P4491	WFB-1	10	X		
			P4492	WFB-1	10	X		
		2	P4498	WFC	10	X		
			P4499	WFB-1	10	X		
			P4500	WFB-1	10	X		
		4	P4506	WFC	10	X		
			P4507	WFB-1	10	X		
			P4508	WFB-1	10	X		
		6	P4514	WFC	10	X		
			P4515	WFB-1	10	X		
			P4516	WFB-1	10	X		
		8	P4522	WFC	10	X		
			P4523	WFB-1	10	X		
			P4524	WFB-1	10	X		
		10	P4530	WFC	10	X		
			P4531	WFB-1	10	X		
			P4532	WFB-1	10	X		
		12	P4538	WFC	10	X		
			P4539	WFB-1	10	X		
			P4540	WFB-1	10	X		
		14	P4546	WFC	10	X		
			P4547	WFB-1	10	X		
			P4548	WFB-1	10	X		
		16	P4554	WFC	10	X		
			P4555	WFB-1	10	X		
			P4556	WFB-1	10	X		
		18	P4562	WFC	10	X		
			P4563	WFB-1	10	X		
			P4564	WFB-1	10	X		
		20	NA (SPARE)	—	—	—		
		22	NA (SPARE)	—	—	—		
		24	NA (SPARE)	—	—	—		
		ALARM BKR	NA (NO CABLE)	—	—	—		

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CHECKED [illegible] DATE 1-31-90

BOARD: 1. 0-DPL-234-A3/IPS 2. ______ 3. ______

4. ______ 5. ______ 6. ______

BOARD REF #	CURVE NO.	COMPT/BKR #/FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/REF.
1	3	1	P3602	WFC	10	X		45W760-234-22(R6); 79-126A sh 17 (R904) (79K5-823897)
			P3603	WFB-1	10	X		
			P3604	WFB-1	10	X		
		3	P3610	WFC	10	X		
			P3611	WFB-1	10	X		
			P3612	WFB-1	10	X		
		5	P3618	WFC	10	X		
			P3619	WFB-1	10	X		
			P3620	WFB-1	10	X		
		7	P3626	WFC	10	X		
			P3627	WFB-1	10	X		
			P3628	WFB-1	10	X		
		9	P3634	WFC	10	X		
			P3635	WFB-1	10	X		
			P3636	WFB-1	10	X		
		11	P3642	WFC	10	X		
			P3643	WFB-1	10	X		
			P3644	WFB-1	10	X		
		13	P3650	WFC	10	X		
			P3651	WFB-1	10	X		
			P3652	WFB-1	10	X		
		15	P3658	WFC	10	X		
			P3659	WFB-1	10	X		
			P3660	WFB-1	10	X		
		17	P3666	WFC	10	X		
			P3667	WFB-1	10	X		
			P3668	WFB-1	10	X		
		19	P3674	WFC	10	X		
			P3675	WFB-1	10	X		
			P3676	WFB-1	10	X		
		21	P3682	WFC	10	X		
			P3683	WFB-1	10	X		
			P3684	WFB-1	10	X		

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COMPUTED TMB DATE 1-30-90

CHECKED [illegible] DATE 1-31-90

BOARD: 1. 0-DPL-234-A3/IPS 2. ______ 3. ______
4. ______ 5. ______ 6. ______

BOARD REF #	CURVE NO.	COMPT/BKR #/FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/REF.
1	3	23	P3690	WFC	10	X		45W760-234-22(R6); 79-126A sh17(R904) (79KS-823897)
			P3691	WFB-1	10	X		
			P3692	WFB-1	10	X		
		2	P6029	WFC	10	X		
			P6030	WFB-1	10	X		
			P6031	WFB-1	10	X		
		4	P6036	WFC	10	X		
			P6037	WFB-1	10	X		
			P6038	WFB-1	10	X		
		6	P6042	WFC	10	X		
			P6043	WFB-1	10	X		
			P6044	WFB-1	10	X		
		8	P6049	WFC	10	X		
			P6050	WFB-1	10	X		
			P6051	WFB-1	10	X		
		10	P6082	WFC	10	X		
			P6083	WFB-1	10	X		
			P6084	WFB-1	10	X		
		12	P6089	WFC	10	X		
			P6090	WFB-1	10	X		
			P6091	WFB-1	10	X		
		14	P6096	WFC	10	X		
			P6097	WFB-1	10	X		
			P6098	WFB-1	10	X		
		16	P6102	WFC	10	X		
			P6103	WFB-1	10	X		
			P6104	WFB-1	10	X		
		18	P6180	WFC	10	X		
			P6181	WFB-1	10	X		
			P6182	WFB-1	10	X		
		20	NA (SPARE)	—	—	—		
		22	NA (SPARE)	—	—	—		
		24	NA (SPARE)	—	—	—		
		ALARM BKR	NA (NO CABLE)	—	—	—		

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BOARD: 1. 0-DPL-234-B3/IPS   2. ______   3. ______

4. ______   5. ______   6. ______

BOARD REF #	CURVE NO.	COMPT/BKR #/FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/REF.
1	3	1	P4702	WFC	10	X		45W760-234-26 (R5); 79-126A S423 (R903) (79K5-823897)
			P4703	WFB-1	10	X		
			P4704	WFB-1	10	X		
		3	P4710	WFC	10	X		
			P4711	WFB-1	10	X		
			P4712	WFB-1	10	X		
		5	P4718	WFC	10	X		
			P4719	WFB-1	10	X		
			P4720	WFB-1	10	X		
		7	P4726	WFC	10	X		
			P4727	WFB-1	10	X		
			P4728	WFB-1	10	X		
		9	P4734	WFC	10	X		
			P4735	WFB-1	10	X		
			P4736	WFB-1	10	X		
		11	P4742	WFC	10	X		
			P4743	WFB-1	10	X		
			P4744	WFB-1	10	X		
		13	P4750	WFC	10	X		
			P4751	WFB-1	10	X		
			P4752	WFB-1	10	X		
		15	P4758	WFC	10	X		
			P4759	WFB-1	10	X		
			P4760	WFB-1	10	X		
		17	P4766	WFC	10	X		
			P4767	WFB-1	10	X		
			P4768	WFB-1	10	X		
		19	NA (SPARE)	—	—	—		
		21		—	—	—		
		23		—	—	—		
		2		—	—	—		
		4		—	—	—		
		6		—	—	—		

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BOARD: 1. 0-DPL-234-B3/IPS 2. 3.

4. 5. 6.

BOARD REF #	CURVE NO.	COMPT/ BKR #/ FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/REF.
1	3	8	P6002	WFC	10	X		45W760-234-26 (R5); 79-126A sh 23 (R903) (79K5-823897)
			P6003	WFB-1	10	X		
			P6004	WFB-1	10	X		
		10	P6009	WFC	10	X		
			P6010	WFB-1	10	X		
			P6011	WFB-1	10	X		
		12	P6016	WFC	10	X		
			P6017	WFB-1	10	X		
			P6018	WFB-1	10	X		
		14	P6022	WFC	10	X		
			P6023	WFB-1	10	X		
			P6024	WFB-1	10	X		
		16	P6056	WFC	10	X		
			P6057	WFB-1	10	X		
			P6058	WFB-1	10	X		
		18	P6062	WFC	10	X		
			P6063	WFB-1	10	X		
			P6064	WFB-1	10	X		
		20	P6069	WFC	10	X		
			P6070	WFB-1	10	X		
			P6071	WFB-1	10	X		
		22	P6076	WFC	10	X		
			P6077	WFB-1	10	X		
			P6078	WFB-1	10	X		
		24	P6185	WFC	10	X		
			P6186	WFB-1	10	X		
			P6187	WFB-1	10	X		
		ALARM BKR	NA (NO CABLE)	—	—	—		

WBPEVAR9001006

COMPUTED JCButler DATE 1-27-90

CHECKED TMB DATE 2-1-90

BOARD: 1. 1-L-234 2. 2-L-234 3. 0-MCC-061-

4. 5. 6.

BOARD REF #	CURVE NO.	COMPT/BKR #/FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/REF.
1	3	3	1G500	WHE	14	X		45N1635-81 R10
2	3	3	2G500	WHE	14	X		45N2635-81 R3
3	86	5HF/1	PL4150	WGB	12	X		45W782-6(R5) -4(R3) (71C62-54114-1) W7250D23, SH26
		5HF/2	PL4170	WGB	12	X		-6(R5) -4(R3)
		5HF/3	PL4195	WGB	12	X		-6(R5) -4(R3)
		5HF/4	PL4217	WGB	12	X		-6(R5) -3(R3)
		5HF/5	PL4236	WGB	12	X		-6(R5) -3(R3)
		5HF/6	PL4113	WGB	12	X		-6(R5) -5(R4)
		5HF/6	PL4114	WGB	12	X		-5(R4)
		5HF/7	PL4101	WGB	12	X		-6(R5) -5(R4)
			PL4105	WGD	12	X		-6(R5) -5(R4
	NA		PL4106	WGB-1	12	X		-5(R4) 5A FUSE IN 0-JB-292-3295 (24VAC)
	86		PL4107	WGB	12	X		-5(R4)
			PL4104	WGB	12	X		-6(R5) -5(R4)
	86	2KR/1	PL-4091	WGB	12	X		45W782-6(R5) -4(R3) SH27
			PL4087	WGB	12	X		-6(R5) -5(R4)
			PL4088	WGB	12	X		-6(R5) -5(R4)
			PL4090	WGB	12	X		-5(R4)
		1KR/1FU 1KR/8FU	NO CABLES INVOLVED					45W782-6(R5)
		3DR/1FU 3DR/2FU	NO CABLES INVOLVED					45W782-6(R5) SH24
	77	3MR/1FU	PL4132	WGH	12	X		45W782-6(R5) -4(R3) SH28

WBPEVAR9001006

SHEET B35
PREPARED W A Lambert DATE 1-31-90
CHECKED JC Butler DATE 2-1-90

BOARD: 1. 1-B0-237-A 2. ______ 3. ______
4. ______ 5. ______ 6. ______

BOARD REF #	CURVE NO.	COMPT/BKR #/FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/REF.
1	27	1	1M8	WDK	4/0	X		45N1646-1 R5
	27	2	1M12	WDK	4/0	X		"
	26	3	1PV2	WDH	1/0	X		45N706-1 R20
	26	4	2PV2	WDH	1/0	X		"
	25	5	1M2	WDJ	2/0	X		45N707-1 R4
	25	6	N/A SPARE					
	24	7	1RR994	WDF	4	X		45N1624-1 R1
			1RR997	WDE	6	X		45N1624-2 R0
			1RR1015	WDE	6	X		45N1624-3 R0
			1RR1042	WDE	6	X		45N1624-5 R0
			1RR1092	WDE	6	X		45N1624-4 R0
			1RR1233	WDE	6	X		45N1624-6 R1
	23	8	T1600	WDE-1	6	X		55N1303
	22	9	N/A SPARE					
	22	10	N/A SPARE					
	21	11	1PV3	WGB	12	X		45N709-4 R3
	21	12	2PV3	WGB	12	X		"
	21	13	1M5	WGB-1	12	X		45N709-1 R6
	21	14	1M3544	WGB-1	12	X		45N1635-103 RT L-376A
	21	15	1V7980	WGB	12	X		45N1641-10 R10 1-M-2
			1V7982	WGD	12	X		45N1670-6 R1 JB1299
			1V7983	WGB	12	X		
			1V7984	WGB	12	X		
			1V7985	WGB	12	X		
			1V8012	WGD	12	X		45N1630-5 R1
			1V8013	WGB	12	X		
			1V8014	WGB	12	X		
			1V8015	WGB	12	X		
			1V7992	WGD	12	X		45N1630-7 R1
			1V7993	WGB	12	X		
			1V7994	WGB	12	X		
			1V7995	WGB	12	X		
			(BKR 15 CONTINUED)					

WBPEVAR9001006 APPENDIX B SHEET B35 A

REV. # 5

PREPARED BY: J. L. Lay DATE 5/15/91

CHECKED BY: J. McCarthy DATE 5/17/91

BOARD: 1. 1-BD-237-A 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES/ REF. DWG.
					1PV3					
4	235	~~235~~	21	11	1PV4	WHB	14		*	45N706-1 45N709-4 CABLE WILL FAIL BECAUSE
		1 5/10						GHW 11/25/91		ITS INSULATION IS ONLY RATED AT 75°C.
										D/K 12/11/91
										* SEE ~~APPENDIX G~~
										ATTACHMENT M16428A

WBPEVAR9001006 APPENDIX B SHEET B35 B

REV. # 5

PREPARED BY: J. L. Day DATE 5/15/91

CHECKED BY: L. McCarthy DATE 5/17/91

BOARD: 1. 1-BD-237-A 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE No.	COMPT. /BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
					2PV3					
4	235	1	21	12	2PV4	WHB	14		X	45N706-1 45N709-4 CABLE WILL FAIL BECAUSE ITS INSULATION IS ONLY RATED AT 75°C.
										- DJL 12/11/91 SEE ~~APPENDIX G~~ ATTACHMENT MIL428A R7

WBPEVAR9001006

SHEET B36

RO: PREPARED W A Lambert DATE 1-31-90

CHECKED JCButler DATE 2-1-90

BOARD: 1. 1-BD-237-A (CONT.) 2. ______ 3. ______

4. ______ 5. ______ 6. ______

BOARD REF #	CURVE NO.	COMPT/BKR #/FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/REF.
1	21	15	(BKR 15 CONT)					
	↓	↓	1V8002	WGD	12	X		45N1630-7 R1
			1V8003	WGB	12	X		
			1V8004	WGB	12	X		
			1V8005	WGB	12	X		
			1V8022	WGD	12	X		45N1630-5 R1
			1V8023	WGB	12	X		
			1V8024	WGB	12	X		
			1V8025	WGB	12	X		
			1V8032	WGD	12	X		45N1630-6 R1
			1V8033	WGB	12	X		
			1V8034	WGB	12	X		
	↓	↓	1V8035	WGB	12	X		
	21	16*	1SG280	WGB	12	X		45N1632-9 R3 * SEE ADDNL CABLES AT END
	↓	↓	1SG281	WGC	12	X		
			1SG282	WGB-1	12	X		
	21	17	N/A SPARE					
	21	18	N/A SPARE					
	21	19	M180	WGB	12	X		45N1635-48 R30
	↓	↓	~~M181~~	~~WHB~~	~~14~~		X	FURTHER EVALUATION REVEALS THAT CABLES DO NOT ENTER A CAT. I STRUCTURE
			~~M182~~	~~WHB~~	~~14~~		X	
			~~M183~~	~~WHB~~	~~14~~		X	R3
			~~M184~~	~~WHB~~	~~14~~		X	
	↓	↓	~~M185~~	~~WHB~~	~~14~~		X	↓
	21	20	A1580	WGB	12	X		45N1636-3 R15 0-C-4C
	↓	↓	A1581	WGB	12	X		45N1636-5 R4
	21	21	1G980	WGB	12	X		45N1686-3 R13
	↓	↓	1G981	WGB	12	X		
			1G982	WGB-1	12	X		
			1G983	WGD	12	X		
			1G984	WGB-1	12	X		
			1G985	WGB	12	X		
			1G987	WGB	12	X		
	↓	↓	(BKR 21	CONT)				

WBPEVAR9001006 APPENDIX B SHEET B36A

REV. # ~~4~~ 5 DJZ 9-5-91

PREPARED BY: [signature] DATE 12-11-90

CHECKED BY: Louis Y. MacGuiom DATE 12-12-90

BOARD: 1. 1-BD-237-A 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
1	32	1	21	19	M180	WGB	12	X		45N708-1, R14 / 45N1635-48, R27
↓	↓	↓	↓	↓	M181 *	WHB	14		X	45N1635-48, R27
					M182 *	WHB	14		X	↓
					M183 *	WHB	14		X	
					M184 *	WHB	14		X	
					M185 *	WHB	14		X	

* FURTHER EVALUATION REVEALED THAT CABLES DO NOT ENTER A CAT. 1 STRUCTURE. SEE PAGE B36A1

APPENDIX B

Prepared [signature] Date 7/15/91
Checked [signature] Date 7/15/91

Note:

Circuit fed from compartment 19 of board 1-BD-237-A contains cables 1M181 thru 1M185 (mark number WHB), which have an insulation temperature rating of 75 degrees C (DS E12.6.3). The primary protective device for this circuit is a 15A circuit breaker (Curve 21). The 15A breaker on curve 21 does not protect a #14 AWG cable rated at 75 degrees C. However, the failure of these cables will not degrade Class 1E safety related cables or equipment since they are located entirely in the Turbine Building (non-category I structure).

WBPEVAR9001006 | APPENDIX B | SHEET ~~B36B~~ B36B
REV. # 45 DJC 9-5-91 | PREPARED BY: Louis Guzman | DATE 12-11-90
| CHECKED BY: L. MacGuiwin | DATE 12-12-90

wyg 8-22-91

BOARD: 1. 1-BD-237-A 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES/ REF. DWG.
2A	3Ø	1	21	16	1SG280	WGB	12	X		R14 45N708-1 / R3 45N1632-9
↓	↓	↓	↓	↓	1SG281	WGC	12	X		45N1632-9 R3
↓	↓	↓	↓	↓	1SG282	WGB-1	12	X		↓
↓	↓	↓	↓	↓	1SG284	WGB-1	12	X		45N1632-9 R3

WBPEVAR9001006

SHEET B37
PREPARED W A Lambert DATE 1-31-90
CHECKED JCButler DATE 2-1-90

BOARD: 1. 1-BD-237-A 2. ______ 3. ______
4. ______ 5. ______ 6. ______

BOARD REF #	CURVE NO.	COMPT/BKR #/FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/REF.
1	21	21	(BKR 21	CONT)				
	↓	↓	1G988	WGB	12	X		
	↓	↓	1G989	WGB	12	X		
	21	22*	1V1187	WGB-1	12	X		45N1630-84 R0 / *SEE ADDNL CABLE AT END
	↓	↓	1V1189	WGB	12	X		
	↓	↓	1V1190	WGB	12	X		
	↓	↓	1V1191	WGB	12	X		
	21	23	1M1750	WGB	12	X		(REDUNDANT 7A PEN FUSE) 45N1635-20 R5
	↓	↓	1M1753	WPA	14	X		45N1618-4 R2
	21	24	M196	WGB-1	12	X		55W1391 R5
	21	25	1A4720	WGB-1	12	X		45N1637-7 R3
	↓	↓	M511	WGB-1	12	X		55W1391 R5
	21	26	1M1680	WGB-1	12	X		45N1632-6 R6
	↓	↓	1M1681	WVA-3	18		X	SEE NOTE ON ATTACHED SHEET B37B
	↓	↓	1M1682	WVA-3	18		X	↓
	↓	↓	1M1683	WVA-3	18		X	↓
	↓	↓	1M1684	WVA-3	18		X	↓
	↓	↓	1M1685	WVA-3	18		X	↓
	↓	↓	1M1687	WVA-3	18		X	↓
	↓	↓	1M1688	WVA-3	18		X	↓
	↓	↓	1M1689	WVA-3	18		X	↓
	↓	↓	1M1690	WVA-3	18		X	↓
	21	27	M58	WHB-1	14	X		45N1630-93 R7
	↓	↓	V1837	WHB-1	14	X		
	↓	↓	V1839	WHB-1	14	X		
	↓	↓	V1835	WHB-1	14	X		
	↓	↓	V1856	WHB-1	14	X		
	↓	↓	V1858	WHB-1	14	X		
	↓	↓	V1860	WHB-1	14	X		
	↓	↓	V1862	WHB-1	14	X		
	21	28	N/A SPARE					
	21	16*	1SG284	WGB-1	12	X		*CONT'D LIST FROM ABOVE
	21	22*	1V1188	WGB	12	X		

WBPEVAR9001006 APPENDIX B ~~W78 0-2271~~ SHEET B ~~35A~~ 37A

REV. # 5

PREPARED BY: Johnny M. Woods DATE 4·11·91

CHECKED BY: T. L. Ray DATE 4/22/91

BOARD: 1. 1-BD-237-A 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
					1M1750					
					1M1753					
4	61	1	21	23	1M1751	WPA	14	X		(RNN) 45N708-1, 45N1635-20 (RG)

APPENDIX B

Prepared by: J.A. Guevara Date: 11-25-91
Checked by: ____________ Date: ______

Note:

Circuit fed from compartment 26 of board 1-BD-237-A contain cables 1M1681, 1M1682, 1M1683, 1M1684, 1M1685, 1M1687, 1M1688, 1M1689 and 1M1690 which are 2/C #18 cables and which are assumed to fail. However, the failure of these cables will not degrade Class IE safety related cables or equipment since they are located entirely in the turbine building (non-category I structure).

WBPEVAR9001006

SHEET B38
PREPARED W A Lambert DATE 1-29-90
CHECKED R. M. Tumez DATE 1-31-90

BOARD: 1. 1-BD-237-B (45N708-1, R14) 2. ______ 3. ______
4. ______ 5. ______ 6. ______

BOARD REF #	CURVE NO.	COMPT/BKR #/FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/REF.
1	27	1	1M9	WDK	4/0	X		45N1646-1 R5
	27	2	1M11	WDK	4/0	X		45N1646-1 R5
	26	3	1PV121	WDH	1/0	X		45N706-2 R21
	26	4	2PV121	WDH	1/0	X		↓
	25	5	N/A SPARE	—	—	—	—	
	25	6	N/A SPARE	—	—	—	—	
	24	7	1R1513	WDF	4	X		45N1635-81 R10
	NWD	8	N/A SPARE	—	—	—	—	
	NWD	9	N/A SPARE	—	—	—	—	
	22	10	1V8100	WFB	10	X		45N1641-11 R5 HVX HVY
			1V8552	WFB	10	X		45N1686-3 R13
			1V8553	WFC	10	X		45N1630-33 R5
			1V8554	WGB	12		* GRG 11/25/91	45N1630-33 R5
			1V8555	WGB	12		* GRG 11/25/91	↓
			1V8280	WFC	10	X		45N1630-5 R1
			1V8283	WFB	10	X		↓
			1V8287	WFB	10	X		
			1V8102	WFC	10	X		45N1630-8 R0
			1V8104	WFB	10	X		↓
			1V8108	WFB	10	X		
			1V8300	WFC	10	X		45N1630-5 R1
			1V8303	WFB	10	X		↓
			1V8307	WFB	10	X		
			1V8121	WFC	10	X		45N1630-8 R0
			1V8124	WFB	10	X		↓
			1V8128	WFB	10	X		
			1V8320	WFC	10	X		45N1630-6 R1
			1V8323	WFB	10	X		↓
			1V8327	WFB	10	X		
			1V8141	WFC	10	X		45N1630-8 R0
			1V8144	WFB	10	X		↓
			1V8148	WFB	10	X		↓
	↓	↓	(BKR. 10	CONT)				NWD = NO WKON DATA

* SEE NOTE ON ATTACHED SHEET B38A |R1

WAC 127-1

APPENDIX B

Prepared by: *[signature]* Date: 11-25-91
Checked by: ____________ Date: ________

Note:

Circuit fed from compartment 10 of board 1-BD-237-B contain cables 1V8554 and 1V8555 (mark number WGB) which has a insulation temperature rating of 75 degrees C (DS E12.6.3). The primary protective device for this circuit is a 20A circuit breaker (curve 22). The 20A breaker on curve 22 does not protect a 12AWG cable rated at 75 degrees C. However, the failure of these cables will not degrade Class IE safety related cables or equipment since they are located entirely in the turbine building (non-category I structure).

WBPEVAR9001006

SHEET B39
PREPARED W A Lambert DATE 1-29-90
CHECKED [illegible] DATE 1-31-90

(45N708-1, R14)

BOARD: 1. 1-BD-237-B 2. ______ 3. ______
4. ______ 5. ______ 6. ______

BOARD REF #	CURVE NO.	COMPT/BKR #/FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/REF.
1	22	10	(BKR 10	CONT)				
			1V8340	WFC	10	X		45N1630-6 R1
			1V8343	WFB	10	X		
			1V8347	WFB	10	X		
			1V8161	WFC	10	X		45N1630-9 R0
			1V8164	WFB	10	X		
			1V8168	WFB	10	X		
			1V8181	WFC	10	X		
			1V8188	WFB	10	X		
			1V8184	WFB	10	X		
			1V8201	WFC	10	X		
			1V8208	WFB	10	X		
			1V8204	WFB	10	X		
			1V8360	WFC	10	X		45N1630-7 R1
			1V8363	WFB	10	X		
			1V8367	WFB	10	X		
			1V8380	WFC	10	X		45N1630-7 R1
			1V8383	WFB	10	X		
			1V8387	WFB	10	X		
	21	11	1PV122	WGB-1	12	X		45N709-4 R3
	21	12	2PV122	WGB-1	12	X		45N709-4 R3
	21	13*	1R1515	WGB-1	12	X		45N1635-82 R1 — SEE * ADDNL CABLES AT END
	21	14	1SG570	WFB-1	10	X		45W1630-94 R1
			1SG571	WHB-1	14	X		
			1SG572	WHB-1	14	X		
			1SG573	WGB-1	12	X		
			1SG574	WHB-1	14	X		
			1SG575	WHB-1	14	X		
			1SG576	WGB-1	12	X		
			1SG577	WHB-1	14	X		
			1SG578	WHB-1	14	X		
			1SG579	WGB-1	12	X		
			1SG580	WHB-1	14	X		
			(BKR 14	CONT)				

Wygl 8-22-91 B39A

WBPEVAR 9001006

REV. # 5

APPENDIX B

SHEET ~~B38~~ 9

PREPARED BY: J. L. Lay DATE 5/15/91

CHECKED BY: J. McCarthy DATE 5/17/91

BOARD: 1. 1-BD-237-B 2. ____ 3. ____

4. ____ 5. ____ 6. ____

GROUP	SYS.	BOARD REF. #	CURVE No.	COMPT. / BKR. # / FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
					1PV122					Wygl 8-22-91
4	235	1	21	11	1PV123	WHB	14		*	45N70~~8~~6-2 45N709-4 CABLE WILL FAIL BECAUSE ITS
									GWW 11/25/91	INSULATION IS ONLY RATED @ 75°C
										DJR 12/11/91
										* SEE ~~APPENDIX G~~
										ATTACHMENT M16428A

wugd 8-22-91 B39B 9

WBPEVAR 9001006
REV. # 5

APPENDIX B

SHEET ~~B38~~

PREPARED BY: J. L. Day DATE 5/15/91
CHECKED BY: J. McCarthy DATE 5/19/91

BOARD: 1. 1-BD-237-B 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
					2PV122					
4	235	1	21	12	2PV123	WHB	14		*	45N706-2 45N709-4 CABLE WILL FAIL BECAUSE ITS
								GRG 11/2?/91		INSULATION IS ONLY RATED AT 75°C.
										DR 12/11/91
										*SEE ~~APPENDIX G~~
										ATTACHMENT M1642SA

WBPEVAR9001006

SHEET B40
PREPARED WA Kambat DATE 1-29-90
CHECKED A.M. Jimenez DATE 1-31-90

BOARD: 1. 1-BD-237-B (45N708-1, R14) 2. ______ 3. ______
4. ______ 5. ______ 6. ______

BOARD REF #	CURVE NO.	COMPT/BKR #/FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/REF.
1	21	14	(BKR 14 CONT)					
			1SG581	WHB-1	14	X		45W1630-94 R1
			1SG582	WGB-1	12	X		
			1SG583	WHB-1	14	X		
			1SG584	WHB-1	14	X		
			1SG585	WGB-1	12	X		
			1SG586	WHB-1	14	X		
			1SG587	WHB-1	14	X		
			1SG635	WFB-1	10	X		45W1635-75 R5
	21	15	1M60	WGB-1	12	X		45N1632-8 R11
			1M61	WGB-1	12	X		
			1M62	WGD	12	X		
			1M63	WGD	12	X		
			1M64	WGD	12	X		
	21	16*	1SG380	WGB	12	X		45N1641-11 R5 / * SEE ADDNL CABLES AT END
			1SG381	WGG	12	X		45N1630-33 R5
			1SG387	WPB	12	X		
			1SG385	WGB	12	X		
			1SG384	WGD	12	X		
			1SG383	WGB	12	X		
			1SG386	WGG	12	X		45N1687-4 R19
	21	17	1V8640	WHB-1	14	X		45N1635-37 R6
			1V8641	WHB-1	14	X		45N1630-75 R3
			1V8642	WHB-1	14	X		
	NWD	18	N/A SPARE	—	—	—	—	
	21	19	R135	WGB-1	12	X		45N1679-1 R0 R113
	21	20	A1810	WGB	12	X		45N1676-2 R16 L-4B
			A1811	WGB	12	X		
	21	21	V1780	WFB	10	X		45N1635-59 R7
			V1781	WFB	10	X		45N1632-6 R6
			V1786	WFD	10	X		
			V1787	WFG	10	X		
			V1785	WFL	10	X		45N1630-33 R5

WBPEVAR9001006 Wyr 8-22-91

REV. # 5

APPENDIX ~~ATTACHMENT~~: B SHEET B40-A

PREPARED BY: Louis Guzman DATE 12-11-9

CHECKED BY: L. MacGirvin DATE 12-12-90

BOARD: 1. 1-BD-237-B 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/ REF. DWG.
2A	30	1	21	15	1M60	WGB-1	12	X		45N708-1/45N1632-8
↓	↓	↓	↓	↓	1M61	WGB-1	↓	X		↓
↓	↓	↓	↓	↓	1M62	WGD	↓	X		↓
↓	↓	↓	↓	↓	1M63	WGD	↓	X		↓
↓	↓	↓	↓	↓	1M64	WGD		X		

WBPEVAR 9001006
REV. # 5

APPENDIX B

SHEET B 40 B

PREPARED BY: [signature] DATE 12 APR 91

CHECKED BY: G. L. Day DATE 4/24/91

BOARD: 1. 1-BD-237-B 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
					1SG 380					~~45N 1630-33, R5~~ ~~45N 1635-43, R7~~ JH 4/12/91
6	2	1	21	16	1SG 382	WGB	12	X		45N1630-33, R5 45N1635-43, R7

WBPEVAR9001006

SHEET B41
RO: PREPARED W A Lambert DATE 1-29-90
CHECKED [illegible] DATE 1-31-90

BOARD: 1. 1-BD-237-B (45N208-1, R14) 2. ______ 3. ______
4. ______ 5. ______ 6. ______

BOARD REF #	CURVE NO.	COMPT/ BKR #/ FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/REF.
1	21	22	1R1525	WGB	12	X		45N1635-38 R5
			~~1R1529~~	~~WHB~~	~~14~~		X	
			~~1R1524~~	~~WHB~~	~~14~~		X	~~45N1672-9 R3~~
			~~1R1526~~	~~WHB~~	~~14~~		X	~~45N1635-87 R3~~
			~~1R1527~~	~~WHB~~	~~14~~		X	
			~~1R1531~~	~~WHB~~	~~14~~		X	
			1R1535	WGB-1	12	X		45N1635-63 R4
			1R1536	WGB-1	12	X		45N1632-18 R0
			1PM5272	WGB-1	12	X		
			1R1537	WGB-1	12	X		
			1R1538	WGB-1	12	X		45N1635-10 R8 L 394
	NWD	23	N/A SPARE	—	—	—	—	
	21	24	M198	WGB-1	12	X		55W1391 R5
			M532	WGB-1	12	X		55W1393-3 R3
	21	25	V2255	WGB	12	X		45N1694-4 R7 R79
	NWD	26	N/A SPARE	—	—	—	—	
	21	27	1M2491	WGB-1	12	X		45N1632-12 R3
	NWD	28	N/A SPARE	—	—	—	—	
	21	13*	1R1516	WGB-1	12	X		45N1635-82 R1 * CONTUED LIST FROM ABOVE
			1R1517	WGB-1	12	X		
			1R1519	WGB-1	12	X		
	21	16*	1SG388	WGB	12	X		45N1687-4 R19
			1SG389	WGB	12	X		

FURTHER EVALUATION REVEALS THAT CABLES DO NOT ENTER A CAT. I STRUCTURE.

R3

WBPEVAR9001006
REV. # 5

APPENDIX B

SHEET B41A

PREPARED BY: [signature] DATE 22 APR 91

CHECKED BY: [signature] DATE 4/24/91

BOARD: 1. 1-BD-237-B 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
					1R 1538					~~45N 1632-18~~ ~~45N 1635-62~~ [initials] 4/23/91
6	2	1	21	22	1PM 5244	WGB-1	12	X		45N1632-18 45N1635-62

WBPEVAR9001006 | APPENDIX B | SHEET B41~~A~~B

REV. # ~~4~~ 5 LMG 1-9-91

LMG 2-22-91

PREPARED BY: [signature] DATE 12-11-90

CHECKED BY: L. MacGivim DATE 12-17-90

BOARD: 1. 1-BD-237-B 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG. (DJK 02-19-91)
2A	31	1	21	25	V2255	WGB	12	X		45N708-1, ~~R14~~ RNN / 45N1694-4, ~~R7~~ RP
2A	31	1	*	↓	V2230	WHH	14	X		45N1694-4, ~~R7~~ RP / 45W1630-76, ~~R5~~ R6
										* The secondary side
										of the transformer will
										not have more than 10A
										do to the 2A fuses on
										the primary side.
										For reference see
										calc. section 6.1.
										paragraph B.
										Results in "Pass."

WBPEVAR9001006 APPENDIX B SHEET B41C

REV. # 5

PREPARED BY: [signature] DATE 18 APR 91

CHECKED BY: T. L. Day DATE 4/23/91

BOARD: 1. 1-BD-237-B 2. ________ 3. ________

4. ________ 5. ________ 6. ________

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
					1M 2491					~~45N 1632-12~~ ~~45N 1630-34~~ JH 4/23/91
6	52	1	21	27	1M 2467	WHB-1	14	X		45N1632-12 45N1630-34
6	52	1	21	27	1M 2489	WHB-1	14	X		45N1632-12 45N1630-34

WBPEVAR 9001006

SHEET B42
PREPARED W A Lambert DATE 1-30-90
CHECKED RS DATE 1/31/90

BOARD: 1. 2-80-237-A 2. ______ 3. ______
4. ______ 5. ______ 6. ______

BOARD REF #	CURVE NO.	COMPT/BKR #/FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/REF.
1	27	1	2M8	WDK	4/0	X		45N708-2 R12
	27	2	2M12	WDK	4/0	X		
	26	3	1PV241	WDH	1/0	X		
	26	4	2P241	WDH	1/0	X		
	25	5	2M2	WDJ	2/0	X		
	25	6	N/A SPARE					
	24	7	2RR994	WDF-1	4	X		
	23	8	T1601	WDE-1	6	X		
	22	9	N/A SPARE					
	NWD	10	N/A SPARE					
	21	11	1PV242	WGB	12	X		
	21	12	2PV242	WGB	12	X		
	21	13	2M5	WGB-1	12	X		
	21	14	N/A SPARE	—	—			
	21	15	2V7980	WGB	12	X		
	21	16	2SG280	WGB	12	X		
	21	17	N/A SPARE					
	21	18	N/A SPARE					
	21	19	N/A SPARE					
	21	20	1PV800	WFB-1	10	X		
	21	21	2G980	WGB	12	X		
	21	22	2V1187	WGB-1	12	X		(REDUNDANT 7A PEN FUSE)
	21	23	2M1750	WGB-1	12	X		
	21	24	N/A SPARE					
	21	25	N/A SPARE					
	21	26	2M1680	WGB-1	12	X		
	21	27	N/A SPARE					
	21	28	N/A SPARE					
	21	20	2PV800	WFB-1	10	X		

NWD = NO WALKON DATA

WBPEVAR 9001006
REV. # 5

APPENDIX B

SHEET B42A

PREPARED BY: Jeff Ball DATE 4/18/91
CHECKED BY: G. L. Day DATE 4/19/91

BOARD: 1. Z-BP-237-A 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
					ZRR994					
6	85	1	24	7	ZRR997	WDE	6	X		45N 2624-1 45N 2624-2
					ZRR1015			X		45N 2624-2 45N 2624-3
					ZRR1042			X		45N 2624-5 45N 2624-3
					ZRR1092			X		45N 2624-4 45N 2624-5
					ZRR1233			X		45N 2624-4 45N 2624-6

WBPEVAR 9001006

REV. # 5

APPENDIX B

SHEET B42B

PREPARED BY: D. Woods DATE 4/24/91

CHECKED BY: J. McCarthy DATE 5-20-9

BOARD: 1. ~~1-BD-235-3-F~~ 2-BD-237-A WWJL 9-4-91 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
					1PY242					
4	235	1	21	11	1PV243	WHB	14		*	45W706-3 45N709-4 CABLE WILL FAIL BECAUSE ITS INSULATIO IS ONLY RATED AT 75°
								GRG 11/25/91		
										DJL 12/11/91
										* SEE ~~APPENDIX G~~
										ATTACHMENT M16428A

WBPEVAR9001006 APPENDIX B SHEET B42C

REV. # 5

PREPARED BY: D Woods DATE 4/24/9

2-BD-237-A

CHECKED BY: J. McCarthy DATE 5-20-9

BOARD: 1. ~~2-BD-235-3-5~~ 2. ______ 3. ______

WGA 9-4-91

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE No.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
					2PV242					
4	235	1	21	12	2PV243	WHB-1	14	X		45N706-3 45N709-4 - CABLE INSUL TEMP RATED @ 90°C

W3PEVAR9001006
REV. # 5

APPENDIX B

PREPARED BY [signature]
CHECKED BY [signature]

SHEET B42D
DATE 4/18/91
DATE 4/19/91

BOARD: 1. 2-BD-237-A 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	CMPT. BKR. #/ FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/ REF. DWG.
					ZY7980					
6	1	1	21	15	ZV7982	WG.0	12	X		46N2641-10 46N2630-6
					ZV8012			X		45N2641-10 46N2630-5
					ZV7992			X		45N2641-10 45N2630-7
					ZV8022			X		46N2641-10 45N2630-~~7~~ -6
					ZV8002			X		45N2641-10 46N2630-7
					ZV8032			Y		45N2641-10 45N2630-6
					ZV7995	WGB		X		45N2630-7
					ZV7994			X		45N2630-7
					ZV7993			X		45N2630-7
					ZV8035			X		45N2630-6
					ZV8034			X		45N2630-6
					ZV8033			X		45N2630-6
					ZV7985			X		45N2630-6
					ZV7984			X		45N2630-6
					ZV7983			X		45N2630-6
					ZV8005			X		45N2630-7
					ZV8004			X		45N2630-7
					ZV8003			X		45N2630-7
					ZV8015			X		45N2630-5
					ZV8014			X		45N2630-5
					ZV8013			X		45N2630-5
					ZV8025			X		45N2630-5
					ZV8024			X		45N2630-5
					ZV8023			X		45N2630-5

WBPEVAR9001006

REV. # 5

APPENDIX B

PREPARED BY: [signature] DATE 4/17/91

CHECKED BY: [signature] DATE 4/19/91

SHEET B42E

BOARD: 1. Z-BD-237-A 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/ REF. DWG.
					ZG980					
6	47	1	21	21	ZG981	WGB	12	X		45N 1686-3 6948D15
6	47	1	21	↓	ZG982	WGB	12	X		6948D31 45N2612-12
6	47	1	21	↓	ZG983	WGD	12	X		45N 2686-3 6948D40
6	47	1	21	↓	ZG984	WGB	12	X		6948D40 45N2612-12
6	47	1	21	↓	ZG985	WGB	12	X		6948D40 45N2612-13
6	47	1	21	↓	ZG987	WGB	12	X		6948D34 45N 2612-13
6	47	1	21	↓	ZG988	WGB	12	X		45N 2686-3 45N2612-14
6	47	1	21	↓	ZG989	WGB	12	X		45N2612-14 45N2612-14

WBFEVAR9001006 APPENDIX B SHEET B42F

REV: # 5

PREPARED BY [illegible] DATE 4/18/[illegible]

CHECKED BY: [illegible] DATE 4/19/9[illegible]

BOARD: 1. Z-BD-237-A 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES/ REF. DWG.
					ZV1187	[illegible] 9.5.91				
6	3	1	21	22	ZV1188	~~WGB~~	12	X		45N2630-84 0126D4672-2
					ZY1189			X		45N2630-84
					ZV1190			X		
					ZV1191			X		

WBPEVAR9001006 — APPENDIX B — 8-22-91 SHEET B42G (B42~~B~~)

REV. # 5

PREPARED BY: [signature] DATE 4/18/91

CHECKED BY: G. L. Day DATE 4/19/91

BOARD: 1. Z-BD-237-A 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES/ REF. DWG.
					ZM1680					SEE NOTE PAGE B42G
6	1	1	21	26	ZM1681	WVA3	18		X	45N 2632-6
↓	↓	↓	↓	↓	ZM1682	↓	↓		↓	↓
↓	↓	↓	↓	↓	ZM1683	↓	↓		↓	↓
↓	↓	↓	↓	↓	ZM1684	↓	↓		↓	↓
↓	↓	↓	↓	↓	ZM1685	↓	↓		↓	↓
↓	↓	↓	↓	↓	ZM1687	↓	↓		↓	↓
↓	↓	↓	↓	↓	ZM1688	↓	↓		↓	↓
↓	↓	↓	↓	↓	ZM1689	↓	↓		↓	↓
↓	↓	↓	↓	↓	ZM1690	↓	↓		↓	↓

WBPEVAR9001006

Sheet B42G1

APPENDIX B

Prepared [signature] Date 4/18/91
Checked [signature] Date 4/19/91

Note:

The primary protective device for this circuit is a 15A circuit breaker (BKR26, curve 21). This device inherently protects a #12 cable at 75 degrees. A review of this circuit identified #18 AWG cables daisey-chained off the primary #12 cable. These #18 cables are not protected by the 15" circuit breaker. However, the failure of these cables will not degrade Class 1E safety-related cables or equipment since they are located entirely in the Turbine Building.

3483q

WBPEVAR9001006

APPENDIX B

SHEET B42~~A~~H

REV. # ~~3~~ 5 LMG 1-9-91

PREPARED BY: [signature] DATE 12-12-90

CHECKED BY: [signature] DATE 12-13-90

BOARD: 1. 2-BD-237-A 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES/ REF. DWG.
										JDK 02-19-91
2A	31	1	21	20	2PV800	WFB-1	10	X		45N708-2, ~~R12~~ RP / 45W776-4, ~~R10~~ RE
			*	318	2PV801	WHB-1	14	X		45W776-4, ~~R10~~ RE
			*	341	2PV802	WHB-1	14	X		
			*	437	2PV803	WHB-1	14	X		
			**	408	2PM5380	WHB-1	14	X		
			**	408	2PM5382	WHB-1	14	X		
										JDK 02-19-91
2A	31	1	21	20	1PV800	WFB-1	10	X		45N708-2, ~~R12~~ RP / 45W77~~6~~5-5, ~~RT~~ RF
			*	318	1PV801	WHB-1	14	X		45W775-5, ~~RT~~ RF
			*	341	1PV802	WHB-1	14	X		
			*	437	1PV803	WHB-1	14	X		
			**	408	1PM5380	WHB-1	14	X		
			**	408	1PM5382	WHB-1	14	X		
										JDK 02-19-91
2A	30	1	21	16	2SG280	WGB	12	X		45N708-2, ~~R12~~ RP / 45N2632-9, ~~RC~~ RC
					2SG281	WGC	12	X		45N2632-9, ~~RC~~ RC
					2SG282	WGB-1	12	X		
					2SG284	WGB-1	12	X		
										* BUSSMAN TYPE KWN1, 1A
										FUSE. MARK # PNA-1
										No CURVE NUMBER
										** BUSSMAN TYPE KTS-3, 3A
										FUSE. MARK # PNG
										No CURVE NUMBER
							LMG 12-19-90			FOR REF. SEE CALC. # ~~WBPEVAR9001006, R3~~
										SECTION 6.1, PARAGRAPH
										B for results in "PASS"

WBPEVAR 9001006

SHEET B43
PREPARED W A Lambert DATE 1-30-90
CHECKED RS DATE 1/30/90

BOARD: 1. 2-BD-237-B 2. ______ 3. ______
4. ______ 5. ______ 6. ______

BOARD REF #	CURVE NO.	COMPT/BKR #/FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/REF.
1	27	1	2M9	WDK	4/0	X		
	27	2	2M11	WDK	4/0	X		
	26	3	1PV361	WDH	1/0	X		
	26	4	2PV361	WDH	1/0	X		
	NWD	5	N/A SPARE					
	NWD	6	N/A SPARE					
	24	7	2R1513	WDF	4	X		
	NWD	8	N/A SPARE					
	NWD	9	N/A SPARE					
	22	10	2VB100	WFB	10	X		
	21	11	1PV362	WGB	12	X		
	21	12	2PV362	WGB	12	X		
	21	13	2R1515	WGB-1	12	X		
	21	14	2SG570	WFB-1	10	X		
	21	15	2M60	WGB-1	12	X		
	21	16	2SG380	WGB	12	X		
	21	17	2V8640	WHB-1	14	X		
	21	18	N/A SPARE					
	NWD	19	N/A SPARE					
	21	20	2A4720	WGB	12	X		
	NWD	21	N/A SPARE					
	21	22	2R1525	WGB	12	X		
	21	23	M480	WGB-1	12	X		
	21	24	M513	WGB-1	12	X		
	21	25	M478	WGB-1	12	X		
	21	26	M479	WGB-1	12	X		
	21	27	2M2491	WGB-1	12	X		
	21	28	N/A SPARE					
								NWD = NO WALKDN DATA

WBPEVAR 9001006 APPENDIX B SHEET B43 A

REV. # 5

PREPARED BY: D. Woods DATE 12/16/90

CHECKED BY: L. MacGirvin DATE 12-31-90

BOARD: 1. 2-BD-237-B 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. /BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
2C	43	1	24	7	2R1513	WDF	4	X		45N708-2 R/P 45N2635-81 R/3
2C	43	1	21	13	2R1515	WDF-1	12	X		45N708-2 R/P 45N2635-82 E/1

WBPEVAR 9001006

REV. # 5

APPENDIX B

SHEET B 43B

PREPARED BY: [illegible] DATE 12 APR 91

CHECKED BY: [illegible] DATE 4-24-91

BOARD: 1. Z-BD-237-B 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
					ZV 8100					
6	6	1	22	10	ZV 8121	WFC	10	X		45N 2641-8, 9, 11
					ZV 8141			X		45N 2630-5, 7, 8, 9
					ZV 8300			X		45N 600-6-1
					ZV 8181			X		
					ZV 8201			X		
					ZV 8360			X		
					ZV 8148	WFB		X		
					ZV 8124	WFB-1		X		
					ZV 8128			X		
					ZV 8144	WFB		X		
					ZV 8307			X		
					ZV 8303			X		
					ZV 8188			X		
					ZV 8184			X		
					ZV 8208			X		
					ZV 8204			X		
					ZV 8363			X		
					ZV 8367			X		

WBPEVAR 9001006
REV. # 5

APPENDIX B

SHEET B430

PREPARED BY: D. Woods DATE 4/24/91

CHECKED BY: J. McCarthy DATE 5/20/9

2-BD-237-B

BOARD: 1. ~~1-BD-235-4-G~~ 2. ________ 3. ________

wygs 9-4-91

4. ________ 5. ________ 6. ________

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES/REF. DWG.
					1PV362					
4	235	1	21	11	1PV363	WHB	14		*	45N706-4 45N769-4 CABLE WILL FAIL BECAUSE ITS INSULATION IS ONLY RATED AT 75°C.
								GRh 11/25/91		
										DJL 12/11/91
										* SEE ~~APPENDIX G~~ ATTACHMENT M16428A

WBPEVAR 9001006 APPENDIX B SHEET 343D

REV. # 5

PREPARED BY: D. Woods DATE 4/24/9

CHECKED BY: J. McCarthy DATE 5/20/9

2-BD-237-B

BOARD: 1. ~~2-BD-235-A-G~~ 2. ______ 3. ______

WYG 9-4-91

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	CMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
					2PV362					
4	235	1	21	12	2PV363	WHB	14		*	45N706-4 45N709-4 CABLE WILL FAIL BECAUSE ITS INSULATION IS ONLY RATED AT 75°C.
								GRG 11/25/91		
										DJL 12/11/91
										* SEE ~~APPENDIX G~~ ATTACHMENT M16428A

W.BPEVAR 9001006 APPENDIX B SHEET B43E

REV. # 5

PREPARED BY: [signature] DATE 12 APR 91

CHECKED BY: J. McCarthy DATE 4-18-91

BOARD: 1. 2-BD-237-B 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO. 2SG 570	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
6	1	1	21	14	2SG 571	WHB-1	14	X		MOTHER DWG 45N708-2
↓	↓	↓	↓	↓	2SG 572	↓	↓	X		45W2630-74 45N600-1-2
					2SG 573	WGB-1	12	X		
					2SG 574	WHB-1	14	X		
					2SG 575	WHB-1	14	X		
					2SG 576	WGB-1	12	X		
					2SG 577	WHB-1	14	X		
					2SG 578	WHB-1	14	X		
					2SG 579	WGB-1	12	X		
					2SG 580	WHB-1	14	X		
					2SG 581	WHB-1	14	X		
					2SG 582	WGB-1	12	X		
					2SG 583	WHB-1	14	X		
					2SG 584	WHB-1	14	X		
					2SG 585	WGB-1	12	X		
					2SG 586	WHB-1	14	X		
↓	↓	↓	↓	↓	2SG 587	WHB-1	14	X		

WBPEVAR9001006
REV. # ~~4~~ 5 LMG 1-9-91

APPENDIX B

wyed 8-22-91
SHEET B43~~A~~F
PREPARED BY: D. Moore DATE 12-19-90
CHECKED BY: Louis MacGuivin DATE 12-20-90

BOARD: 1. 2-BD-237-B 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT./BKR. #/FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
2A	30	1	21	15	2M60	WGB-1	12	X		45N708-2,RP/45N2632-8,RE
					2M61	WGB-1	12	X		45N2632-8, REV. E
					2M62	WGD	12	X		
					2M63	WGD	12	X		

WBPEVAR9001006

REV. # 5

APPENDIX B

SHEET: B43G

PREPARED BY: [signature] DATE 10 APR.91

CHECKED BY: J. McCarthy DATE 04/22/91

BOARD: 1. 2-BD-237-B 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES / REF. DWG.
					2SG380					
6	2	1	21	16	2SG381	WGG	12	X		45N708-2 45N2641-11
					2SG382	WGB		X		45N2630-33 45W600-2
					2SG383	WGB				45N2687-4 45N2641-8
					2SG384	WGD				45N2635-43
					2SG385	WGB				
					2SG386	WGG				
					2SG387	WPB				
					2SG388	WGB				
					2SG389	WGB				

WBPEVAR 9001006 | APPENDIX B | SHEET 843 H
REV. # 5

PREPARED BY: [signature] DATE 4-12-91
CHECKED BY: J. McCarthy DATE 4-22-91

BOARD: 1. 2-BD-237-B 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	CMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES/ REF. DWG.
					2V8640					
6	2	1	21	17	2V8641	WHB-1	14	X		MOTHER DWG 45N708-2,R12
↓	↓	↓	↓	↓	2V8642	↓	↓	X		45N2635-37,R6 45N2630
										-15, R2 45W600-2, R7
										DS-E12.6.3 PASSES A
										WHB-1 @ 90°C

WBPEVAR9001006
REV.# 5

APPENDIX B

SHEET B43I

PREPARED BY: [signature] DATE 25 APR 9

CHECKED BY: James B. McCarthy DATE 4-25-9

BOARD: 1. 2-BD-237-B 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE No.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES/ REF. DWG.
					2R1525					
6	237	1	21	22	2R1526	WHB	14		X	45N 2635-38
					2R1527				X	SEE SHEET B43&I1 wjg 9-4-91
					2R1529				X	
					2R1524				X	
					2R1531				X	

WBPEVAR9001006

8-22-91

Sheet B43 I1

APPENDIX B

Prepared ______ Date 25 APR 91
Checked J. McCarthy Date 4-25-91

Note:

Circuit 2R1525 contains cables with a mark number of WHB, which has a insulation temperature rating of 75 C (DS E12.6.3). The primary protective device for this circuit is a 15A circuit breaker (Curve 21). The 15A fuse on curve 21 does not protect a #14 AWG cable rated at 75 C. However, the failure of these cables will not degrade Class 1E safety related cables or equipment since they are located entirely in the Turbine Building (non-category I structure).

3483q

WBPEVAR9001006 APPENDIX B SHEET B43

REV. # 5

PREPARED BY: [signature] DATE 4-18-9

CHECKED BY: J. McCarthy DATE 4-18-9

BOARD: 1. Z-BD-237-B 2. ____ 3. ____

4. ____ 5. ____ 6. ____

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES/ REF. DWG.
					2M 2491					
6	52	1	21	27	2M 2467	WHB-1	14	X		45N708-2, 45N2632-12
↓	↓	↓	↓	↓	2M 2489	WHB-1	14	X		45N2630-34

WBPEVAR9001006

PAGE B44

COMPUTED Wom DATE 1-31-90
CHECKED JCButler DATE 2-1-90

BOARD: 1. 1-BD-237-M7 2. ______ 3. ______
~~4.~~ INST PWR A RACK 5. ______ 6. ______

JCB 2-1-90
Wom 1-31-90

BOARD REF #	CURVE NO.	COMPT/ BKR #/ FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES / REF.
1	6	1	1A4660	WDF	4	✓		45N1646-3 R4
	-	2	SPARE					
	-	3	"					
	-	4	"					
	8	5	DA1	WDE-1	6	✓		
	-	6	SPARE					
	-	7	↓					
	-	8	↓					
	-	9	↓					
	9	10	1V8820	WFB	10	✓		
	10	11	DA854	WGB	12	✓		
	-	12	SPARE					
	10	13	SG2	WGB	12	✓		
	10	14	1G875	WGB	12	✓		
	10	15	1G160	WGB	12	✓		
	10	16	V1540	WGB	12	✓		
	10	17	1SG40	WGB	12	✓		
	10	18	RM345	WGB-1	12	✓		
	10	19	1G820	WGB	12	✓		
	10	20	1G480	WGB	12	✓		
	10	21	1G320	WGB	12	✓		
	10	22	1V8688	WGB	12	✓		
	10	23	1RM165	WGB	12	✓		
	10	24	1V9020 / 1V9003	WGB/WGB	12/12	✓		
	10	25	1V9385	WGB	12	✓		
	—	26	SPARE	—	—			
	10	27	1RM166	WGB	12	✓		
	10	28	V1380	WGB	12	✓		
	—	29	SPARE	—	—			
	10	30	1SG340	WGB	12	✓		
	10	31	RM316	WGB-1	12	✓		
	-	32	SPARE	—	—			

WBPEVAR9001006 APPENDIX B SHEET B44A

REV. # 5

PREPARED BY: [signature] DATE 05-06-91

CHECKED BY: [signature] DATE 5/7/91

BOARD: 1. 1-BD-237-M7A (RACK A) 2. ________ 3. ________

4. ________ 5. ________ 6. ________

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
5	55	1	6	1	1A4660 1A4665	WDJ-1	2/0	✓		45N1635-20, 45W1656-1

WBPEVAR 9001006
REV. # 5

APPENDIX B

SHEET B44B
PREPARED BY: J. M. WOODS DATE 4-18-91
CHECKED BY: J. McCarthy DATE 7-11-91

BOARD: 1. 1-BD-237-M7-A (RACK A) 2. ______ 3. ______
4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES / REF. DWG.
					SG2					45W1646-3
6	12	1	10	13	SG3	WJH	12	✓		45W784-1
6	12	1	10	13	SG4	WGB-1	12	✓		45W760-12-2
6	12	1	10	13	SG7	WGD	12	✓		45W797-6A
6	12	1	10	13	SG8	WGB	12	✓		45W797-6B
6	12	1	10	13	SG10	WGB	12	✓		45B784-3B
~~6~~	~~12~~	~~1~~	~~10~~	~~13~~	~~SG11~~	~~WVA~~	~~16~~	gmw 7-10-91		CONTRACT 75012
6	12	1	10	13	SG12	WHB	14		✓	DWG. 15271-W-3
6	12	1	10	13	SG13	WGB	12	✓		(SEE ATTACHED SHEET)
6	18	1	10	13	SG14	WGB-1	12	✓		B44B1
6	12	1	10	13	SG15	WGD	12	✓		
6	18	1	10	13	SG16	WGB-1	12	✓		
6	12	1	10	13	SG17	WGB-1	12	✓		

APPENDIX B

Prepared John W. Hudson Date 7.16.91
Checked J. McCarthy Date 7-16-91

Note:

Circuit fed from compartment 13 of board 1-BD-237-M7 contains cable SG12 (mark number WHB), which has a insulation temperature rating of 75 degrees C (DS E12.6.3). The primary protective device for this circuit is a 15A circuit breaker (Curve 10). The 15A breaker on curve 10 does not protect a #14 AWG cable rated at 75 degrees C. However, the failure of these cables will not degrade Class 1E safety related cables or equipment since they are located entirely in the Turbine Building (non-category I structure).

WBPEVAR 9001006

REV. # 5

APPENDIX B

SHEET B44C

PREPARED BY: J. McCarthy DATE 6-25-91

CHECKED BY: J. L. Lay DATE 7/19/91

BOARD: 1. 1-BD-237-M7 (RACK A) 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
					1G160					
6	47	1	10	15	1G161	WGM	12	✓		45N1682-2 45N1612-3
6	47	1	10	15	1G162	WGM	12	✓		45N1682-2 45N1612-4
6	47	1	10	15	1G164	WGH	12	✓		45N1682-2 45N1612-9
6	47	1	10	15	1G165	WGH	12	✓		45N1682-2 45N1612-9
6	47	1	10	15	1G167	WGH	12	✓		45N1682-2 45N1612-10
6	47	1	10	15	1G168	WGH	12	✓		45N1682-2 45N1612-10
6	47	1	10	15	1G170	WGH	12	✓		45N1682-2 45N1612-11
6	47	1	10	15	1G172	WGH	12	✓		45N1682-2 45N1686-3
6	47	1	10	15	1G173	WGB	12	✓		45N1686-3 45N1612-2
6	47	1	10	15	1G171	WGH ~~WGB~~	12	✓		45N1682-2 45N1612-11

JL 7/19/91

WBPEVAR9001006
REV. # 5

APPENDIX B

SHEET B44D

PREPARED BY: D Woody DATE 5/10/91

CHECKED BY: J. L. Ray DATE 5/10/91

BOARD: 1. 1-BD-232-M7 (RACK A) 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
					V1540					
4	25	1	10	16	V1541	WGB	12	X		45N1653-2, R(K) 45N1690-4, R(I)
					V1542	WGE	12	X		45N1653-2, R(K) 45N1630-78, R(J)
					V1543	WGB	12	X		45N1630-78, R(J)
					V1544	WGB	12	X		
					V1545	WGB	12	X		
					V1546	WGB-1	12	X		
					V1547	WGB-1	12	X		
					V1548	WGB-1	12	X		

WBPEVAR 9001006
REV. # 5

APPENDIX B

SHEET B44E

PREPARED BY: JOHNNY WOODS DATE 07-1-91
CHECKED BY: J. McCarthy DATE 7-10-91

BOARD: 1. 1-BD-237-M7-B (RACK A) 2. ______ 3. ______
4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE No.	COMPT./BKR. #/FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
					1SG40					
6	46	1	10	17	1SG46	WGD	12	✓		45N1642-4
6	46	1	10	17	1SG47	WGB	12	✓		45N1642-4

8-22-91

WBPEVAR 9001006

REV. # 5

APPENDIX B

SHEET ~~B44A~~ B44F

PREPARED BY: J. WOODS DATE 04.19.91

CHECKED BY: J. McCarthy DATE 6.20.91

BOARD: 1. 1-BD-237-M7 (RACK A) 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES/ REF. DWG.
					RM345					45N1646-3
6	90	1	10	18	RM200	WGB	12	✓		45W1620-7
6	90	1	10	18	RM201	WGB	12	✓		
6	90	1	10	18	RM204	WGB	12	✓		
6	90	1	10	18	RM215	WGB-1	12	✓		
6	90	1	10	18	RM218	WGB	12	✓		
6	90	1	10	18	RM221	WGB	12	✓		
6	90	1	10	18	RM230	WGB-1	12	✓		
6	90	1	10	18	RM233	WGB-1	12	✓		
6	90	1	10	18	RM236	WGB-1	12	✓		
6	90	1	10	18	RM245	WGB-1	12	✓		
6	90	1	10	18	RM248	WGB-1	12	✓		
6	90	1	10	18	RM251	WGB-1	12	✓		
6	90	1	10	18	RM260	WGB-1	12	✓		
6	90	1	10	18	RM263	WGB	12	✓		
6	90	1	10	18	RM266	WGB	12	✓		
6	90	1	10	18	RM275	WGB-1	12	✓		
6	90	1	10	18	RM278	WGB	12	✓		
6	90	1	10	18	RM281	WGB	12	✓		
6	90	1	10	18	RM290	WGB	12	✓		
6	90	1	10	18	RM293	WGB	12	✓		
6	90	1	10	18	RM296	WGB	12	✓		
6	90	1	10	18	RM305	WGB-1	12	✓		
6	90	1	10	18	RM328	WGB-1	12	✓		
6	90	1	10	18	RM330	WGB	12	✓		
6	90	1	10	18	RM334	WGB	12	✓		
6	90	1	10	18	RM337	WGB-1	12	✓		
6	90	1	10	18	RM348	WGB	12	✓		
6	90	1	10	18	RM352	WGB	12	✓		
6	90	1	10	18	RM362	WGB-1	12	✓		
6	90	1	10	18	RM365	WGB	12	✓		
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	12	✓		

8-22-91

SHEET: B44B G

WBPEVAR 9001006

REV. # 5

APPENDIX B

PREPARED BY: J. WOODS DATE 04·19·91

CHECKED BY: J. McCarthy DATE 6-20-91

BOARD: 1. 1-BD-237-M7 (RACK A) 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES/ REF. DWG.
6	90	1	10	18	RM380	WGB	12	✓		
6	90	1	10	18	RM383	WGB	12	✓		
6	90	1	10	18	RM387	WGB	12	✓		
6	90	1	10	18	RM388	WGB	12	✓		
6	90	1	10	18	RM395	WGB	12	✓		
6	90	1	10	18	RM398	WGB	12	✓		
6	90	1	10	18	RM402	WGB	12	✓		
6	90	1	10	18	RM403	WGB	12	✓		
6	90	1	10	18	RM410	WGB-1	12	✓		
6	90	1	10	18	RM413	WGB	12	✓		
6	90	1	10	18	RM414	WGB	12	✓		
6	90	1	10	18	RM417	WGB	12	✓		

WBPEVAR9001006
REV. # 5

APPENDIX B

SHEET B44H
PREPARED BY: JOHNNY M. WOODS DATE 04-23-91
CHECKED BY: J. McCarthy DATE 6-20-91

ARD: 1. 1-BD-237-M (RACK A) 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES/ REF. DWG.
					1G820					
6	244	1	10	19	1G833	WGB-1	12	✓		45N1646-3
6	47	1	10	19	1G851	WGB	12	✓		45N1685-3

WB.PEVAR 9001006

REV. # 5

APPENDIX B

SHEET B44I

PREPARED BY: JOHNNY M. WOODS DATE 05·28·91

CHECKED BY: J. McCarthy DATE 6·24·91

BOARD: 1. 1-BD-237-M-7 (RACK A) 2. _____ 3. _____

4. _____ 5. _____ 6. _____

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES/ REF. DWG.
					1V8688					DWG. 45N1646-3
6	7	1	10	22	1V8689	WGD	12	✓		45N16~~46-3~~12-1 45N1641-10
6	7	1	10	22	1V8692	WGB	12	✓		45N1612-1
6	7	1	10	22	1V8693	WGB	12	✓		
6	7	1	10	22	1V8694	WGB	12	✓		
6	7	1	10	22	1V8695	WGB	12	✓		
6	7	1	10	22	1V8696	WGB	12	✓		
6	7	1	10	22	1V8706	WGB	12	✓		
6	7	1	10	22	1V8707	WGB	12	✓		
6	7	1	10	22	1V8708	WGB	12	✓		
6	7	1	10	22	1V8709	WGB	12	✓		
6	7	1	10	22	1V8710	WGB	12	✓		
6	7	1	10	22	1V8745	WHB	14		✓	See Attached Sheet 44I1
6	7	1	10	22	1V8750	WHB	14		✓	See Attached Sheet 44I1

APPENDIX B

Prepared J.M. Hinds Date 7-16-91
Checked D. McCarthy Date 7-16-91

Note:

Circuit fed from compartment 22 of board 1-BD-237-M7 contains cables 1V8745 and 1V8750 (mark number WHB), which have an insulation temperature rating of 75 degrees C (DS E12.6.3). The primary protective device for this circuit is a 15A circuit breaker (Curve 10). The 15A breaker on curve 10 does not protect a #14 AWG cable rated at 75 degrees C. However, the failure of these cables will not degrade Class 1E safety related cables or equipment since they are located entirely in the Turbine Building (non-category I structure).

WBPEVAR9001006 APPENDIX B SHEET B44J

REV. # 5

PREPARED BY: JOHNNY M. WOODS DATE: 4-23-91

CHECKED BY: J. McCarthy DATE 6-24-91

BOARD: 1. 1-BD-237-M7 (RACK A) 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
					IRM165					
6	90	1	10	23	IRM475	WGB-1	#12	✓		45N1651-15 45N1651-20
6	90	1	10	23	IRM479	WGB-1	#12	✓		45N1651-20 45N1651-21

WBPEVAR 9001006
REV. # 5

APPENDIX B

SHEET B44K

PREPARED BY: JOHNNY M. WOODS DATE 05·01·91
CHECKED BY: J. McCarthy DATE 6·25·91

BOARD: 1. 1-BD-237-M7 (RACK A) 2. ______ 3. ______
4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
					1V9020					
6	6	1	10	24	1V9030	WGG	12	✓		45N1641-10 45N1630-17
6	6	1	10	24	1V9037	WGE	12	✓		45N1641-11 45N1630-16
6	6	1	10	24	1V9038	WGB	12	✓		45N1630-16
6	6	1	10	24	1V9039	WGB	12	✓		
6	6	1	10	24	1V9040	WGB	12	✓		
6	6	1	10	24	1V9021	WGB	12	✓		45N1641-11 45N1685-3
6	6	1	10	24	1V9022	WGB	12	✓		45N1685-3 ~~45N~~ 0126D3931-5
6	6	1	10	24	1V9023	WGB	12	✓		0126D3931-3 0126D4010-7
6	6	1	10	24	1V9025	WGG	12	✓		45N1685-3 45N1630-17
6	6	1	10	24	1V9031	WGB	12	✓		
6	6	1	10	24	1V9033	WGE	12	✓		
6	6	1	10	24	1V9034	WGB	12	✓		
6	6	1	10	24	1PM4712	WHD	14	✓		* CHANGES FROM #12 TO #14 AT TB 2-3J (1&7) 1-PNL-278/M2/2 |R
								GRG 11/27/91		
										DJC 12/11/91
										* SEE ~~APPENDIX G~~ |R
										ATTACHMENT M16428A

WBPEVAR9001006
REV. # 5

APPENDIX B

SHEET B44L

PREPARED BY: JOHNNY M. WOODS DATE 5-22-91
CHECKED BY: J. McCarthy DATE 6-25-91

BOARD: 1. 1-BD-237-M7 (RACK A) 2. ______ 3. ______
4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES / REF. DWG.
					1V9003					
6	6	1	10	24	1V9004	WGD	12	✓		45B1754-5C 45W1630-18
6	6	1	10	24	1V9005	WGB	12	✓		45W1630-18
6	6	1	10	24	1V9006	WGB	12	✓		
6	6	1	10	24	1V9007	WGB	12	✓		
6	6	1	10	24	1V9008	WGC	12	✓		45~~W~~B1753-5C
6	6	1	10	24	1V9009	WGC	12	✓		45B1753-5C 45B1752-5C
6	6	1	10	24	1V9011	WGD	12	✓		45B1752-5C 45W1630-18
6	6	1	10	24	1V9012	WGB	12	✓		
6	6	1	10	24	1V9013	WGB	12	✓		
6	6	1	10	24	1V9014	WGB	12	✓		

WBPEVAR 9001006 APPENDIX B 8-22-91 SHEET B44 AM

REV. # 5 PREPARED BY: JOHNNY M. WOODS DATE: 05-02-91

CHECKED BY: L. McCarthy DATE 6-26-91

BOARD: 1. 1-BD-237-M7 (RACK A) 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT./BKR. #/FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
					1V9385					
6	5	1	10	25	1V9380	WGE	12	✓		4SN1685-3 4SN1630-15
6	5	1	10	25	1V9390	WGE	12	✓		4SN1630-15
6	5	1	10	25	1V9391	WGB	12	✓		
6	5	1	10	25	1V9392	WGB	12	✓		
6	5	1	10	25	1V9393	WGB	12	✓		
6	5	1	10	25	1V9394	WGB	12	✓		
6	5	1	10	25	1V9408	WGD	12	✓		
6	5	1	10	25	1V9405	WGG	12	✓		
6	5	1	10	25	1V9412	WGB	12	✓		
6	5	1	10	25	1V9413	WGB	12	✓		
6	5	1	10	25	1V9414	WGB	12	✓		
6	5	1	10	25	1V9427	WGB	12	✓		
6	5	1	10	25	1V9428	WGB	12	✓		
6	5	1	10	25	1V9429	WGB	12	✓		
6	5	1	10	25	1V9442	WGB	12	✓		
6	5	1	10	25	1V9443	WGB	12	✓		
6	5	1	10	25	1V9444	WGB	12	✓		
6	5	1	10	25	1V9455	WGE	12	✓		
6	5	1	10	25	1V9456	WGB	12	✓		
6	5	1	10	25	1V9457	WGB	12	✓		
6	5	1	10	25	1V9458	WGB	12	✓		
6	5	1	10	25	1V9466	WGE	12	✓		
6	5	1	10	25	1V9467	WGB	12	✓		
6	5	1	10	25	1V9468	WGB	12	✓		
6	5	1	10	25	1V9469	WGB	12	✓		
6	5	1	10	25	1V9477	WGE	12	✓		
6	5	1	10	25	1V9478	WGB	12	✓		
6	5	1	10	25	1V9479	WGB	12	✓		
6	5	1	10	25	1V9480	WGB	12	✓		
6	5	1	10	25	1V9500	WHB	14		✓	SEE ATTACHED SH.
6	5	1	10	25	1V9501	WHB	14		✓	4SN 1630-40 [illegible] 5-5-91 B44P1

WBPEVAR 9001006

REV. # 5

APPENDIX B

wmg 8-22-91

SHEET B44~~B~~N

PREPARED BY: JOHNNY M. WOODS DATE 05-20-91

CHECKED BY: J. McCarthy DATE 6-26-91

BOARD: 1. 1-BD-237-M7 (RACK A) 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES / REF. DWG.
6	5	1	10	25	1V9502	WHB	14		✓	45N1630-40 SEE ATTACHED SHEET B44P1
6	5	1	10	25	1V9503	WHB	14		✓	
6	5	1	10	25	1V9508	WHB	14		✓	
6	5	1	10	25	1V9509	WHB	14		✓	
6	5	1	10	25	1V9510	WHB	14		✓	
6	5	1	10	25	1V9504	WHB	14		✓	
6	5	1	10	25	1V9505	WHB	14		✓	
6	5	1	10	25	1V9506	WHB	14		✓	
6	5	1	10	25	1V9511	WHB	14		✓	
6	5	1	10	25	1V9512	WHB	14		✓	
6	5	1	10	25	1V9513	WHB	14		✓	
6	5	1	10	25	1V9514	WHB	14		✓	
6	5	1	10	25	1V9515	WHB	14		✓	
6	5	1	10	25	1V9516	WHB	14		✓	
6	5	1	10	25	1V9404	WGH	12	✓		45W1752-2
6	5	1	10	25	1V9415	WGB	12	✓		
6	5	1	10	25	1V9416	WGB	12	✓		
6	5	1	10	25	1V9417	WGB	12	✓		
6	5	1	10	25	1V9403	WGK	12	✓		
6	5	1	10	25	1V9430	WGB	12	✓		
6	5	1	10	25	1V9431	WGB	12	✓		
6	5	1	10	25	1V9432	WGB	12	✓		
6	5	1	10	25	1V9402	WGH	12	✓		
6	5	1	10	25	1V940~~2~~0	WGK	12	✓		
6	5	1	10	25	1V9445	WGB	12	✓		
6	5	1	10	25	1V9446	WGB	12	✓		
6	5	1	10	25	1V9447	WGB	12	✓		
6	5	1	10	25	1V9401	WGG	12	✓		
6	5	1	10	25	1V9459	WGB	12	✓		
6	5	1	10	25	1V9470	WGB	12	✓		
6	5	1	10	25	1V9481	WGB	12	✓		

WBPEVAR9001006

REV. # 5

APPENDIX B

SHEET B442P

PREPARED BY: J. McCarthy DATE 6-26-91

CHECKED BY: J. L. Ray DATE 7/18/91

BOARD: 1. 1-BD-237-M7 (RACK A) 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES/ REF. DWG.
6	5	1	10	25	1V9381	WGB	12	✓		45N1630-15
6	5	1	10	25	1V9382	WGB	12	✓		↓
6	5	1	10	25	1V9383	WGB	12	✓		↓

APPENDIX B

Prepared J.M. Woods Date 7-16-91
Checked P. McCarthy Date 7-16-91

Note:

Circuit fed from compartment 25 of board 1-BD-237-M7 contains cables 1V9500 thru 1V9506, and 1V9508 thru 1V9516 (mark number WHB), which have an insulation temperature rating of 75 degrees C (DS E12.6.3). The primary protective device for this circuit is a 15A circuit breaker (Curve 10). The 15A breaker on curve 10 does not protect a #14 AWG cable rated at 75 degrees C. However, the failure of these cables will not degrade Class 1E safety related cables or equipment since they are located entirely in the Turbine Building (non-category I structure).

WBPEVAR9001006
REV. # 5

APPENDIX B

SHEET B44Q

PREPARED BY: JOHNNY M. WOODS DATE 05-02-91
CHECKED BY: J. McCarthy DATE 6-25-91

BOARD: 1. 1-BD-237-M7 (RACK A) 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES/ REF. DWG.
					V1380					
6	33	1	10	28	V1381	WGB	12	✓		45N1646-3, 45W782-1, 45N1632-10
6	33	1	10	28	V1382	WGB	12	✓		45W782-1, 45N1630-40
6	33	1	10	28	V1383	WGB	12	✓		
6	33	1	10	28	V1384	WGB	12	✓		

WBFEVAR 9001006

REV. # 5

APPENDIX B

SHEET B44R

PREPARED BY: JOHNNY M. WOODS DATE 05.02.91

CHECKED BY: J. McCarthy DATE 6-26-91

BOARD: 1. 1-BD-237-M7 (RACK A) 2. ________ 3. ________

4. ________ 5. ________ 6. ________

GROUP	SYS.	BOARD REF. #	CURVE No.	COMPT. BKR. #/ FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES / REF. DWG.
					1SG340					
6		1	10	30	1SG341	WGB	12	✓		45W1614-4 45W1630-75
6		1	10	30	1SG342	WGB	12	✓		
6		1	10	30	1SG343	WGB	12	✓		45W1614-8 45W1614-4
6		1	10	30	1SG344	WGB	12	✓		45W1614-8 45W1630-75
6		1	10	30	1SG345	WGB	12	✓		

WBPEVAR 9001006

REV. # 5

APPENDIX B

SHEET B445

PREPARED BY: JOHNNY WOODS DATE 05-02-91

CHECKED BY: J. McCarthy DATE 7-10-91

BOARD: 1. 1-BD-237-M7-A (RACK A) 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE No.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
					RM316					
6	90	1	10	31	RM315	WGB-1	12	✓		45N1646-3
6	90	1	10	31	RM319	WGB-1	12	✓		45W1620-10
6	90	1	10	31	RM320	WGB-1	12	✓		55W1378-49
6	90	1	10	31	RM321	WGB-1	12	✓		45W1620-18
6	90	1	10	31	RM322	WGB-1	12	✓		
6	90	1	10	31	RM317	WHC-1	14	✓		

COMPUTED: Wom DATE 1-31-90
CHECKED: JCButler DATE 2-1-90

BOARD: 1. 1-BD-237-M7 2. ______ 3. ______
~~4.~~ INST PWR B RACK 5. ______ 6. ______
JCB 2-1-90
Wom 1-31-90

BOARD REF #	CURVE NO.	COMPT/BKR #/FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/REF.
1	6	1	1RR220	WDE-1	6	✓		45N1646-4 (R3)
	6	2	1RM162	WDF	4	✓		
	-	3	SPARE	-	-			
	7	4	1NM815	WDD-1	8	✓		
	-	5	SPARE	-	-			
	8	6	1G640	WDD-1	8	✓		
	-	7	SPARE	-	-			
	9	8	RM532	WFB	10	✓		
	9	9	M15	WFB	10	✓		
	-	10	SPARE	-	-			
	10	11	M161	WGB	12	✓		
	10	12	SG40	WGB	12	✓		
	10	13	1G800	WGB	12	✓		
	-	14	SPARE	-	-			
	10	15	1FE60	WGB	12	✓		
	10	16	1V720	WGB	12	✓		
	10	17	1SG60	WGB	12	✓		
	10	18	1M1261	WGB	12	✓		
	10	19	1M1260	WGB	12	✓		
	10	20	R25	WGB	12	✓		
	10	21	1NM1270	WGB-1	12	✓		
	10	22	1M1500	WGB	12	✓		
	10	23	V1480	WGB	12	✓		
	10	24	M220	WGB-1	12	✓		
	10	25	SG22	WGB-1	12	✓		
	-	26	SPARE	-	-			
	10	27	1M1515	WGB	12	✓		
	10	28	1V680	WGB	12	✓		
	-	29	SPARE	-	-			
	-	30	↓	-	-			
	-	31	↓	-	-			
	-	32	↓	-	-			

wygd 8-22-91 B45A

SHEET ~~B45~~

WBPEVAR 9001006

REV. # 5

APPENDIX B

PREPARED BY: Curtis [illegible] DATE 7-8-91

CHECKED BY: J. McCarthy DATE 2-11-91

BOARD: 1. 1-BD-237-M7 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT./BKR.#/FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES/REF. DWG.
		DJC 9-5-91		~~4~~	1NM815					
6	94	~~1-M-18~~	7	4	1NM764	WPA	14	✓	~~X~~	45N1622-1 ▲
					1NM765	WGD	12	✓	~~X~~	▲
					1NM783	WPA	14	✓	~~X~~	▲
					1NM784	WPA	14	✓	~~X~~	DJC 12-5-91 ▲
					1NM786	WPA	14	✓	~~X~~	▲
					1NM807	WPB	12	✓	~~X~~	▲
					1NM808	WGK	12	✓	~~X~~	▲

~~▲ SEE APPENDIX G~~ DJC 12-5-91

▲ DWG 45N1655-1, REV D, NOTE 2 IDENTIFIES THAT A 10 AMP FUSE IS TO BE INSTALLED.

WBPEVAR9001006 APPENDIX B SHEET B45B

REV. # 5

PREPARED BY: Curtis Turner DATE 7-8-91

CHECKED BY: J. McCarthy DATE 7-10-91

BOARD: 1. 1-BD-237-M7 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
					1G640					
6	47	1	8	6	1G641	WGD	12		X	45N1600-2
6	47	1	8	6	1G642	WHB-1	14		X	"

* SEE SH. B45B1 & B45B2 FOR EXPLANATION

WJG 9-4-91

APPENDIX B

Prepared C. [illegible] Date 7-8-91
Checked J. McCarthy Date 7-10-91

Note:

Circuit fed from compartment 6 of board 1-BD-237-M7 contains cable 1G641 (mark number WGD), which has a insulation temperature rating of 75 degrees C (DS E12.6.3). The primary protective device for this circuit is a 15A circuit breaker (Curve 8). The 15A breaker on curve 8 does not protect a #12 AWG cable rated at 75 degrees C. However, the failure of these cables will not degrade Class 1E safety related cables or equipment since they are located entirely in the Turbine Building (non-category I structure).

3483q

WBPEVAR9001006

Lwgl 8-22-91

Sheet B45 B2

APPENDIX B

Prepared C. Turner Date 7-8-91
Checked J. McCarthy Date ~~7-~~ 7-10-91

Note:

Circuit fed from compartment 6 of board 1-BD-237-M7 contains cable 1G642 (mark number WHB-1), which has a insulation temperature rating of 90 degrees C (DS E12.6.3). The primary protective device for this circuit is a 15A circuit breaker (Curve 8). The 15A breaker on curve 8 does not protect a #14 AWG cable rated at 90 degrees C. However, the failure of these cables will not degrade Class 1E safety related cables or equipment since they are located entirely in the Turbine Building (non-category I structure).

3483q

WBPEVAR 9001006 APPENDIX B

REV. # 5

8-22-91

SHEET B45AC

PREPARED BY: J. M. WOODS DATE 6.14.91

CHECKED BY: J. McCarthy DATE 7-8-91

BOARD: 1. 1-BD-237-M7/B 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
					RM532					45N1646-4
6	90	1	9	8	RM430	WFB	10	✓		45W1620-5
6	90	1	9	8	RM533	WFB	10	✓		45W1620-6
6	90	1	9	8	RM488	WFB	10	✓		45W1620-9
6	90	1	9	8	RM489	WFB	10	✓		45W1620-11
6	90	1	9	8	RM534	WFB	10	✓		45W1620-13
6	90	1	9	8	RM468	WFB	10	✓		
6	90	1	9	8	RM460	WFB	10	✓		
6	90	1	9	8	RM431	WFB	10	✓		
6	90	1	9	8	RM526	WFB	10	✓		
6	90	1	9	8	RM600	WFB	10	✓		
6	90	1	9	8	RM601	WFB	10	✓		
6	90	1	9	8	RM492	WFB	10	✓		
6	90	1	9	8	RM493	WFB	10	✓		
6	90	1	9	8	RM466	WFB	10	✓		
6	90	1	9	8	RM467	WFB	10	✓		
6	90	1	9	8	RM606	WFB	10	✓		
6	90	1	9	8	RM611	WFB	10	✓		
6	90	1	9	8	RM470	WFB	10	✓		
6	90	1	9	8	RM471	WFB	10	✓		
6	90	1	9	8	RM620	WFB-1	10	✓		
6	90	1	9	8	RM607	WFB	10	✓		
6	90	1	9	8	RM608	WFB	10	✓		
6	90	1	9	8	RM645	WGB-1	12	✓		
6	90	1	9	8	RM612	WFB	10	✓		
6	90	1	9	8	RM622	WFB	10	✓		
6	90	1	9	8	RM621	WFB	10	✓		
6	90	1	9	8	RM623	WFB	10	✓		
6	90	1	9	8	RM624	WFB	10	✓		
6	90	1	9	8	RM625	WFB	10	✓		
6	90	1	9	8	RM461	WFB	10	✓		
6	90	1	9	8	RM464	WFB	10	✓		

WBPEVAR 9001006
REV. # 5

APPENDIX B

wy8/ 8-22-91 D
SHEET B45~~8~~
PREPARED BY: J.M. WOODS DATE 6·14·91
CHECKED BY: J. McCarthy DATE 7·8·91

BOARD: 1. 1-BD-237-M7/B 2. ______ 3. ______
4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE No.	COMPT. BKR. #/ FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES / REF. DWG. wy8/ 9-4-91
6	90	1	9	8	RM465	WFB	10	✓		SEE Pg. ~~A~~C
6	90	1	9	8	RM480	WFB	10	✓		
6	90	1	9	8	RM582	WFB	10	✓		
6	90	1	9	8	RM481	WFB	10	✓		
6	90	1	9	8	RM484	WFC	10	✓		
6	90	1	9	8	RM485	WFB	10	✓		
6	90	1	9	8	RM486	WFB-1	10	✓		
6	90	1	9	8	RM469	WFB	10	✓		
6	90	1	9	8	RM472	WFB	10	✓		
6	90	1	9	8	RM473	WFB	10	✓		
6	90	1	9	8	RM476	WFB	10	✓		
6	90	1	9	8	RM477	WFB	10	✓		
6	90	1	9	8	RM578	WFB	10	✓		
6	90	1	9	8	RM527	WFB	10	✓		
6	90	1	9	8	RM528	WFB	10	✓		
6	90	1	9	8	RM19	WFC	10	✓		
6	90	1	9	8	RM602	WFB	10	✓		
6	90	1	9	8	RM603	WFB	10	✓		
6	90	1	9	8	RM640	WGB-1	12	✓		
6	90	1	9	8	RM535	WFB	10	✓		
6	90	1	9	8	RM496	WFB	10	✓		
6	90	1	9	8	RM497	WFB	10	✓		
6	90	1	9	8	RM498	WFB	10	✓		
6	90	1	9	8	RM513	WFB	10	✓		
6	90	1	9	8	RM514	WFB	10	✓		
6	90	1	9	8	RM515	WFB-1	10	✓		
6	90	1	9	8	RM448	WFB	10	✓		
6	90	1	9	8	RM424	WFB ~~WB~~	10	✓		
6	90	1	9	8	RM425	WFB	10	✓		
6	90	1	9	8	RM521	WFB	10	✓		
6	90	1	9	8	RM522	WFB	10	✓		
6	90	1	9	8	RM523	WFB	10	✓		

WBPEVAR 9001006
REV. # 5

APPENDIX B

wmw 8-22-91
SHEET B45 E&

PREPARED BY: J. M. WOODS DATE 6-14-9

CHECKED BY: J. McCarthy DATE 2-8-91

BOARD: 1. 1-BD-237-M7/B 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES / REF. DWG. wmw 9-4-91
6	90	1	9	8	RM444	WFB	10	✓		SEE Pg. ~~A~~ C
6	90	1	9	8	RM445	WFB	10	✓		
6	90	1	9	8	RM440	WFB	10	✓		
6	90	1	9	8	RM441	WFB	10	✓		
6	90	1	9	8	RM436	WFB	10	✓		
6	90	1	9	8	RM437	WFB	10	✓		
6	90	1	9	8	RM449	WFB	10	✓		
6	90	1	9	8	RM456	WFB	10	✓		
6	90	1	9	8	RM457	WFB	10	✓		
6	90	1	9	8	RM452	WFB	10	✓		
6	90	1	9	8	RM453	WFB	10	✓		
6	90	1	9	8	RM502	WFB	10	✓		
6	90	1	9	8	RM503	WFB	10	✓		
6	90	1	9	8	RM504	WFB	10	✓		
6	90	1	9	8	RM517	WFB	10	✓		
6	90	1	9	8	RM518	WFB	10	✓		
6	90	1	9	8	RM428	WFB	10	✓		
6	90	1	9	8	RM429	WFB	10	✓		
6	90	1	9	8	RM432	WFB	10	✓		
6	90	1	9	8	RM433	WFB	10	✓		
6	90	1	9	8	RM508	WFB	10	✓		
6	90	1	9	8	RM509	WFB	10	✓		
6	90	1	9	8	RM510	WFB	10	✓		
6	90	1	9	8	RM420	WFB	10	✓		
6	90	1	9	8	RM421	WFB	10	✓		
6	90	1	9	8	RM577	WGB-1	12	✓		
6	90	1	9	8	RM581	WGB-1	12	✓		

WBPEVAR 9001006 APPENDIX B SHEET B45F

REV. # 5

PREPARED BY: Curtis Firms DATE 6-31-91

CHECKED BY: J. McCarthy DATE 2-10-91

BOARD: 1. 1-BD-237-M7 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
					M161					
6	253	1	9	11	M164	WGB	12	X		55W1390
6	253	1	9	11	M165	WGB-1	12	X		〃
6	253	1	9	11	M168	WGB-1	12	X		〃

WBPEVAR9001006 APPENDIX B SHEET B45G

REV. # 5

PREPARED BY: D. Woods DATE 4/29/91

CHECKED BY: [signature] DATE 5/10/91

BOARD: 1. 1-RD-237-M7 2. 0-PNL-12-L333/A 3. ____

4. ____ 5. ____ 6. ____

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES / REF. DWG.
					SG 40					
4	18	1	10	12	SG 41	WGB	12	X		45W784-1, R/7
↓	↓	↓	↓	↓	SG 43	WGB	12	X		45W784-1, R/7
↓	↓	↓	↓	↓	SG 44	WGC	12	X		45W784-1, R17
6	12	2	10	12	SG 51	WGB	12	X		45W784-2, R14
6	12	2	10	12	SG64	WGB	12	X		↓
										45N1635-39
										45N1635-96

WBPEVAR 9001006 APPENDIX B SHEET B45H

REV. # 5

PREPARED BY: J. M. WOODS DATE 6·17·91

CHECKED BY: J. McCarthy DATE 7·2·91

BOARD: 1. 1-BD-237-M7/B 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
					1G800					
6	35	1	10	13	1G804	WGB	12	✓		45N16~~46~~04-~~4~~1 JMW 6-17 45N1635-27
6	35	1	10	13	1G810	WGB-1	12	✓		45N1635-27 45N1635-29
6	35	1	10	13	1G813	WGB-1	12	✓		45N1635-29 45N1635-43
6	35	1	10	13	1G855	WGB-1	12	✓		
6	35	1	10	13	1G816	WGB	12	✓		45N1604-1 45N1635-43
6	35	1	10	13	1G840	WGB	12	✓		45N1635-43 45N1635-53
6	35	1	10	13	1G760	WGB	12	✓		45N1604-1 45N1604-1
~~6~~	~~35~~	~~1~~	~~10~~	~~13~~	~~1G761~~ gmw 6·18·91					
6	2	1	10	13	1M1509	WGB	12	✓		45N1604-1 45N1635-43

WBPEVAR9001006

REV. # 5

APPENDIX B

SHEET B45I

PREPARED BY: [signature] DATE 6-27-91

CHECKED BY: J. McCarthy DATE 6-27-91

BOARD: 1. 1-BD-237-M7 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE No.	CCMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
					IFE 60					
4	26	1	10	15	V 997	WHB-1	14	X		45N1694-3
4	26	1	10	15	V 1022	WHB-1	14	X		45N1686-4
										45N1687-3
										NOTE:
										CABLES V997 AND
										V1022 ARE PROTECTED
										BY 5A FUSES AS WELL
										AS ANY DOWNSTREAM
										CABLES

WBPEVAR9001006 APPENDIX B

wmgj 8-22-91

SHEET B45~~A~~J

REV. # ~~8~~ 5 LMG 1-9-91

PREPARED BY: D. Woods DATE 12/20/90

CHECKED BY: L. MacGirvin DATE 1-3-91

BOARD: 1. Panel 1-M-7 INSTR. PWR. B RACK 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
2C	15	1	10	16	1V 720	WGB	12	X		45N1686-4 R/W 45N1646-4 R/U
					1V 721	WGG	12	*		45N1686-4 R/W / 45N1630-75 R/E
					1V 722	WGB	12	X		45N1630-75 R/E
					1V 723	WGB	12	X		
					1V 724	WGB	12	X		
					1V 725	WGB	12	X		
					1V 726	WGB	12	X		
					1V 727	WGB	12	X		
					1V 4140	WGG	12	*		45N1686-4 R/W / 45N1630-75 R/E
					1V 4141	WGB_1	12	X		45N1630-75 R/E
					1V 4142	WGB_1	12	X		
					1V 4143	WGB_1	12	X		
					1V 4144	WGB_1	12	X		
					1V 8643	WGB_1	12	X		45N1630-75 R/E / 45N1635-53 R/D
					1V 8644	WGB_1	12	X		45N1635-53 R/D / 451635-66 R/AA

wmgj 9-4-91

~~* Ref. QIR LCCWB N90058, R0~~

wmgj 9-4-91

WBPEVAR9001006 APPENDIX B SHEET B45K

REV. # 5

PREPARED BY: J. M. WOODS DATE 6·21·91

CHECKED BY: J. McCarthy DATE 7-8-91

BOARD: 1. 1-BD-237-M7/B 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES/ REF. DWG.
					1SG60					
6	46	1	10	17	1SG66	WGD	12	✓		45N1642-3 45W1614-6
6	46	1	10	17	1SG67	WGB	12	✓		45N1642-3 45W1614-5

WBPEVAR9001006

REV. # 5

APPENDIX B

SHEET B45L

PREPARED BY: Curtis Turner DATE 7-1-91

CHECKED BY: J. McCarthy DATE 7-2-91

BOARD: 1. 1-BD-237-M7 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
					1M1500					
6	6	-	10		1M1501	WGB	12	✓		45N1635-42
	2				1M1502			✓		"
	2				1M1503			✓		45N1635-27
	2				1M1504			✓		"
	6				1M1505			✓		"
	6				1M1506			✓		45N1635-53
	36				1M1510			✓		45N1635-42
	2				1M1497	WGB-1		✓		45N1635-53
	43				1M2280			✓		45N1635-35
	43				1M2281			✓		45N1632-8

WBPEVAR9001006
REV. # 5

APPENDIX B

SHEET B45M

PREPARED BY: Curtis Turner DATE 6-26-91

CHECKED BY: J. McCarthy DATE 7-8-91

BOARD: 1. 1-BD-237-M7 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/ REF. DWG.
					V1480					
6	29	1	10	23	V1481	WGD	12	✓	✓	45N1687-4
					V1482	WGC		✓	✓	45N1630-33
					V1483	WGB		✓	✓	
					V1484	WGC		✓	✓	
					V1485	WGB		✓	✓	
					V1486			✓	✓	
					V1487			✓	✓	
									DAC 9.5.91	

[illegible] 8-22-91 N

WBPEVAR9001006 APPENDIX B SHEET B458

REV. # 5

PREPARED BY: Curtis Turner DATE 7-8-91

CHECKED BY: J. McCarthy DATE 7-10-91

BOARD: 1. 1-BD-237-M7 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
					M220					
6	40	1	10	24	M112	WGD	12	X		45W1632-7
					M113			X		
					M114			X		
					M115			X		
					M116			X		
					M117			X		
					M118			X		
					M119			X		
					M120			X		
					M121			X		
					M122			X		
					M123			X		
					M124			X		
					M125			X		
					M126			X		
					M127			X		
					M128			X		
					M129			X		
					M130			X		
					M131			X		
					M132			X		
					M133			X		
					M134			X		
					M135			X		
					M136			X		
					M137			X		
					M138			X		
					M139			X		
					M140			X		
					M141	WGE		X		
					M142	WPA	14			

WBPEVAR9001006
REV. # 5

APPENDIX B

wyg 8-22-91
SHEET B458P

PREPARED BY: Curtis Turner DATE 7-8-91
CHECKED BY: J. McCarthy DATE 7-10-91

BOARD: 1. 1-BD-237-M7 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES / REF. DWG.
					M220					
6	40	1	10	24	M221	WGD	12	X		45W1632-7
					M222					
					M223					
					M224					
					M225					
					M226					
					M227					
					M228					
					M229					
					M230					
					M231					
					M232					
					M233					
					M234					
					M235					
					M236					
					M237					
					M238					
					M239					
					M100					
					M101					
					M102					
					M103					
					M104					
					M105					
					M106					
					M107					
					M108					
					M109					
					M110					
					M111					

WBPEVAR 9001006 APPENDIX B

REV. # 5

wygs 8-22-91 Q

SHEET B458

PREPARED BY: Curtis [illegible] DATE 7-8-91

CHECKED BY: J. McCarthy DATE 7-10-91

BOARD: 1. 1-BD-237-M7 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
					M220					45W1632-7
6	40	1	10	24	M143	WPA	14	X		
					M144	WPA	14	X		
					M146	WGC-1	12	X		
					M147	WGC-1	12	X		
					M150	WGE	12	X		
					M151	WPA	14	X		
					M152	WPA	14	X		
					M153	WPA	14	X		
6	40		10		M148	WHC	14		X	*
6	40		10		M149	WHC	14		X	*

DJC 9-4-91

* SEE SH B45AQ1 FOR EXPLANATION

WBPEVAR9001006

lyg 8-22-91

Sheet B45AQ1

APPENDIX B

Prepared C. Turner Date 7-8-91
Checked J. McCarthy Date 7-10-91

Note:

Circuit fed from compartment 24 of board 1-BD-237-M7 contains cable M148 + M149 (mark number WHC), which has a insulation temperature rating of 75 degrees C (DS E12.6.3). The primary protective device for this circuit is a 15A circuit breaker (Curve 10). The 15A breaker on curve 10 does not protect a #14 AWG cable rated at 75 degrees C. However, the failure of these cables will not degrade Class 1E safety related cables or equipment since they are located entirely in the Turbine Building (non-category I structure).

3483q

WBPEVAR 9001006
REV. # 5

APPENDIX B

SHEET B45R

PREPARED BY: Curtis [signature] DATE 6-28-91
CHECKED BY: J. McCarthy DATE 7-2-91

BOARD: 1. 1-BD-237-M7 2. ______ 3. ______
4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/ REF. DWG.
					SG22					
6	12	1	10	25	SG23	WJH	12	X		45W785-1
					SG27	WGD		X		
					SG28	WGB		X		
					SG29	WGB-1		X		
					SG30	WGB		X		
					SG32	WJG	14	X		
					SG33	WGB	12	X		
	18				SG34	WGB-1		X		
	12				SG35	WGD		X		
	18				SG36	WGB-1		X		
	12				SG37	WGB-1		X		

WBPEVAR9001006
REV. # 5

APPENDIX B

SHEET B455

PREPARED BY: Curtis Turner DATE 6-25-91
CHECKED BY: J. McCarthy DATE 7-2-91

BOARD: 1. 1-BD-237-M7 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES / REF. DWG.
					1V680					
6	24	1	10	28	1V681	WGE	12	✓		45N1653-2
↓	↓	↓	↓	↓	1V682	WGB-1	↓	✓		35W730-1
					1V683	↓		✓		↓
					1V684			✓		
					1V685			✓		

COMPUTED Wom DATE 1-31-90
CHECKED JCButler DATE 1-31-90

BOARD: 1. 2-BO-227-M7 2. ______ 3. ______
~~4.~~ INSTR PWR A RACK 5. ______ 6. ______

JCB 1-31-90
wom 1-31-90

BOARD REF #	CURVE NO.	COMPT/BKR #/FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/REF.
1	-	1	SPARE					45N2646-3 R3
	-	2	SPARE					
	7	3	2A4660	WDF	4	✓		
	-	4	SPARE					
	-	5						
	-	6						
	-	7						
	-	8						
	-	9						
	9	10	2V8820	WFB	10	✓		
	10	11	0A855	WGB	12	✓		
	10	12	M905	WGB-1	12	✓		
	-	13	SPARE	-	-			
	10	14	2G875	WGB	12	✓		
	10	15	2G160	WGB	12	✓		
	-	16	SPARE	-	-			
	10	17	2SG40	WGB	12	✓		
	-	18	SPARE	-	-			
	10	19	2G820	WGB	12	✓		
	10	20	2G440	WGB	12	✓		
	10	21	2G320	WGB	12	✓		
	10	22	2V8688	WGB	12	✓		
	10	23	2RM165	WGB	12	✓		
	10	24	2V9020/2V9003	WGB/WGB	12/12	✓		
	10	25	2V9385	WGB	12	✓		
	-	26	SPARE	-	-			
	10	27	2RM166	WGB	12	✓		
	-	28	SPARE	-	-			
	-	29	SPARE	-	-			
	10	30	2SG340	WGB	12	✓		
	-	31	SPARE	-	-			
	-	32	SPARE	-	-			

WBPEVAR9001006

REV. # 5

APPENDIX B

PREPARED BY: D. Woods DATE 4/17/91

CHECKED BY: J. McCarthy DATE 4/22/91

SHEET B46A

BOARD: 1. 237-2-BD-M7A (RACK A) 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES/ REF. DWG.
					M905					
4	77	1	10	12	M909	WGB-1	12	X		45N1630-101 R/F
↓	↓	1	↓	↓	M915	WGB-1	12	X		↓

WBPEVAR 9001006

APPENDIX B

SHEET B46B

REV. # 5

PREPARED BY: [signature] DATE 5/3/91

CHECKED BY: J. McCarthy DATE 5/14/91

RACK A

BOARD: 1. Z-BD-237-M7 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	CMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES/ REF. DWG.
					ZG160					
6	47	1	10	15	ZG161	WGM	12	X		45N2682-2 45N2612-3
					ZG162					45N2682-2 45N2612-4
					ZG164	WGH				45N2682-2 45N2612-9
					ZG165					45N2682-2 45N2612-9
					ZG167					45N2682-2 45N2612-10
					ZG168					45N2682-2 45N2612-10
					ZG170					45N2682-2 45N2612-11
					ZG171					45N2682-2 45N2612-11
					ZG172					45N2682-2 45N2686-3
					ZG173	WGB				45N2612-2 45N2686-3

WBPEVAR 9001006

REV. # 5

APPENDIX B

SHEET B46C

PREPARED BY: [signature] DATE 5/6/91

CHECKED BY: J. McCarthy DATE 5/13/91

RACK A

BOARD: 1. Z-BD-237-M7 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
					ZG820					
6	244	1	10	19	ZG833	WGB-1	12	X		45N2685-3 45W2610-1
6	47	1	10	19	ZG851	WGB	12	X		45N2600-2 45N2685-3

WBPEVAR 9001006

REV. # 5

Z-BD-237-M7

APPENDIX B

PREPARED BY: [signature] DATE 5/6/91

CHECKED BY: J. McCarthy DATE 5/13/91

SHEET B46D

BOARD: 1. RACK A 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
					ZV8688					
6	7	1	10	22	ZV8689	WGD	12	X		45N2641-10 45N2612-1
					ZV8692	WGB				45N2612-1
					ZV8693					
					ZV8694					
					ZV8695					
					ZV8696					45N2612-1 45N2635-80
					ZV8706					45N2612-1
					ZV8707					
					ZV8708					
					ZV8709					
					ZV8710					
					ZV8745					
					ZV8750					45N2612-1 45N2612-2

WBPEVAR 9001006

REV #: 5

APPENDIX B

SHEET B46E

PREPARED BY: [illegible] DATE 5/1/91

CHECKED BY: J. McCarthy DATE 5/8/91

PANEL 2-M-7

BOARD: 1. RACK A- 2BD-237-M7 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
					ZRM165					
6	90	1	10	23	ZRM475	WGB-1	12	X		45N1651-14 45W2651-5
6	90	1	10	23	ZRM479	WGB-1	12	X		45W2651-5 45W2651-6

WBPEVAR 9001006

REV. # 5

Z-BD-237-M7

APPENDIX B

PREPARED BY Jeff Ball DATE 3/25/[illegible]

CHECKED BY: J. McCarthy DATE 5/[illegible]

SHEET B4 OF

BOARD: 1. RACK A 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
					ZV9020					
6	6	1	10	24	ZV9021	WGB	12	X		45N2641-11 45N2685-3
					ZV9022					45N2685-3 0126D4622-5
					ZV9025					45N2685-3 45N2630-17
					ZV9026					45N2630-17
					ZV9027					45N2630-17 45N2635-53
					ZV9030					45N2641-10 45N2630-17
					ZV9031					45N2630-17
					ZV9033					
					ZV9034					
					ZV9037					45N2641-11 45N2630-16
					ZV9038					45N2630-16
					ZV9039					
					ZV9040					
					ZPM4712	WHD-1	14			45W2642-6 45N2641-11

WBPEVAR9001006 APPENDIX B SHEET B46G

REV. # 5

RACK A

PREPARED BY: [signature] DATE 3/26/91

CHECKED BY: J. McCarthy DATE 5/8/91

BOARD: 1. Z-BD-237-M7 2. ____ 3. ____

4. ____ 5. ____ 6. ____

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES/ REF. DWG.
					ZV9003					
6	6	1	10	24	ZV9004	WGB	12	X		45B-2754-5C 45N-2630-18
					ZV9005					45N2630-18
					ZV9006					
					ZV9007					
					ZV9008					45N2630-18 45B2753-5C
					ZV9009	WGC				45B2753-5C
					ZV9011	WGD				45B2753-5C 45N2630-18
					ZV9012	WGB				45N2630-18
					ZV9013					
					ZV9014					

PEVAR 9001006

REV. # 5

Z-BD-237-M7

APPENDIX B

SHEET B46H

PREPARED BY: [signature] DATE 3/29/91

CHECKED BY: J. McCarthy DATE 5/9/91

BOARD: 1. RACK A 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/ REF. DWG.
					ZV9385					45N2685-3
6	5	1	10	25	ZV9380	WGE	12	X		45N2630-15
					ZV9381	WGB				45N2630-15
					ZV9382					
					ZV9383					
					ZV9390	WGE				
					ZV9391	WGR				
					ZV9392					45N2630-15
					ZV9394					45N2612-2
					ZV9400	WGK				45W2752-2 45B2752-5C
					ZV9401	WGG				45W2752-2 45B2752-5C
					ZV9402	WGH				45W2752-2
					ZV9403	WGK				
					ZV9404	WGH				45N2630-15
					ZV9405	WGG				45W2752-2
					ZV9408	WGD				45N2630-15
					ZV9412	WGB				
					ZV9413					
					ZV9414					
					ZV9415					45W2752-3 45W2752-2
					ZV9416					45W2752-3 45W2752-2
					ZV9417					45W2752-3 45W2752-2
					ZV9427					45N2630-15
					ZV9428					
					ZV9429					
					ZV9430					45W2752-3 45W2752-2
					ZV9431					45W2752-3 45W2752-2
					ZV9432	WGB-1				45W2752-3 45W2752-2
					ZV9442	WGB				45N2630-15
					ZV9443					

VBPEVAR 9001006
REV. # 5
2-BD-237-M7

APPENDIX B

SHEET B40 I

PREPARED BY [signature] DATE 3/29/91
CHECKED BY [signature] DATE 5/9/91

BOARD: 1. RACK A 2. ______ 3. ______
4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/ REF. DWG.
					ZV9385					
6	5	1	10	25	ZV9444	WGB	12	X		45N2630-15
					ZV9446					45W2752-3 45W2752-2
					ZV9447					45W2752-3 45W2752-2
					ZV9455	WGE				45N2630-15 45W2752-2
					ZV9456	WGB				45N2630-15
					ZV9457					
					ZV9458					
					ZV9459					45W2752-2 45W2752-4
					ZV9466	WGE				45W2752-2 45N2630-15
					ZV9467	WGB				45N2630-15
					ZV9468					
					ZV9469					
					ZV9470					45W2752-2 45W2752-2
					ZV9477	WGE				45N2630-15 45W2752-2
					ZV9478	WGB				45N2630-15
					ZV9479					
					ZV9480					
					ZV9481					45W2752-2 45W2752-4
					ZV9500	WHB	14		X	45N2630-15 45N2630-40 SEE SHEET B46-J1
					ZV9501					45N2630-40
					ZV9502					
					ZV9503					
					ZV9504					
					ZV9505					
					ZV9506					
					ZV9508					
					ZV9509					
					ZV9510					
					ZV9511					

WBPEVAR 9001006

APPENDIX B

SHEET B46J

PREPARED BY [signature] DATE 3/29/91

CHECKED BY [signature] DATE 5/9/91

T #: 5

2-BD-237-M7

BOARD: 1. RACK A   2. ______   3. ______

4. ______   5. ______   6. ______

GROUP	SYS.	BOARD REF. #	CURVE No.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES/ REF. DWG.
					ZV9385					
6	5	1	10	25	ZV9512	WHB	14		X	45N2630-40 SEE SHEET B46J1
					ZV9513					
					ZV9514					
					ZV4515					
					ZV4516					

APPENDIX B

Prepared [signature] Date 4-30-91
Checked [signature] Date 5/9/91

Note:

Circuit fed from compartment 25 of board 2-BD-237-M7 contains cables 2V9500 thru 2V9506, and 2V9508 thru 2V9516 (mark number WHB), which have an insulation temperature rating of 75 degrees C (DS E12.6.3). The primary protective device for this circuit is a 15A circuit breaker (Curve 10). The 15A breaker on curve 10 does not protect a #14 AWG cable rated at 75 degrees C. However, the failure of these cables will not degrade Class 1E safety related cables or equipment since they are located entirely in the Turbine Building (non-category I structure).

WBPEVAR 9001006 APPENDIX B SHEET B 46K

REV. # 5 PREPARED BY: Jeff Ball DATE 4/24/91

Z-BD-237-MJ CHECKED BY: J. McCarthy DATE 5/2/91

BOARD: 1. RACK A 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
					2SG340					
6	3	1	10	30	2SG341	WGB	12	X		45W 2614-4 45N 2630-75
↓	↓	↓	↓	↓	2SG342	↓	↓	X		45W 2614-4 45N 2630-75
↓	↓	↓	↓	↓	2SG343	↓	↓	X		45W 2614-4 45W 2614-8
↓	↓	↓	↓	↓	2SG344	↓	↓	X		45W 2614-8 45N 2630-75
↓	↓	↓	↓	↓	2SG345	↓	↓	X		45W 2614-8 45N 2630-75

WBPEVAR9001006

COMPUTED WOM DATE 1-31-90
CHECKED JCButler DATE 1-31-90

BOARD: 1. 2-BD-237-M7 2. ______ 3. ______
WOM 1-31-90 JCB 1-31-90 ~~4.~~ INSTR PWR B RACK 5. ______ 6. ______

BOARD REF #	CURVE NO.	COMPT/BKR #/FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/REF.
1	6	1	2RR220	WDE-1	6	✓		45N2646-A (R2)
	6	2	2RM162	WDF	4	✓		
	–	3	SPARE	–	–			
	7	4	2NM815	WDD-1	8	✓		
	–	5	SPARE	–	–			
	8	6	2G640	WDD-1	8	✓		
	–	7	SPARE	–	–			
	–	8						
	–	9						
	–	10						
	–	11						
	–	12						
	10	13	2G800	WGB	12	✓		
	–	14	SPARE	–	–			
	10	15	2FE60	WGB	12	✓		
	10	16	2V720	WGB	12	✓		
	10	17	2SG60	WGB	12	✓		
	10	18	2M1261	WGB-1	12	✓		
	10	19	2M1260	WGB	12	✓		
	–	20	SPARE	–	–			
	10	21	2NM1270	WGB	12	✓		
	10	22	2M1500	WGB	12	✓		
	–	23	SPARE	–	–			
	–	24		–	–			
	–	25		–	–			
	–	26		–	–			
	–	27		–	–			
	10	28	2V680	WGB	12	✓		
	–	29	SPARE	–	–			
	–	30		–	–			
	–	31		–	–			
	–	32		–	–			

WBPEVAR9001006 APPENDIX B SHEET B47A

REV. # 5

PREPARED BY: [signature] DATE 5/13/91

CHECKED BY: [signature] DATE 5/14/91

BOARD: 1. 2-BD-237-M7 (RACK B) 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
					2RR220					
6	85	1	6	1	2RR222	WDE-1	6	X		45N2674-2 KD-0092-2 SH.2

WBPEVAR9001006 APPENDIX B SHEET B47B

REV. # 5

PREPARED BY: Jeff Ball DATE 5/13/91

CHECKED BY: J. McCarthy DATE 5/14/91

RACK B

BOARD: 1. 2-BD-237-M7 2. ____ 3. ____

4. ____ 5. ____ 6. ____

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
					ZG800					
6	35	1	10	13	ZG760	WGB	12	X		45N2604-1
↓	↓	↓	↓	↓	ZG761	WGH-1	↓	↓		45N2604-1 45N2650
					ZG804	WGB				45N2604-1 45N2635-27
					ZG810	↓				46N2635-27 45N2635-29
					ZG813	↓				45N2635-29 45N2635-43
					ZG816	WGB-1				45N2604-1 45N2635-43
					ZG840	WGB				45N2635-43 45N2635-53
↓	↓	↓	↓	↓	ZG855	WGB-1	↓	↓		45N2635-43 45N2635-66

WBPEVAR9001006 APPENDIX B [illegible]10-22-91 ~~B47C~~ SHEET ~~B47A~~

REV. # ~~4~~ 5 LMG 1-9-91

PREPARED BY: D. Woods DATE 12/22/9

CHECKED BY: L. MacQuinn DATE 1-4-91

BOARD: 1. 2-BD-237-M7 Inst. PWR. B Rack 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES/ REF. DWG.
2C	15	1	10	16	2V720	WGB	12	X		45N2646-4 R/C, 45N2686-4 R/5
					2V721	WGG	12	*		45N2686-4 R/5, 45N2630-[illegible] R2
					2V722	WGD	12	X		45N2686-4, R/5, 45N1686-4 R/W
					2V723	WGB	12	X		45N2630-75, R/2
					2V724	WGB	12	X		
					2V725	WGB	12	X		
					2V726	WGB	12	X		
					2V727	WGB	12	X		
					2V728	WGB	12	X		
					2V4140	WGG_1	12	*		45N2686-4 R/5, 45N2630-7[illegible] R/2
					2V4145	WGD_1	12	X		45N2686-4 R/5, 45N1686-4 R/[illegible]
					2V4141	WGB_1	12	X		45N2630-75 R/2
					2V4142	WGB_1	12	X		
					2V4143	WGB_1	12	X		
					2V4144	WG_1B	12	X		
					2V8643	WGB_1	12	X		45N2630-75 R/2, 45N26[illegible]-53 R[illegible]
					2V8644	WG_1B	12	X		45N2635-53 R/9, 45N2635-66 R/1[illegible]

~~* Ref. QIR #~~
~~LEEWBN90050, R/[illegible]~~
DJG
9-4-91

WBPEVAR9001006 APPENDIX B SHEET B47D

REV. # 5 PREPARED BY: [signature] DATE 5/9/91

CHECKED BY: J. McCarthy DATE 5/15/91

BACK B

BOARD: 1. 2-BD-237-M7 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR.#/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
					ZSG60					
6	46	1	10	17	ZSG66	WGD	12	X		45N2614-6 45N2642-3
6	46	1	10	17	ZSG67	WGB	12	X		45N2642-3 45N2687-3

WBPEVAR9001006 APPENDIX B SHEET B47E

REV. # 5 PREPARED BY: [signature] DATE 5/8/91

RACK B CHECKED BY: [signature] DATE 5/23/91

BOARD: 1. 2-BD-237-M7 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
6	56	1	10	18	2M1261 2M1263	WGR1	12	X		45N2678-1 45N2678-4 SEE NOTE 1

NOTE:

1. THESE CABLES PROVIDE POWER TO THE MODULES IN PNLS. 2-R-111 & 2-R-112. OTHER CABLES TO AND FROM THESE MODULES ARE NV1 OR NV2 TYPE CABLES (#16 AWG), THEREFORE NO FURTHER EVALUATION IS REQUIRED.

WBPEVAR 9001006

REV. # 5

RACK B

APPENDIX B

PREPARED BY Jeff Ball DATE 5/8/91

CHECKED BY G. L. Ray DATE 5/5/24

SHEET B47F

BOARD: 1. Z-BD-237-M7 2. ________ 3. ________

4. ________ 5. ________ 6. ________

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES/ REF. DWG.
					ZM1500					
6	2	1	10	22	ZM1497	WGB-1	12	X		45N2635-53
	6				ZM1501	WGB				45N2635-42
	2				ZM1502					45N2635-42 45N2635-~~53~~27 JB 5/13
	2				ZM1503					46N2635-27
	2				ZM1504					45N2635-27
	6				ZM1505					45N2635-27 45N2635-53
	6				ZM1506					45N2635-53
	36				ZM1510					45N2635-42 45N2635-35

WBPEVAR9001006
REV. # 5

APPENDIX B

SHEET B47G

PREPARED BY: [signature] DATE 5/7/91

CHECKED BY: G.L. Ray DATE 5/20/91

BOARD: 1. Z-BD-237-M7 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES/ REF. DWG.
					ZV680					
6	24	1	10	28	ZV681	WGE	12	X		45N2653-2 35W730-1
↓	↓	↓	↓	↓	ZV682	WGB-1	↓	↓		35W730-1
					ZV683	↓				↓
					ZV684					
↓	↓	↓	↓	↓	ZV685	↓	↓	↓		↓

WBPEVAR9001006

RO: COMPUTED Wom DATE 1-31-90

CHECKED JCButler DATE 2-1-90

BOARD: 1. 1-BD-238-1 2. ______ 3. ______

4. ______ 5. ______ 6. ______

BOARD REF #	CURVE NO.	COMP'T/ BKR #/ FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/REF.
1	*	101	1M3	WDJ	2/0	✓	✓	95N707-1(R4) (BKRS ARE IDENTIFIED AS 'CF' ON DWG & REVISED WALKDOWN DATA) (see REF. 3.4)
1	*	102	2M4	WDJ	2/0	✓	✓	
1	*	103	1M1	WDG	2	✓	✓	
1	*	104	T1120	WDE	6	✓	✓	
1	**	105	~~SPARE?~~ 1PM 5814	WFA-10	8	✓	-	Added by DCN P-5833-A R4
1	**	106	B109	WHB	14	✓	✓	
1	**	107	B195	WGB	12	✓	✓	
1	**	108	1G149	WGB-1	12	✓	✓	
1	**	109	1M1262	WGB	12	✓	✓	
1	**	110	1G860	WGB	12	✓	✓	R3
1	**	111	M191	WGB-1	12	✓	✓	
1	**	112	M190	WGB	12	✓	✓	
1	**	113	1M1572	WGB-2	12	✓	✓	
1	**	114	1M1560	WGB-1	12	✓	✓	
1	**	115	1M1566	WGB-	12	✓	✓	
1	**	116	1M3479	WFB-1	10	✓	✓	
1	**	117	1M3458	WGB-1	12	✓	✓	
1	**	118	1M3459	WGB-1	12	✓	✓	
1	**	119	1M3035	WGB-1	12	✓	✓	
1	**	120	1M3036	WGB-1	12	✓	✓	
1	—	121	SPARE					
1	—	122	"					
1	—	123	"					
1	—	124	"					

RL 9/6/90 GW 9-6-90

*HEINEMAN TYPE KU-793 2 POLE, 60 AMP 'CF' CURVE NO. 109 R

2-POLE, 60 AMP

**HEINEMAN TYPE KU-793, CF 2 POLE, 15 AMP CURVE NO. 39 R

VBPEVAR 9001006 APPENDIX B SHEET B48A

REV. # 5

PREPARED BY: Curtis Turner DATE 4-29-

CHECKED BY: T. L. Gay DATE 5/6/9

BOARD: 1. 1-BD-238-1 2. ________ 3. ________

4. ________ 5. ________ 6. ________

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
					1G860					
6	47		39		1G861	WGD	12	✓		45N1686-3; 45N 707-1
↓	↓		↓		1G862	WGB	12	✓		45N1641-7; ~~45N 600-47~~ CJ.S
					1G863	WVL	12	✓		↓
					1G864	↓	12	✓		
					1G865	↓	12	✓		JSB 9.4.91 ↓ JSB 9.4.91
					1G866	WHD	14	✓	~~✓~~	45N1684-3 ~~SEE NOTE 1~~
					1G867	↓	14	✓	~~✓~~	45N1686-3 ↓
					1G868	WGD	12	✓		↓
↓	↓		↓		1G869	WHB-1	14	✓		45N1690-3

~~NOTE 1:~~ JSB 9.4.91

~~THE 15A BREAKER IN THIS CKT. WILL NOT PROTECT THESE TWO CABLES WHICH ARE #14 RATED AT 70°C PER CURVE #39~~

lmg 8-22-91

WBPEVAR9001006 APPENDIX B SHEET B48AB

REV. # ~~4~~ 5 fmG 1-9-91 PREPARED BY: L McGowan DATE 12-10-90

CHECKED BY: V Whitt DATE 12-11-90

BOARD: 1. 1-80-238-1 2. ________ 3. ________

4. ________ 5. ________ 6. ________

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG. JC 2/19/91
1	70	1	39	13	1M1572	WGB -2	12	X		45N707-1 ~~R3~~ R/R 45N1635-62 ~~R14~~ R/H
1	70				1M1573	WGB -1	12	X		45N1635-62 ~~R14~~ R/H 45N1635-69 ~~R9~~ R/K
2B	74				1M1575	WGB	12	X		45N1635-57 ~~R8~~ R/F 45N1635-50 ~~R7~~ R/L
2B	74				1M1576	WGB	12	X		45N1635-50 ~~R7~~ R/L
4	77				1M1577	WGB -1	12	X		45N1635-69 ~~R9~~ R/K 45N1635-57 ~~R8~~ R/F
1	70	1	39	14	1M1560	WGB -1	12	X		45N707-1 ~~R3~~ R/R 45N1635-57 ~~R8~~ R/F
1	70				1M1561			X		45N1635-57 ~~R8~~ R/F
1	70				1M1562			X		45N1635-57 ~~R8~~ R/F
2C	43				1M2580			X		45N1635-57 ~~R8~~ R/F 45N1635-81 ~~R9~~ R/L
2C	43				1M2581			X		45N1635-81 ~~R9~~ R/L
1	70	1	39	15	1M1566	WGB -1	12	X		45N707-1 ~~R5~~ R/R 45N1635-49 ~~R5~~ R/F
6	1				1M1564	WGB -1		X		45N1635-66 ~~R15~~ R/AA
6	78				1M1565	WGB -1		X		45N1635-14 ~~R6~~ R/G 45N1632-9 ~~R3~~ R/M
2B	63				1M1567	WGB		X		45N1635-49 ~~R5~~ R/F 45N1635-19 ~~R2~~ R/H
6	1				1M1568	WGB -1		X		45N1635-19 ~~R2~~ R/H 45N1635-66 ~~R15~~ R/AA
6	1				1M1569	WGB -1		X		45N1635-66 ~~R15~~ R/AA 45N1635-14 ~~R6~~ R/G

WBPEVAR9001006
REV. # 5

APPENDIX B

SHEET B48C

PREPARED BY: [signature] DATE 6-26-91
CHECKED BY: [signature] DATE 7/18/91

BOARD: 1. 1-BD-238-1 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE No.	CCMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES/ REF. DWG.
					1M 3479					
2C	43	1	39	116	1M 2622	WHB-1	14	X		45B774-6C
					1M 2623	WHD-1	14	X		45W1630-99
					1M 3462	WHD-1	14	X		45W1630-100
					1M 3463	WHG-1	14	X		45W1630-98
					1M 3464	WHD-1	14	X		45N 1687-4
					1M 3491	WFB-1	10	X		45N 1635-102
					1M 3492	WFB-1	10	X		
					1M 3493	WHB-1	14	X		
					1M 3494	WHB-1	14	X		
					1M 3495	WHB-1	14	X		
					1M 3541	WHB-1	14	X		
					1M 3542	WHD-1	14	X		
					1M 3543	WHD-1	14	X		
					1V 8792	WHD-1	14	X		
					1V 8793	WHD-1	14	X		
					1V 8796	WHD-1	14	X		
					1V 8797	WHD-1	14	X		
					1V 8794	WHD-1	14	X		

WBPEVAR9001006
REV. # 5

APPENDIX B

SHEET B 48D

PREPARED BY: [signature] DATE 6-28-9

CHECKED BY: [signature] DATE 7/18/9

BOARD: 1. 1-BD-238-1 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES / REF. DWG.
					1M 3458					45N707-1
2C	43	1	39	117	1M 3446	WHC	14	X	~~X~~	45N 1635-102
↓	↓	↓	↓	↓	1M 3448	WHG-1	14	X		JSB 9-4-91 ↓
					1M 3449	WHD-1	14	X		
					1M 3447	WHG-1	14	X		

NOTE: OTHER DAISEY CHAIN CABLES EXIST BUT THEY ARE NV? TYPE

WBPEVAR 9001006

REV. # 5

APPENDIX B

SHEET B 48E

PREPARED BY: [signature] DATE 7-2-91

CHECKED BY: [signature] DATE 7/18/91

BOARD: 1. 1-BD-238-1 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES / REF. DWG.
					IM 3459					45N707-1
2C	43	1	39	118	IM 3444	WHJ-2	14	X		45N1635-102
					IM 3441	WHM	14	X	~~X~~	JSB 9.4.91 D/C 9-5-91 ~~SEE NOTE~~
					IM 3465	WGB-1	12	X		
					IM 3467	WHB-1	14	X		
					IM 3443	WGB-1	12	X		
					IM 3442	WGB-1	12	X		
					IM 3461	WGB-1	12	X		
					IM 3468	WHB-1	14	X		
					IM 3469	WHB-1	14	X		
					IM 3540	WHB-1	14	X		45N1687-4, -2
					IM 3460	WGB-1	12	X		

~~NOTE:~~ D/C 9.5.91

~~THIS CABLE IS ONLY RATED AT 75°C AND THEREFORE NOT PROTECTED ACCORDING TO CURVE #39~~

WBPEVAR9001006 APPENDIX B SHEET B488F

REV. # A5 LMG 1-9-91

PREPARED BY: D. Woods DATE 12/11/90

CHECKED BY: L. MacGivin DATE 12-13-90

BOARD: 1. 1-BD-238-1 2. ________ 3. ________

4. ________ 5. ________ 6. ________

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES/ REF. DWG.
1	32	1	39	119	1M3035	WGB-1	12	X		45N707-1,R4/45N1630-89,R9
					1M3060	WHB-1	14	X		45N1630-89,R9
					1M3061	WHB-1	14	X		
					1M3062	WHB-1	14	X		
					1M3063	WHB-1	14	X		
					1M3064	WHG-1	14	X		REF. QIR LEE WBN90058,R0
					1M3067	WHB-1	14	X		
1	32	1	39	120	1M3036	WGB-1	12	X		45N707-1,R4/45N1630-89,R9
					1M3070	WHB-1	14	X		45N1630-89,R9
					1M3071	WHB-1	14	X		
					1M3072	WHB-1	14	X		
					1M3073	WHB-1	14	X		
					1M3074	WHG-1	14	X		REF. QIR LEE WBN90058,R0
					1M3077	WHB-1	14	X		

WBPEVAR9001006

COMPUTED: WDM DATE: 2-2-90
CHECKED: WAC DATE: 2-2-90

BOARD: 1. 2-80-238-1 45N707-2 2. ______ 3. ______
4. ______ 5. ______ 6. ______

BOARD REF #	CURVE NO.	COMPT/ BKR #/ FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/REF.
1	109	201	2M3	WDJ	2/0	✓		45N707-2 (R4)
	109	202	1M4	WDJ	2/0	✓		
	109	203	M2	WDG	2	✓		
	109	204	M1140	WFB-1	10	✓	~~✓~~	~~SEE NOTE ON ATTACHED SHEET B49G~~ R1 CURVE 109 (CFZ CURVES) PROTECTS #14 @ 90°C
	109	205	SPARE	-	-			
	39	206	B110	WHB	14	✓	~~✓~~	~~SEE NOTE ON ATTACHED SHEET B49H~~ R1 CURVE 39 INHERENTLY PROTECTS A #14 CABLE
	39	207	SPARE	-	-			
	39	208	2G149	WGB-1	12	✓		
	39	209	2M1262	WGB-1	12	✓		
	39	210	2G860	WGB-1	12	✓		
	-	211	SPARE	-	-			
	-	212	SPARE	-	-			
	39	213	2M1574	WGB-1	12	✓		
	39	214	2M1560	WGB-1	12	✓		
	39	215	2M1566	WGB-1	12	✓		
	39	216	2M3479	WFB-1	10	✓		
	39	217	2M3458	WGB-1	12	✓		
	39	218	2M3459	WGB-1	12	✓		
	-	219	SPARE	-	-			
	-	220		-	-			
	-	221		-	-			
	-	222		-	-			
	-	223		-	-			

WBPEVAR9001006 APPENDIX B SHEET B49A

REV. # 5

PREPARED BY: Curtis Lunne DATE 5-2-91

CHECKED BY: T.L. Day DATE 5/21/91

BOARD: 1. 2-BD-238-1 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE No.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
					2G860					
6	47	1	39	210	2G864	WVL	12	✓		45N2641-7 *
6	47	1	39	210	2G865	WVL	12	✓		↓ *

* THESE CABLES ARE LOCA, RATED AT 125°C

WBPEVAR9001006 APPENDIX B wmg 8-22-91 SHEET B49~~A~~B

REV. # ~~4~~ 5 fmg 1-9-91

PREPARED BY: [signature] DATE 12/11/90

CHECKED BY: [signature] DATE 12-17-90

BOARD: 1. 2-BD-238-1 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT./BKR.#/FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES/REF. DWG. JCL 2/19/91 R/H JSB 9-4-91 R/E
1	70	1	39	213	2M1574	WGB-1	12	X		45N707-2, ~~R4~~ R/H / 45N2635-57, ~~R6~~ R/E
2B	74	1	39	↓	2M1575	WGB-1	12	X		45N2635-57, ~~R6~~ / 45N263550, ~~R6~~
2B	74	1	39	↓	2M1576	WGB-1	12	X		45N2635-50, ~~R6~~ R/G R/G JSB 9-4-91
										JSB 9-4-91 R/H R/E
1	70	1	39	214	2M1560	WGB-1	12	X		45N707-2, ~~R4~~ / 45N2635-57, ~~R6~~
1	↓	1	39	↓	2M1561	WGB-1	12	X		45N2635-57, ~~R6~~ R/E
1	↓	1	39	↓	2M1562	WGB-1	12	X		↓ JSB 9-4-91
2C	43	1	39	216	2M3479	WFB-1	10	X		45N707-2, R/H / 45W2630-99, R/2
↓	↓	↓	↓	↓	2M3491	WFB-1	10	X		45W2630-99, R/2
↓	↓	↓	↓	↓	2M3492	WFB-1	10	X		45W2630-99, R/2 / 45W2630-100, R/4
↓	↓	↓	↓	↓	2M3493	WHB-1	14	X		45W2630-98, R/4 / 45W2630-99, R/2
↓	↓	↓	↓	↓	2M3494	WHB-1	14	X		↓ / ↓
↓	↓	↓	↓	↓	2M3495	WHB-1	14	X		↓ / ↓
↓	↓	↓	↓	↓	2M3462	WHD-1	14	X		45N2635-102, R/6 ↓
↓	↓	↓	↓	↓	2M3463	WHG-1	14	*		↓ / ↓
↓	↓	↓	↓	↓	2M3464	WHD-1	14	X		↓ / ↓
↓	↓	↓	↓	↓	2M3541	WHB-1	14	X		45N2687-4, R/A / ↓
↓	↓	↓	↓	↓	2M3542	WHD-1	14	X		↓ 45N2635-102, R/6
↓	↓	↓	↓	↓	2M3543	WHD-1	14	X		↓ / ↓
↓	↓	↓	↓	↓	2V8792	WHD-1	14	X		45W2630-98, R/4 / 45W2630-99, R/2
↓	↓	↓	↓	↓	2V8793	WHD-1	14	X		↓ / ↓
↓	↓	↓	↓	↓	2V8794	WHD-1	14	X		↓ / 45W2630-100, R/4
↓	↓	↓	↓	↓	2V8796	WHD-1	14	X		↓ / 45W2630-99, R/2
↓	↓	↓	↓	↓	2V8797	WHD-1	14	X		↓ / ↓
↓	↓	↓	↓	↓	2M2622	WHB-1	14	X		45W2630-100, R/4 / 45B776-108, R/3
↓	↓	↓	↓	↓	2M2623	WHD-1	14	X		↓ 45W2630-98, R/4
										JSB 9-4-91
										~~* REF. QIR LEEWBN90058,~~
										~~REV. 0~~

WBPEVAR9001006 APPENDIX B

REV. # 5

8-22-91

SHEET B49 ~~B~~ C

PREPARED BY: [signature] DATE 12-20-90

CHECKED BY: [signature] DATE 12-20-90

BOARD: 1. 2-BD-238-1 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES/ REF. DWG.
2B	63	1	39	215	2M1566	WGB-1	12	X		45N707-2 R5 45N2635-63 R5
					2M1567	WGB-1	12	X		45N2635-63 R5 45N2635-66 R19
					2M1564	WGB-1	12	X		45N2635-66 R19
					2M1568	WGB-1	12	X		45N2635-66 R19 45N2635-14 R8

WBPEVAR 9001006
REV. # 5

APPENDIX B

SHEET B49D

PREPARED BY: [signature] DATE 7-2-91

CHECKED BY: [signature] DATE 7/23/91

BOARD: 1. Z-BD-238-1 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES/ REF. DWG.
					ZM 3458					
2C	43	1	39	217	ZM 3446	WHC-1	14	X		45N2635-102
					ZM 3448	WHG-1	14	X		
					ZM 3449	WHD-1	14	X		

WBPEVAR 9001006
REV. 5

APPENDIX B

MMYL 8-22-91
SHEET B49AE

PREPARED BY: Curtis Russo DATE 5-22-91
CHECKED BY: J. McCarthy DATE 5/22/91

BOARD: 1. 0-SW-238-1-VBH-2 2. ____ 3. ____

4. ____ 5. ____ 6. ____

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO. M1140	MK#	SIZE	PASS	FAIL	NOTES/ REF. DWG.
6	238	1	111	—	M1141	WFB-1	10	✓		46W402-12
↓	↓	↓	↓		M1142	WFC-1	10	✓		↓
↓	↓	↓	↓		M1143	↓	10	✓		↓
↓	↓	↓	↓		M1144	↓	10	✓		↓
↓	↓	↓	↓		M1145	↓	10	✓		↓
↓	↓	↓	↓		M1146	↓	10	✓		↓
↓	↓	↓	↓		M1147	↓	10	✓		↓
↓	↓	↓	↓		M1148	↓	10	✓		↓
↓	↓	↓	↓		M1149	↓	10	✓		↓
↓	↓	↓	↓		M1150	↓	10	✓		↓
↓	↓	↓	↓		M1151	↓	10	✓		↓
↓	↓	↓	↓		M1152	↓	10	✓		↓
↓	↓	↓	↓		M1153	↓	10	✓		↓
↓	↓	↓	↓		M1154	↓	10	✓		↓

NOTE:
30A FRN FUSE PASSES
PER CURVE ~~CHART~~
DR 9-5-91
~~(ATTACHED)~~ AND VERIFIED
BY FIELD WALKDOWN.
ALL ABOVE CABLES RATED
AT 90°.

wyg 8-22-91 B49F
SHEET ~~B49~~

WBPEVAR9001006
REV.# 5

APPENDIX B

PREPARED BY: [signature] DATE 7-8-9[illegible]
CHECKED BY: Thomas L. Day DATE 7/18/9[illegible]

BOARD: 1. 2-BD-238-1 2. ______ 3. ______
4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE No.	COMPT. BKR.#/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
					2M 3459					
2C	43	1	39	218	2M 3441	WHM-1	14	X		45N 2635-102
					2M 3442	WGB-1	12	X		45N 2687-4
					2M 3443	WGB-1	12	X		
					2M 3444	WHJ-2	14	X		
					2M 3465	WGB-1	12	X		
					2M 3460	WGB-1	12	X		
					2M 3461	WGB-1	12	X		
					2M 3467	WHB-1	14	X		
					2M 3468	WHB-1	14	X		
					2M 3469	WHB-1	14	X		
					2M 3540	WHB-1	14	X		
					2M 50	WHC-1	14	X		
					2M 51	WHD-1	14	X		

WBPEVAR9001006

SHEET B50
PREPARED W A Lambert DATE 1-30-90
CHECKED R D Roberts DATE 1/31/90

BOARD: 1. 0-DBD-238-3 2. ______ 3. ______
4. ______ 5. ______ 6. ______

BOARD REF #	CURVE NO.	COMPT/BKR #/FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/REF.
1	39	1	M880	WFB-1	10	X		55W716-3 R11, 75W525 R2
*	39	2	M887	WFB-1	10	X		
	39	3	SS546R	WGB-1	12	X		
	39	4	SS552P	WGB-1	12	X		
	39	5	FE25	WGB	12	X		
	39	6	SS475	WGB	12	X		
	39	7	SS485	WGB	12	X		
	39	8	FE2795	WFB	10	X		
	39	9	FE1	WGB	12	X		
	39	10	FE75	WGB	12	X		
	39	11	FE125	WGB	12	X		
	39	12	FE100	WGB	12	X		
	39	15	N/A SPARE					
	39	18	N/A SPARE					
	39	19	L400	WGB	12	X		
	39	20	CL1	WHB	14	X	~~X~~	~~SEE NOTE ON ATTACHED SHEET B50T~~ CURVE 39 INHERENTLY PROTECTS A #14 CABLE @ 75°C R1
	39	21	M5	WGB	12	X		
	39	23	M6	WGB	12	X		
	39	24	M7	WGB	12	X		
	39	26	TV40	WHB-1	14	X		
	39	27	M509	WGB-1	12	X		
	39	28	M301	WGB-1	12	X		
	39	29	M3	WGB	12	X		
	39	30	M4	WGB	12	X		
	39	33	N/A SPARE					
	39	34						
	39	35						
	39	36						

* CURVE BASED ON DESIGN INFORMATION ONLY. REFER TO DWG 6200-1, CONTRACT 73-84612; ITEMS 3C.10, MARK 4AK

WBPEVAR9001006
REV. # 5

APPENDIX B

SHEET 850A

PREPARED BY: [signature] DATE 5-7-91
CHECKED BY: [signature] DATE 5/13/91

BOARD: 1. 0-0BD-238-3   2. ______   3. ______
4. ______   5. ______   6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT./BKR. #/FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES / REF. DWG.
					M 880					
6	35	1	39	1	M 881	WGB-1	12	X		75W525
					M 882	WGB-1	12	X		
					M 883	WGC	12	X		
					M 885	WGD	12	X		
					M 884	WGE	12	X		

3PEVAR9001006
REV.# 5

APPENDIX B

SHEET B50B

PREPARED BY: [signature] DATE 5-7-91
CHECKED BY: T. L. Ray DATE 5/13/91

BOARD: 1. 0-DBD-238-3 2. ______ 3. ______
4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES/ REF. DWG.
					M 887					
6	35	1	39	2	M 888	WGB-1	12	X		75W525
					M 889	WGB-1		X		
					M 890	WGC		X		
					M 892	WGD-1		X		
					M 891	WGE		X		

WBPEVAR9001006 APPENDIX B SHEET B50C

REV. # 5

PREPARED BY: D. Woods DATE: 4/25/91

CHECKED BY: J. McCarthy DATE: 4/30/91

BOARD: 1. 0-BD-238-3 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
					SS546R					
4	26	1	39	3	J187 R	WG.C	12	X		55W612-1, R/J 55W635-1, R/H
					SS547 R	WGD-1	12	X		55W612-1, R/J 45W1698-12, R/D
					SS548	WGB-1	12	X		45W1698-12, R/D
					SS549		12	X		
					SS550		12	X		
					SS551	WGB-1	12	X		

WBPEVAR 9001006
REV. # 5

APPENDIX B

SHEET B50D

PREPARED BY: D. Woods DATE 4/25/91

CHECKED BY: J. McCarthy DATE 4/29/91

BOARD: 1. 0-BD-238-3 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES/ REF. DWG.
					SS 552P					
4	26	1	39	4	J 186 P	WGC	12	X		55W613-5, R/L 55W624-1, R/K
					SS 553 P	WGD-1	12	X		55W613-5, R/L 45W1698-12, R/D
					SS 55 4	WGB-1	12	X		45W1698-12, R/D
					SS 555			X		
					SS 556			X		
					SS 557			X		

WBPEVAR 9001006 APPENDIX B SHEET B50E

REV. # 5

PREPARED BY: D. Woods DATE 4/25/91

CHECKED BY: J. McCarthy DATE 4/29/91

BOARD: 1. 0-BD-238-3 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES / REF. DWG.
					FE25					
4	26	1	39	5	J78	WGD	12	X		55W616-1, R/H 55W635-1, R/H
					FE26	WFE	10	X		55W635-1, R/H 45N1698-1, R/F
					FE27	WGB	12	X		45N1698-1, R/F
					FE28			X		
					FE29			X		
					FE30			X		
					FE31			X		
					FE32			X		
					FE33			X		
					FE35			X		
					FE36			X		

WBPEVAR9001006 APPENDIX B SHEET B50F

REV. # 5

PREPARED BY: D. Woods DATE 4/25/91

CHECKED BY: J. McCarthy DATE 4/30/91

BOARD: 1. 0-BD-238-3 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES / REF. DWG.
4	26	1	39	6	SS475 J76P	WGC	12	X		55W624-1, R/K 55W613-1, R/D
					SS477	WGD	12	X		55W613-1, R/D 45N1698-5, R/D
					SS480	WGB		X		
					SS478			X		
					SS479			X		
					SS486			X		

WBPEVAR9001006 APPENDIX B SHEET B50G

REV. # 5

PREPARED BY: D. Woods DATE 4/25/91

CHECKED BY: J. McCarthy DATE 4/30/~~89~~ 91

BOARD: 1. 0-BD-238-3 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES/REF. DWG.
					SS485					
4	26	1	39	7	J79 R	WGG	12	X		55W635-1, R/H 55W612-1, R/J
					SS487	WGD	12	X		55W612-1, R/J 45N1698-5, R/D
					SS490	WGB	12	X		45N1698-5, R/D
					SS488			X		
					SS489			X		
					SS493			X		

WBPEVAR9001006
REV. # 5

APPENDIX B

SHEET B50H

PREPARED BY: D. Woods DATE 4/26/91

CHECKED BY: J. McCarthy DATE 5/6/91

BOARD: 1. 0-BD-238-3 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES/ REF. DWG.
					FE 1					
4	26	1	39	9	J77	WGD	12	X		55W624-1, R/K 55W616-1, R/H
					FE2	WFE	10	X		45N1698-1, R/F 55W624-1, R/K
					FE3	WGB	12	X		45N1698-1, R/F
					FE4			X		
					FE5			X		
					FE6			X		
					FE7			X		
					FE8			X		
					FE9			X		
					FE11			X		
					FE12			X		

WBPEVAR9001006

REV. # 5

APPENDIX B

SHEET B50J

PREPARED BY: D. Woods DATE 4/25/91

CHECKED BY: J. McCarthy DATE 5/6/91

BOARD: 1. 0-BD-238-3 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
					FE 75					
4	26	1	39	10	FE 76	WGC	12	X		45N1694-3, R/18 55W616-1, R/H
					FE 77	WGE	12	X		45N1694-3, R/18 45N1698-1, R/F
					FE 78	WGG	12	X		45N1698-1, R/F
					FE 79	WGB	12	X		
					FE 80			X		
					FE 81			X		
					FE 82			X		
					FE 83			X		
					FE 84			X		
					FE 85			X		
					FE 86			X		
					FE 87			X		
					FE 88			X		
					FE 89			X		

WBPEVAR9001006

REV. # 5

APPENDIX B

PREPARED BY: D. Woods DATE 4/26/91

CHECKED BY: J. McCarthy DATE 5/6/91

SHEET B50K

BOARD: 1. 0-BD-238-3 2. ________ 3. ________

Pg. 1

4. ________ 5. ________ 6. ________

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES / REF. DWG.
					FE 125					
4	26	1	39	11	FE 126	WGB	12	X		45N1694-3, R/18 55W624-1, R/K
					FE 127			X		45N2694-3, R/15 45N1694-3, R/18
					FE 889	WGB-1	12	X		45W1698-10, R/E 45N2694-3, R/15
					FE 891	WGB		X		45W1698-10, R/E
					FE 892	WGB-1		X		
					FE 893	WGB		X		
					FE 894			X		
					FE 895			X		
					FE 896			X		
					FE 897			X		
					FE 898			X		
					FE 899	WGB-1		X		
					FE 900	WGB		X		
					FE 901			X		
					FE 902			X		
					FE 123	WHB-1	14	X		45N1694-3, R/18 45N1687-3, R/U
					FE 128	WGB	12	X		45N1698-4, R/H 45N1694-3, R/18
					FE 129			X		45N1698-4, R/H
					FE 130			X		
					FE 131			X		
					FE 132			X		
					FE 133			X		
					FE 134			X		
					FE 135			X		
					FE 136			X		
					FE 137			X		
					FE 138			X		
					FE 139			X		
					FE 140			X		
					FE 141	WGB-1		X		45N1694-3, R/18 45N1698-3, R/G
					FE 142			X		45N1698-3, R/G

WBPEVAR9001006

REV. # 5

APPENDIX B

PREPARED BY: D. Woods DATE 4/26/91

CHECKED BY: J. McCarthy DATE 5/6/91

SHEET B50L

BOARD: 1. 0-BD-238-3 2. ______ 3. ______ Pg. 2

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE No.	CMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
4	26	1	39	11	FE 143	WGB-1	12	X		45N1698-3, R/G
4	26	1	39	11	FE 144	WGB-1	12	X		45N1698-3, R/G
4	26	1	39	11	FE 145	WGB-1	12	X		45N1698-3, R/G
4	26	1	39	11	FE 146	WGB-1	12	X		45N1698-3, R/G
4	26	1	39	11	FE 147	WGB-1	12	X		45N1698-3, R/G
4	26	1	39	11	FE 148	WGB-1	12	X		45N1698-3, R/G
4	26	1	39	11	FE 149	WGB-1	12	X		45N1698-3, R/G
4	26	1	39	11	FE 150	WGB-1	12	X		45N1698-3, R/G
4	26	1	39	11	FE 151	WGB-1	12	X		45N1698-3, R/G
4	26	1	39	11	FE 152	WGB-1	12	X		45N1698-3, R/G
4	26	1	39	11	FE 153	WGB-1	12	X		45N1698-3, R/G
4	26	1	39	11	FE 154	WGB-1	12	X		45N1698-3, R/G
4	26	1	39	11	FE 155	WGB-1	12	X		45N1698-3, R/G
4	26	1	39	11	FE 156	WGB-1	12	X		45N1698-3, R/G
4	26	1	39	11	FE 157	WGB-1	12	X		45N1698-3, R/G
4	26	1	39	11	FE 158	WGB-1	12	X		45N1698-3, R/G
4	26	1	39	11	FE 159	WGB-1	12	X		45N1698-3, R/G
4	26	1	39	11	FE 160	WGB-1	12	X		45N1698-3, R/G
4	26	1	39	11	FE 161	WGB-1	12	X		45N1698-3, R/G
4	26	1	39	11	FE 162	WGB-1	12	X		45N1698-3, R/G
4	26	1	39	11	FE 163	WGB-1	12	X		45N1698-3, R/G
4	26	1	39	11	FE 164	WGB-1	12	X		45N1698-3, R/G
4	26	1	39	11	FE 165	WGB-1	12	X		45N1698-3, R/G
4	26	1	39	11	FE 166	WGB-1	12	X		45N1698-3, R/G
4	26	1	39	11	FE 167	WGB-1	12	X		45N1698-3, R/G
4	26	1	39	11	FE 168	WGB-1	12	X		45N1698-3, R/G
4	26	1	39	11	FE 169	WGB-1	12	X		45N1698-3, R/G
4	26	1	39	11	FE 170	WGB-1	12	X		45N1698-3, R/G
4	26	1	39	11	FE 171	WGB-1	12	X		45N1698-3, R/G
4	26	1	39	11	FE 172	WGB-1	12	X		45N1698-3, R/G
4	26	1	39	11	FE 173	WGB-1	12	X		45N1698-3, R/G
4	26	1	39	11	FE 174	WGB-1	12	X		45N1698-3, R/G

WBPEVAR9001006

REV. # 5

APPENDIX B

SHEET B50M

PREPARED BY: D. Woods DATE 4/26/91

CHECKED BY: J. McCarthy DATE 5/7/91

BOARD: 1. 0-BD-238-3 2. ______ 3. ______ PG.3

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES / REF. DWG.
4	26	1	39	11	FE175	WGB-1	12	X		45N1698-3, R/G
					FE176			X		
					FE177			X		
					FE178			X		
					FE179			X		45N1694-3, R/18
					FE182			X		45N1698-3, R/G 45N1694-3, R/18
					FE203	WGB		X		45N1698-2, R/D
					FE1559	WHB-1	14	X		15W741-1, R/O 45N1698-2, R/D
					FE183	WGB	12	X		45N1698-4, R/H
					FE184			X		45N1698-4, R/H
					FE185			X		
					FE186			X		45N1698-2, R/D 45N1698-4, R/H
					FE187			X		
					FE188			X		45N1698-4, R/H
					FE189			X		
					FE190			X		45N1698-2, R/D 45N1698-4, R/H
					FE191			X		45N1698-4, R/H
					FE192			X		
					FE193			X		45N1698-2, R/D 45N1698-4, R/H
					FE194			X		45N1698-4, R/H
					FE195	WGB-1		X		
					FE5712			X		45N1698-2, R/D
					FE2598	WHB-1	14	X		35W757-3, R/J
					FE119	WFB	10	X		45N1698-3, R/G 35W757-3, R/J
					FE180	WGB-1	12	X		45N1698-3, R/G
					FE181			X		
					FE840			X		45N1698-3, R/G 45W1698-11, R/10
					FE910	WGB-1	12	X		45N1698-3, R/G 45W1698-11, R/10
					FE911			X		45W1698-11, R/10
					FE912			X		
					FE913			X		
					FE914			X		

WBFEVAR9001006

REV. # 5

APPENDIX B

SHEET B50N

PREPARED BY: DeMoris Woods DATE: 4/26/91

CHECKED BY: J. McCarthy DATE: 5/7/91

BOARD: 1. 0-BD-238-3 2. ______ 3. ______ Pg. 4

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/ REF. DWG.
4	26	1	39	11	2V8684	WHB-1	14	X		45N1699-45, R/E
					FE4610	WGB-1	12	X		45N1694-3, R/18 45W1698-13, R/D
					FE4611			X		
					FE4612			X		
					FE4613			X		
					FE4614			X		
					FE4615	WGB		X		
					FE4616	WGB-1		X		
					FE4617			X		
					FE6099			X		45N1698-13, R/D
					FE5855			X		55W635-1, R/H 45N1694-3, R/18
					FE5856			X		55W624-1, R/K 45N1694-3, R/18
					FE120	WGB	12	X		45N1698-4, R/H
					FE121			X		
					FE921	WGB-1	12	X		45N2698-2
					FE922			X		45N1698-11
					FE923			X		45N1698-11
					FE924			X		45N1698-11
					FE925			X		45N1698-11
					FE926			X		45N1698-11

WBPEVAR9001006
REV. # 5

APPENDIX B

PREPARED BY: D. Woods DATE 4/26/91
CHECKED BY: J McCarthy DATE 5/6/91

SHEET B50 P

BOARD: 1. 0-BD-238-3 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES / REF. DWG.
					FE100					
4	26	1	39	12	FE101	WGC	12	X		45N1694-3, R118
↓	↓	↓	↓	↓	FE4447	WGB-1	12	X		↓
					FE4448	WGB-1	12	X		

WBPEVAR9001006
REV. # 5

APPENDIX B

SHEET B50Q

PREPARED BY: [signature] DATE 5-9-91

CHECKED BY: [signature] DATE 5/16/91

BOARD: 1. 0-DBD-238-3 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES/ REF. DWG.
					L400					
6	233	1	39	19	L401	WHC	14	X		PROTECTED BY 5A FUSE

WBPEVAR 9001006
REV. # 5

APPENDIX B

SHEET B50R
PREPARED BY: [signature] DATE 5-8-91
CHECKED BY: [signature] DATE 5/16/91

BOARD: 1. 0-DBD-238-3 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE No.	COMPT. BKR. #/ FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES / REF. DWG.
					CL 1					JSB 9.4.91
6	270	1	39	20	CL 2	WHB	14	X	~~X~~	55W615-1
	271				CL 101			X	~~X~~	55W615-1, 45N1643-7
					CL 102			X	~~X~~	45N1643-7
					CL 107			X	~~X~~	55W615-1, 45N2643-7
					CL 108			X	~~X~~	45N 2643-7
					CL 109	WHB-1		X		45N 2643-7
					CL 120	WHB		X	~~X~~	55W615-1
									JSB 9.4.91	

~~NOTE:~~ DJC 9.5.91
~~CABLE CL 109 IS RATED AT 90°C INSULATION. ALL OTHER CABLES ABOVE HAVE AN INSULATION RATING OF 75°C, THEREFORE FAILING CABLE CL1 WAS EVALUATED BY TVA AS FAILED~~

WBPEVAR 9001006
REV. # 5

APPENDIX B

SHEET B50S

PREPARED BY: [signature] DATE 5-7-91
CHECKED BY: [signature] DATE 5/17/91

BOARD: 1. 0-DBD-238-3 2. ______ 3. ______
4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES/ REF. DWG.
					M509					
6	253	1	39	27	M510	WGB-1	12	X		55W 1391
6	253	1	39	27	M508	WGB-1	12	X		55W716-3 55W1391

WBPEVAR9001006

RO: COMPUTED WOM DATE 1-31-9

CHECKED VA Lambert DATE 2-1-9

BOARD: 1. 1-BD-238-M7 2. ____ 3. ____

4. PREFERED PWR BK 5. ____ 6. ____

BOARD REF #	CURVE NO.	COMPT/BKR #/FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/REF.
1	*	1	1M1491	WGB	12	✓		45N1646-2 R3
	*	2	1G280	WGB	12	✓		
	*	3	SPARE	–				
	*	4	"	–				
	*	5	1PL2199	WGB	12	✓		
	*	6	SPARE	–				
	*	7	1M1650	WGB-1	12	✓		
	*	8	SPARE	–				
	*	9	1A6060	WGB	12	✓		
	*	10	SPARE					
		11						
		12						
		13						
		14						
		15						
		16						
		17						
		18						
		19						
		20						* HEINEMANN KU793
		21						CD2-G2G3-6
		22						CD2-Z85-3
		23						15A (CURVE #39)
		24						PER PUBLISHED VENDOR
		25						DATA 'CD', 'CE', & 'CF'
		26						BKRS ARE ALL SERIES CF
		27						(HEINEMANN BULLETIN CF-3104)
		28						
		29						
		30						
		31						
		32						

WBPEVAR9001006 APPENDIX B SHEET B51A

REV. # 5

PREPARED BY: Curtis Turner DATE 4-15-9

CHECKED BY: J. McCarthy DATE 4-23-9

BOARD: 1. 1-BD-238-M7 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	CCMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES/ REF. DWG.
					1G280					
6	47	1	39	2	1G281	WGB	12	✓		45N1686-3
6	47	1	39	2	1G283	WGB	12	✓		45N1635-54

WBPEVAR9001006
REV. # ~~4~~ 5 fmG 1-9-91

APPENDIX B

wyg 8-22-91
SHEET B51~~A~~B

PREPARED BY: D. Woods DATE 12-21-90
CHECKED BY: L. MacGovern DATE 12-26-90

BOARD: 1. 1-BD-238-M7 2. 0-M-27A 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE No.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG. JC 2/19/91 1660-67
1	67	1	39	9	1A6060	WGB	12	X		45N1646-2, RH/45N~~1660-6~~, RJ
		2		*	1A6000	WHB	14	X		45N1660-6, REV. J
					1A6002	WHB	14	X		
					1A6004	WHB	14	X		
					1A6006	WHB	14	X		
					1A6008	WH$_1$B	14	X		
					1A6010	WHB	14	X		
					1A6012	WHB	14	X		
					1A6014	WHB	14	X		
					1A6016	WHB	14	X		
					1A6018	WHB	14	X		
					1A6020	WHB	14	X		
					1A6022	WHB	14	X		
					1A6024	WHB	14	X		
					1A6026	WHB	14	X		
					1A6028	WHB	14	X		
					1A6030	WHB	14	X		
					1A6032	WHB	14	X		
					1A6042	WHB	14	X		
					1A6044	WHB	14	X		
					1A6046	WHB	14	X		
					1A6048	WHB	14	X		
					1A6050	WHB	14	X		
					1A6052	WHB	14	X		
					1A6054	WHB	14	X		
					1A6056	WHB	14	X		
					2A6000	WHB	14	X		
					2A6002	WHB	14	X		
					2A6004	WH$_1$B	14	X		* For Comments see sheet
					2A6006	WH$_1$B	14	X		B51~~A~~BC
					2A6012	WH$_1$B	14	X		DJC 9-5-91
					2A6014	WH$_1$B	14	X		

WBPEVAR9001006 REV.# ~~4~~ 5 LMG 1-9-91

APPENDIX B

WMH 8-22-91 SHEET B518C

PREPARED BY: D. Woods DATE 12-21-90

CHECKED BY: L. MacGuvin DATE 12-26-90

BOARD: 1. 0-M-27A 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT./BKR. #/FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES/REF. DWG.
1	67	1	39	*	2A6016	WHB	14	X		45N1660-6, REV. J
					2A6018	WHB	14	X		
					2A6020	WHB	14	X		
					2A6022	WHB	14	X		
					2A6024	WHB	14	X		
					2A6026	WHB	14	X		
					2A6028	WHB	14	X		
					2A6034	WHB 1	14	X		
					2A6036	WHB 1	14	X		
					2A6038	WHB 1	14	X		
					2A6040	WHB 1	14	X		
					2A6042	WHB	14	X		
					2A6044	WHB	14	X		
					2A6046	WHB	14	X		
					2A6048	WHB	14	X		
					2A6050	WHB	14	X		
					2A6052	WHB	14	X		
					2A6054	WHB	14	X		
					2A6056	WHB	14	X		

* The secondary side of the transformer is protected by a 5 Amp, 250V. AC, non-indicating, Buss Limitron fuse - 0-FU-67-M27A/3,4. For "Results in Pass" see this Calc.#, section 6.1, Paragraph B.

WBPEJAR9001006

RO: COMPUTED WOM DATE 1-31-
CHECKED JCButler DATE 1-31-

BOARD: 1. 2-BD-238-M7 2. ______ 3. ______
~~4.~~ PREFERRED PWR RACK 5. ______ 6. ______

JCB 1-31-90
Wom 1-31-90

BOARD REF #	CURVE NO.	COMPT/BKR #/FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/REF.
	*	1	2M1491	WGB	12	✓	~~✓~~	45N2646-2(R3)
	*	2	2G280	WGB	12	✓	~~✓~~	
		3	SPARE	-	-			
		4	SPARE	-	-			
	*	5	2PL2199	WGB	12	✓	~~✓~~	
		6	SPARE					
		7						
		8						
		9						
		10						
		11						
		12						
		13						
		14						
		15						
		16						
		17						
		18						
		19						
		20						
		21						
		22						* HEINEMAN MODEL
		23						CD2-G2G3-U
		24						CD2-Z85-3
		25						TYPE KU-793
		26						(CURVE #39)
		27						PER PUBLISHED VENDOR
		28						DATA 'CD', 'CE', & 'CF'
		29						BKRS ARE ALL SERIES CF
		30						(HEINEMANN BULLETIN CF-3104)
		31						
		32						

WBPEVAR9001006 APPENDIX B SHEET B52A

REV. # 5

PREPARED BY: Curtis Turner DATE 4-16-9

CHECKED BY: J. McCarthy DATE 4-22-9

BOARD: 1. 2-BD-238-M7 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES/ REF. DWG.
					2G280					
6	47	1	39	2	2G281	WGB	12	✓		45N2686-3
6	47	1	39	2	2G283	WGB	12	✓		45N2635-54

WBPEVAR 9001006

PAGE 053

COMPUTED WOM DATE 2-5-90

CHECKED WAL DATE 2-5-90

BOARD: 1. 0-BO-239-1 2. 0-BO-239-2 3. 0-DBD-239-6

4. 5. 6.

BOARD REF #	CURVE NO.	COMPT/BKR #/FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/REF.
1		1	N/A					10A FUSES - KLC10, ECN10, KWN10, TR10
2		1	N/A					10&12A FUSES KLC10, ECN10 ECN12
3	36	1	B313	WGB-1	12	✓		55W716-6 R3
	36	3	B317	WGB-1	12	✓		
	36	4	B314	WGB-1	12	✓		
	37	8	B336	WFB	10	✓		
	37	9	B337	WFB	10	✓		
	37	17	B338	WFB	10	✓		
	36	25	B357	WGB	12	✓		
	36	26	B358	WGB	12	✓		
	36	27	B359	WGB	12	✓		
	36	29	B346	WGB	12	✓		
	36	30	B347	WGB	12	✓		
	36	33	B369	WGB	12	✓		
	36	34	B370	WGB	12	✓		
	36	35	B371	WGB	12	✓		
	36	36	B372	WGB	12	✓		
	36	37	B506P	WGB-1	12	✓		
	36	38	B507P	WGB-1	12	✓		

WBPEVAR9001006 APPENDIX B SHEET B53A

REV. # 5

PREPARED BY: D. Woods DATE 5/29/91

CHECKED BY: J. McCarthy DATE 5/31/91

BOARD: 1. 0-BD-239-6 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES/ REF. DWG.
					B317P					
6	200	1	36	3	J96P	WGC	12	X		55W624-1, R/K
↓	↓	↓	↓	↓	5S103P	WFC	10	X		↓

WBPEVAR9001006 APPENDIX B SHEET B53B

REV. # 5

PREPARED BY: D. Woods DATE: 5/29/91

CHECKED BY: J. McCarthy DATE: 6/4/91

BOARD: 1. 0-BD-239-6 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES / REF. DWG.
					B314 P					
6	200	1	36	4	5S 406 P	WGB	12	X		55W624-1, R1K

WBPEVAR9001006

REV. # 5

APPENDIX B

SHEET 853C

PREPARED BY: D. Woods DATE 5/29/91

CHECKED BY: J. McCarthy DATE 6/16/91

RD: 1. OB-239-6 2. ________ 3. ________

4. ________ 5. ________ 6. ________

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
					B336					11/20/91
6	245	1	37	8	J59	WGH	12		*	55W643-1, R/H
					J60	WGG	12		*	
					J64	WGN	12		*	
					J172	WGD	12		*	
					FBT1020	WGK	12		X	75W1521-1, R/E ▲
					FBT1021	WGH	12		X	▲
					FBT1022	WGK	12		X	▲
					FBT1024	WGK	12		X	▲
					FBT1025	WGH	12		X	▲
					FBT1026	WGK	12		X	▲
					FBT1028	WGK	12		X	▲
					FBT1030	WGK	12		X	▲
					FBT1032	WGG	12		X	▲
					FBT1036	WGG	12		X	▲
					FBT1040	WGG	12		X	▲
					FBT1075	WFL	10	X		
					FBT1076	WFL	10	X		

R7

ATTACHMENT M16425A

* SEE ~~APPENDIX G~~ DM 12/11/91

▲ SEE NOTE ON ATTACHED SHEET B53C1

R7

APPENDIX B

Prepared by: J.R. Juwan Date: 11-25-91
Checked by: ____________ Date: ______

Note:

Cables FBT1020, FBT1021, FBT1022, FBT1024, FBT1025, FBT1026, FBT1028, FBT1030, FBT1032, FBT1036 and FBT1040 are Daisy Chain Circuits from Breaker 8 of O-DBD-239-6. The primary protective device for these circuits is a 30A circuit breaker (Curve 37). The 30A breaker on Curve 37 does not protect a 12 AWG cable rated at 75 degrees C. However, the failure of these cables will not degrade Class IE safety related cables or equipment since they are located entirely in the Switchyard area (non-category I).

WBPEVAR9001006

REV. # 5

APPENDIX B

SHEET B53D

PREPARED BY: D. Woods DATE 5/29/91

CHECKED BY: J. McCarthy DATE 6/10/91

BD: 1. 0-BD-239-6 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES / REF. DWG.
					B337					
6	245	1	37	9	J46	WGH	12		~~X~~	GDG 11/25/91 55W642-1, R/H
					J47	WGN	12		~~X~~	
					J50	WLC	12		~~X~~	
					FBT2020	WGK	12		X	75W1521-3, R/F ▲
					FBT2021	WGH	12		X	▲
					FBT2022	WGK	12		X	▲
					FBT2024	WGK	12		X	▲
					FBT2025	WGH	12		X	▲
					FBT2026	WGK	12		X	▲
					FBT2028	WGK	12		X	▲
					FBT2030	WGK	12		X	▲
					FBT2032	WGG	12		X	▲
					FBT2036	WGG	12		X	▲
					FBT2040	WGG	12		X	▲
					FBT2075	WFL	10	X		
					FBT2076	WFL	10	X		

ATTACHMENT MIL428A

~~X SEE APPENDIX G~~ DJC 12/11/91

▲ SEE NOTE ON ATTACHED SHEET B53D1

R7

R7

APPENDIX B

Prepared by: J.P. Juravan Date: 11-25-91
Checked by: ____________ Date: ______

Note:

Cables FBT2020, FBT2021, FBT2022, FBT2024, FBT2025, FBT2026, FBT2028, FBT2030, FBT2032, FBT2036 and FBT2040 are Daisy Chain Circuits from Breaker 9 of 0-DBD-239-6. The primary protective device for these circuits is a 30A circuit breaker (Curve 37). The 30A breaker on Curve 37 does not protect a 12 AWG cable rated at 75 degrees C. However, the failure of these cables will not degrade Class IE safety related cables or equipment since they are located entirely in the Switchyard area (non-category I).

WBPEVAR9001006 APPENDIX D SHEET: B53E

REV. # 5

PREPARED BY: D. Woods DATE 5/29/91

CHECKED BY: J. McCarthy DATE 6/10/91

RD: 1. 0-BD-239-6 2. ________ 3. ________

4. ________ 5. ________ 6. ________

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
					B338					
6	245	1	37	17	J43	WGM	12		*	GRG 11/25/91 55W626-1, R/G
					TBT 40	WGK	12		*	75W1521-5, R/E ▲
					TBT 41	WGH	12		X	▲
					TBT 42	WGK	12		X	▲
					TBT 44	WGK	12		X	▲
					TBT 45	WGH	12		X	▲
					TBT 46	WGK	12		X	▲
					TBT 48	WGK	12		X	▲
					TBT 49	WGH	12		X	▲
					TBT 50	WGK	12		X	▲
					TBT 52	WGG	12		X	▲
					TBT 56	WGG	12		X	▲
					TBT 60	WGG	12		X	▲
					TBT 93	WGM	12		*	GRG 11/25/91
					TBT 95	WFL	10	X		
					TBT 96	WFL	10	X		

R7

* SEE ~~APPENDIX G~~ ATTACHMENT M16428A DM 12/11/91

▲ SEE NOTE ON ATTACHED SHEET B53E1

R7

APPENDIX B

Prepared by: J R Iravan Date: 11-25-91
Checked by: ____________ Date: ______

Note:

Cables TBT40, TBT41, TBT42, TBT44, TBT45, TBT46, TBT48, TBT49, TBT50, TBT52, TBT56 and TBT60 are Daisy Chain Circuits from Breaker 17 of 0-DBD-239-6. The primary protective device for these circuits is a 30A circuit breaker (Curve 37). The 30A breaker on Curve 37 does not protect a 12 AWG cable rated at 75 degrees C. However, the failure of these cables will not degrade Class IE safety related cables or equipment since they are located entirely in the Switchyard area (non-category I).

WBPEVAR9001006

APPENDIX B

SHEET B53F

REV. # 5

PREPARED BY: D. Woods DATE 5/29/91

CHECKED BY: J. McCarthy DATE 6/10/91

BOARD: 1. 0-BD-239-6 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR.#/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES/ REF. DWG.
					B369					
6	245	1	36	33	J42	WGB	12	X		55W626-1, R/G
	244				2G1	WFH	12	X		55W627-1, R/E
					2G2	WGB	12	X		75W2602, R/B
					2G3	WGB	12	X		
					2G4	WGB	12	X		
					2G6	WGB	12	X		
					2G7	WGB	12	X		
					2G8	WGB	12	X		55W626-1, R/G
					2G11	WGB	12	X		55W641-1, R/K
					2G13	WGB	12	X		75W1521-7, R/G
					2G14	WGB	12	X		
					2G15	WGB	12	X		
					2G16	WGB	12	X		
					2G17	WGB	12	X		
					2G18	WGB	12	X		
					2G19	WGB	12	X		

WBPEVAR9001006
REV. # 5

APPENDIX B

SHEET B53G

PREPARED BY: D. Woods DATE 5/29/91
CHECKED BY: J. McCarthy DATE 6/10/91

BOARD: 1. 0-BD-239-6 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES/ REF. DWG.
					B370					
6	244	1	36	34	2G41	WGB	12	X		55W641-1, R/K
					2G42	WGB	12	X		75W1521-5, R/E
					2G43	WGB	12	X		
					2G44	WGB	12	X		
					2G45	WGB	12	X		55W641-1, R/K
					2G46	WGB	12	X		75W1521-7, R/G
					2G47	WGB	12	X		
					2G48	WGB	12	X		
					2G846	WGB-1	12	X		55W626-1, R/G

WBPEVAR9001006 — APPENDIX B — SHEET B53H

REV. #: 5

PREPARED BY: S. Woods — DATE 5/29/91

CHECKED BY: J. McCarthy — DATE 6/11/91

BOARD: 1. 0-BD-239-6 2. ____ 3. ____

4. ____ 5. ____ 6. ____

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR.#/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES/REF. DWG.
					B507 P					
6	200	1	36	38	55559 P	WGC	12	X		55W624-1, R/K

WBPEVAR9001006

COMPLETED WOM DATE 1-31-90
CHECKED WAC DATE 2-1-90

BOARD: 1. 0-BD-239-1 (PNL 2) 2. ______ 3. ______
4. ______ 5. ______ 6. ______

BOARD REF #	CURVE NO.	COMPT/BKR #/FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/REF.
1	45	201	1B287	WDP	500	✓		45N704-1
			1B290	WDP	500	✓		
1	45	202	2B288	WDP	500	✓		"
			2B290	WDP-1	500	✓		
1	43	203	B115	WDN	300	✓		
1	43	204	B120	WDN	300	✓		"
1	44	205	B135	WDN	300	✓		
			B137	WDN	300	✓		
1	44	206	B130	WDN	300	✓		
	-	207	SPARE	-	-			
1	42	208	B125	WDH	1/0	✓		
1	42	209	B128	WDH	1/0	✓		"
1	42	210	B140	WDK	4/0	✓		
1	42	211	2B276	WDN	300	✓		
			2B278	WDH	1/0	✓		
1	42	212	1B275	WDN	300	✓		
			1B278	WDH	1/0	✓		
1	41	213	1B307	WDG	2	✓		
			1B308	WDG	2	✓		
1	41	214	1B318	WDG	2	✓		
			1B319	WDG	2	✓		
1	41	215	1B266	WDF	4	✓		
1	41	216	1B265	WDF	4	✓		
	-	217	SPARE	-	-			
1	42	218	1B990	WDH-1	1/0	✓		

WBPEVAR9001006
REV. # 5

APPENDIX B

SHEET B54A

PREPARED BY: [signature] DATE: 7/8/91
CHECKED BY: J. McCarthy DATE 7/10/91

BOARD: 1. 0-BD-239-1 (PNL 2) 2. ______ 3. ______
4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES / REF. DWG.
6	47	1	45	202	2B288, 2B290 2B291	WDR-1	500	X		JSB 9.4.91
6	47	1	45	202	2B292	WJH	12		X	SEE PAGE ~~B54B1~~ B54A1 NO FURTHER EVALUATION REQUIRED. DC EOP STARTER CAB CONTAINS A 20A FUSE WHICH INHERENTLY PROTECTS A #14 WIRE AT 75°C

APPENDIX B

Prepared J. Bell Date 9-4-91
Checked D.J. Cloulke Date 9-5-91

Note:

Circuit fed from compartment 202 of board 0-BD-239-1 contains cable 2B292 (mark number WJH), which has a insulation temperature rating of 90 degrees C (DS E12.6.3). The primary protective device for this circuit is a 400A circuit breaker (Curve 45). The 400A breaker on curve 45 does not protect a #12 AWG cable rated at 90 degrees C. However, the failure of these cables will not degrade Class 1E safety related cables or equipment since they are located entirely in the Turbine Building (non-category I structure).

WBP.EVAR 9001006
REV. # 5

APPENDIX B

PREPARED BY: L. Brannon DATE 5/8/91
CHECKED BY: J. McCarthy DATE 5/28/91

SHEET B54B

BOARD: 1. 0-BD-239-1/2 2. ______ 3. ______
4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE No.	COMPT. BKR. #/FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES / REF. DWG.
					2B278					
6	35	1	42	211	2B279	WDH	1/0	X		45N2604-3
↓	↓	1	↓	211	2B280	WIH	12		X	↓
										SEE PAGE B54B1

WBPEVAR9001006

Sheet B54B1

APPENDIX B

Prepared [signature] Date 7-15-91
Checked J. McCarthy Date 7-16-91

Note:

Circuit fed from compartment 211 of board 0-BD-239-1 contains cable 2B280 (mark number WJH), which has a insulation temperature rating of 90 degrees C (DS E12.6.3). The primary protective device for this circuit is a 150A circuit breaker (Curve 42). The 150A breaker on curve 42 does not protect a #12 AWG cable rated at 90 degrees C. However, the failure of these cables will not degrade Class 1E safety related cables or equipment since they are located entirely in the Turbine Building (non-category I structure).

3483q

WBPEVAR9001006
REV. #: 5

APPENDIX B

SHEET B54C

PREPARED BY: B Branson DATE 5/8/91

CHECKED BY: J. McCarthy DATE 5/30/91

BOARD: 1. 0-BD-239-1/2 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE No.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
					1B278					
6	35	1	42	212	1B279	WDH	1/0	X		4SN1604-3 SEE SHEET B54C1
↓	↓	1	↓	212	1B280	WJH	12		X	↓

APPENDIX B

Prepared R.2/Rh Date 7-15-91
Checked J. McCarthy Date 7-16-91

Note:

Circuit fed from compartment 212 of board 0-BD-239-1 contains cable 1B280 (mark number WJH), which has a insulation temperature rating of 90 degrees C (DS E12.6.3). The primary protective device for this circuit is a 150A circuit breaker (Curve 42). The 150A breaker on curve 42 does not protect a #12 AWG cable rated at 90 degrees C. However, the failure of these cables will not degrade Class 1E safety related cables or equipment since they are located entirely in the Turbine Building (non-category I structure).

WBPEVAR 9001006
REV. # 5

APPENDIX B

PREPARED BY: [signature] DATE 7/8/91
CHECKED BY: [signature] DATE 7/10/91

SHEET B54D

BOARD: 1. 0-BD-239-1 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES/ REF. DWG.
					1B307, 1B308					45N704-1
6	46	1	41	213	1B310	WDG	2	X		45W1614-4
										45W600-46-4
										No further evaluation
										Required. DC EOP Starter
										Cab contains a 20A
										Fuse which inherently
										Protects a #14 wire
										@ 75°C

WBPEVAR9001006
REV. # 5

APPENDIX B

SHEET B54E

PREPARED BY: [signature] DATE 7/8/91
CHECKED BY: J. McCarthy DATE 7-10-91

BOARD: 1. 0-BD-239-1 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE No.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
					1B318, 319					
6	46	1	41	214	1B321	WDG	2	X		45N704-1, 45N1614-5,8
										45W600-46-4
										NO FURTHER EVALUATION
										REQUIRED. DC EOP
										STARTER CAB CONTAINS A
										20A FUSE WHICH INHERENTLY
										PROTECTS A #14 WIRE
										@ 75°C

WBFEVAR9001006
REV. # 5

APPENDIX B

PREPARED BY: [signature] DATE 5/13/91
CHECKED BY: J. McCarthy DATE 5/24/91

SHEET B54F

BOARD: 1. 0-BD-239-1/2 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES / REF. DWG.
					1B266					
6	238	1	41	215	1M1	WD6	2	X		45N707-1
										CABLE 1M1 IS PROTECT-
										ED WITH A 90A FUSE

WBPEVAR9001006 APPENDIX B SHEET B54G

REV. # 5

PREPARED BY: [signature] DATE 5/14/91

CHECKED BY: J. McCarthy DATE 5/22/91

RD: 1. 0-BD-239-1/2 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES / REF. DWG.
					1B2665					
6	241	1	41	216	M24	WGB	12	X		ASW709-3
					M26	WGB	12	X		
					M27	WDF	4	X		
					M29	WDF	4	X		

NOTE

CABLES M27 & M29 ARE PROTECTED W/90A FUSE. CABLES M26 & M24 ARE PROTECTED W/15A & 3A FUSE, RESPECTIVELY

WBPEVAR 9001006

SHEET B55
PREPARED W A Lambert DATE 1-31-90
CHECKED RD Roberts DATE 1/31/90

BOARD: 1. 0-DPL-239-1 2. ______ 3. ______
4. ______ 5. ______ 6. ______

BOARD REF #	CURVE NO.	COMPT/BKR #/FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/REF.
1	93	201	B225	WDE	6	X		45N705 R7
		202	B229	WDE	6	X		
		203	1B400	WDE	6	X		
		204	2B401	WDE	6	X		
		205	1B402	WDE	6	X		
		206	2B403	WDE	6	X		
		207	1B404	WDE	6	X		
		208	2B405	WDE	6	X		
		209	1B406	WDE	6	X		
		210	2B407	WDE	6	X		
		211	B233P	WDE	6	X		
		212	B236	WDE	6	X		
		213	SPARE	—	—			
		214	B234R	WDE	6	X		
		215	1B418	WDF	4	X		
		216	B380	WDE-1	6	X		
		217	1B415	WDE	6	X		
		218	2B416	WDE-1	6	X		
		219	1B420	WDE	6	X		
		220	1B422	WDE	6	X		
		221	1B424	WDE	6	X		
		222	1B426	WDE	6	X		
		223	2B420	WDE	6	X		
		224	2B422	WDE	6	X		
		225	2B424	WDE	6	X		
		226	2B426	WDE	6	X		
		227	SPARE	—	—			
		228		—	—			
		229		—	—			
		230		—	—			

W.BPEVAR9001006
REV.# 5

APPENDIX B

SHEET B 55A

PREPARED BY: [signature] DATE 6-6-9

CHECKED BY: [signature] DATE 6/21/9

BOARD: 1. O-DPL-239-1 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	CMPT. BKR.#/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES/ REF. DWG.
					B 380					CONTRACT 74C2 84376
6	202	1	93	216	B 381	WDE-1	6	X		0126D1484-2, -3
↓	↓	↓	↓	↓	B 382	↓	↓	X		0126D1501-3, -4, -1
↓	↓	↓	↓	↓	B 383	↓	↓	X		0126D1501-1, -4

NOTE

ALL FURTHER DOWNSTREAM CABLES WILL BE ANALYZED UNDER 1-BD-202-A/2. ABOVE CABLES ARE PROTECTED BY A 50A BREAKER (BKR. 216) IN TURBINE BLDG. DIST. BD.#1

SHEET B56
PREPARED W A Taylor DATE 1-29-90
CHECKED RD Roberts DATE 1/30/90

WBPEVAR 9001006

BOARD: 1. 10-DPL-239-2 2. ______ 3. ______
4. ______ 5. ______ 6. ______

BOARD REF #	CURVE NO.	COMPT/BKR #/FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/REF.
1	93	201	B226	WDE	6	X		45N705 R9
		202	B228	WDE	6	X		
		203	1B401	WDE	6	X		
		204	2B400	WDE	6	X		
		205	1B403	WDE	6	X		
		206	2B402	WDE	6	X		
		207	1B405	WDE	6	X		
		208	2B404	WDE	6	X		
		209	1B407	WDE	6	X		
		210	2B406	WDE	6	X		
		211	B232P	WDE	6	X		
		212	B237	WDE	6	X		
		213	SPARE	—	—			
		214	B235R	WDE	6	X		
		215	2B418	WDF	4	X		
		216	B384	WDE-1	6	X		
		217	1B416	WDE	6	X		
		218	2B415	WDE-1	6	X		
		219	1B421	WDE	6	X		
		220	1B423	WDE	6	X		
		221	1B425	WDF	4	X		
		222	1B427	WDF	4	X		
		223	2B421	WDE	6	X		
		224	2B423	WDE	6	X		
		225	2B425	WDF	4	X		
		226	2B427	WDF	4	X		
		227	SPARE	—	—			
		228		—	—			
		229		—	—			
		230		—	—			

WBPEVAR9001006 APPENDIX B SHEET B56A

REV. # 5

PREPARED BY: Curtis Turner DATE 6-20-91

CHECKED BY: J. L. Ray DATE 6/20/91

BOARD: 1. 0-DPL-239-2 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
					B384					0126D1484-4
6	202	1	93	216	B386	WDE-1	6	✓		0126D1484-1

WBPEVAR9001006

COMPUTED WOM DATE 1-31-90
CHECKED WAC DATE 2-1-90

BOARD: 1. 0-BD-239-1 (PNL 3) 2. ______ 3. ______
4. ______ 5. ______ 6. ______

BOARD REF #	CURVE NO.	COMPT/ BKR #/ FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/REF.
1	31	302	B146	WDE	6	✓		45N704-1 R10
1	31	303	1B255	WDE	6	✓		
1	31	304	2B256	WDE	6	✓		
1	31	305	1B257	WDE	6	✓		
1	31	306	2B258	WDF	6	✓		
1	30	312	N/A					BUSS FILTER
1	29	316	B148	WDD-1	8	✓		
1	29	317	B143	WDD	8	✓		
1	20	320	1B336	WFB	10	✓		
1	20	321	1B338	WFB	10	✓		
1	20	323	2B328	WFB	10	✓		RT TO 45N709-1 R6 ISOLATION BOX
			2G221-A	WG13-1	12	✓		RT TO 2-PNL-275-R71
1	20	322	1B328	WFB	10	✓		RT TO 45N709-1 R6 ISOLATION BOX
			1G221A	WGB	12	✓		RT TO 1-PNL-275-R71

WBPEVAR9001006

EV. # 5

APPENDIX B

SHEET B57A

PREPARED BY: L. Guzman DATE 5-21-91

CHECKED BY: A. L. Day DATE 6/4/91

B D: 1. 0-BD-239-1 2. ________ 3. ________

4. ________ 5. ________ 6. ________

GROUP	SYS.	BOARD REF. #	CURVE No.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
					1B336					45N704-1
6	46	1	20	320	1SG1	WFE	10	✓		45W1614-1/45N1687-3
6	46	1	20	320	1SG2	WFL	10	✓		45N1642-4/45W1614-2
6	46	1	20	320	1SG4	WFB	10	✓		45W1614-1/45W~~1752~~-4 1614-1 5/22/91
6	46	1	20	320	1SG5	WFB	10	✓		" 45W1752-4
6	46	1	20	320	1SG6	WFB	10	✓		45W1614-1/45N1635-34
6	46	1	20	320	1SG7	WFB	10	✓		45W1687-3/45N1691-4
6	46	1	20	320	1SG11	WFB	10	✓		45W1614-2/45B1752-2B
	46	1	20	320	1SG13	WFB	10	✓		45N1691-4/45N1695-4

WBFEVAR9001006 APPENDIX B SHEET B57B

REV. # 5

PREPARED BY: [signature] DATE 5-21-91

CHECKED BY: G. L. Ray DATE 6/4/91

BRD: 1. 0-BD-239-1 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
					1B338					
6	46	1	20	321	1S621	WFB	10	✓		45W1614-5/45N1687-3
6	46	1	20	321	1S625	WFB	10	✓		45W1753-2
6	46	1	20	321	1S624	WFB	10	✓		45W1614-4/45W1614-5
6	46	1	20	321	1S626	WFB	10	✓		45W1614-5/45W1635-34
6	46	1	20	321	1S622	WFB	10	✓		45N1642-3/45W1614-6
6	46	1	20	321	1S631	WFB	10	✓		45W1614-6/45B1753-9E
6	46	1	20	321	1S627	WFB	10	✓		45W1691-4/45N1687-3
6	46	1	20	321	1S633	WFB	10	✓		45W1691-4/~~45N1687-3~~ 45N1695-3 SG 6/3/91

WBPEVAR9001006

PAGE B58

COMPUTED WOM DATE 2-5-90
CHECKED WAC DATE 2-5-90

BOARD: 1. 0-BD-239-2 (PNL3) 2. ______ 3. ______
4. ______ 5. ______ 6. ______

BOARD REF #	CURVE NO.	COMPT/BKR #/FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/REF.
1	31	302	B147	WDE	6	✓		45N704-2 R8
1	31	303	1B256	WDE	6	✓		
1	31	304	2B255	WDE	6	✓		
1	31	305	1B258	WDE	6	✓		
1	31	306	2B257	WDE	6	✓		
1	30	312	N/A					BATTERY BOARD BUSS FILTER
1	29	316	B149	WDD-1	8	✓		
1	29	317	B144	WDD	8	✓		
1	20	320	2B336	WFB	10	✓		
1	20	321	2B338	WFB	10	✓		
1	20	322	1B332	WFB	10	✓		To ISOLATION BOX [illegible]
			1G201B	WGB	12	✓		To 1-R-70
1	20	323	2B332	WFB	10	✓		To ISOLATION BOX [illegible]
			2G201B	WGB-1	12	✓		To 2-R-70

WBPEVAR9001006

REV.# 5

APPENDIX B

SHEET B58A

PREPARED BY: Jeffrey T. [illegible] DATE 5-1-91

CHECKED BY: [illegible] DATE 6/3/91

BOARD: 1. 0-BD-239-2 (PNL3) 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT./BKR. #/FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES/REF. DWG.
					2B336					45N704-2
6	46	1	20	320	2SG1	WFE	10	✓		1-45W600-46-1
6	46	1	20	320	2SG2	WFL	10	✓		1-45W600-46-2
6	46	1	20	320	2SG4	WFB	10	✓		45W2614-1
6	46	1	20	320	2SG5	WFB	10	✓		45W2614-2
6	46	1	20	320	2SG6	WFB	10	✓		~~45W2614-3~~ JTM 5-1-91
6	46	1	20	320	2SG7	WFB	10	✓		45W2614-4
6	46	1	20	320	2SG11	WFB	10	✓		45B2752-2B
										45N2691-4
										45N2635-3d
										45W2752-4
										45W2642-4
										45N2642-2
										45W2642-1
										45N2687-3
										45N2642-3

WB:PEVAR9001006 APPENDIX B SHEET B58B

REV. # 5 PREPARED BY: [signature] DATE 5-2-91

CHECKED BY: [signature] DATE 6/3/91

BOARD: 1. 0-BD-239-2 (PNL3) 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES / REF. DWG.
					2B338					45N704-2
6	46	1	20	321	2SG21	WFE	10	✓		1-45W600-46-1
6	46	1	20	321	2SG22	WFL	10	✓		1-45W600-46-2
6	46	1	20	321	2SG24	WFB	10	✓		45W2614-5
6	46	1	20	321	2SG25	WFB	10	✓		45W2614-6
6	46	1	20	321	2SG26	WFB	10	✓		45N2687-3
6	46	1	20	321	2SG27	WFB	10	✓		45N2642-2
6	46	1	20	321	2SG31	WFB	10	✓		45W2642-1
										45N2635-34
										45N2691-4
										45W2614-4
										45W2753-2
										45W2642-3
										45B2753-9E

WBPEVAR 9001006
REV. # 5

APPENDIX B

SHEET B58C

PREPARED BY: Jeffrey J. [signature] DATE 4-30-91
CHECKED BY: [signature] DATE 6/4/91

BOARD: 1. 0-BD-239-2 (PNL3) 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES / REF. DWG.
					1B332 1G2018					45N704-2
6	47	1	20	322	1G204	WGC-1	12	✓		45N600-47-2
~~6~~	~~47~~	~~1~~	~~20~~	~~322~~	~~1G202B~~	~~WGD~~	~~12~~	~~✓~~		1-45W709-1 SEE NOTE
~~6~~	~~47~~	~~1~~	~~20~~	~~322~~	~~1G203B~~	~~WGD~~	~~12~~	~~✓~~		45N1685-2
~~6~~	~~47~~	~~1~~	~~20~~	~~322~~	~~1G217B~~	~~WGB7~~	~~12~~	~~✓~~		~~45N1677-5~~
										~~45N1677-6~~
										45N1612-2
										~~45N1624-11~~

NOTE
THESE AR CLASS 1E CABLES

WBPEVAR9001006 APPENDIX B SHEET B58D

REV. # 5

PREPARED BY [signature] DATE 4-30-91

CHECKED BY: [signature] DATE 6/4/91

BOARD: 1. 0-BD-239-2(PNL3) 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES / REF. DWG.
					2B332 2G201B					45N704-2
6	47	1	20	323	2G204	WGC-1	12	✓		45N600-47-2
~~6~~ JM	~~47~~	~~1~~	~~20~~	~~323~~	~~2G202B~~	~~WGB-1~~	~~12~~	✓		1-45W709-1 SEE NOTE
~~6~~ JM	~~47~~	~~1~~	~~20~~	~~323~~	~~2G203B~~	~~WGD~~	~~12~~	✓		45N2685-2
~~6~~ JM	~~47~~	~~1~~	~~20~~	~~323~~	~~2G217B~~	~~WGB-1~~	~~12~~	✓		~~45N2677-5~~
										~~45N2677-6~~
										45N2612-2
										~~45N2624-11~~

NOTE

THESE ARE CLASS 1E CABLES.

WBPEVAR9001006

COMPUTED WOM DATE 1-31-90
CHECKED WAC DATE 2-1-90

BOARD: 1. 0-BD-239-2 (PNL 2) 2. ________ 3. ________
4. ________ 5. ________ 6. ________

BOARD REF #	CURVE NO.	COMPT/BKR #/FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/REF.
1	45	201	1B288	WDP	500	✓		45N704-2 R8
			1B290	WDP	500	✓		
1	45	202	2B287	WDP	500	✓		
			2B290	WDP-	500	✓		
1	43	203	B116	WDN	300	✓		
1	43	204	B119	WDN	300	✓		
1	44	205	B136	WDN	300	✓		
			B137	WDN	300	✓		
1	44	206	B131	WDN	300	✓		
1	42	208	B126	WDH	1/0	✓		
1	42	209	B127	WDH	1/0	✓		
1	42	210	SPARE	–	–			
1	42	211	1B276	WDN	300	✓		
			1B278	WDH	1/0	✓		
1	42	212	2B275	WDN	300	✓		
			2B278	WDH	1/0	✓		
1	41	213	2B307	WDG	2	✓		To SW-46-1A
			2B308	WDG	2	✓		To STR 46-1A
1	41	214	2B318	WDG	2	✓		To SW-46-27A
			2B319	WDG	2	✓		To STR-46-27A
1	41	215	2B266	WDF	4	✓		
1	41	216	2B265	WDH	1/0	✓		
1	42	218	2B440	WDH-1	1/0	✓		

WBPEVAR9001006
REV. # 5

APPENDIX B

SHEET B59A

PREPARED BY: Jeffrey J. Mrozek DATE 7-9-91
CHECKED BY: J. McCarthy DATE 7-10-91

BOARD: 1. 0-BD-239-2(PNL 2) 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES / REF. DWG.
					1B288/1B290					45N704-2
6	47	1	45	201	1B291	WDP	500	X		45N1612-14
6	47	1	45	201	1B292	WJH	12	✓	*	86795-RC-5019C
								DJK 9-5-91		45N1612-13
										45N600-47-6
										45N1686-3
										45N1641-10
										45N1641-9
										SEE PAGE ~~B59B~~ B59A1 WMG 9-4-91
										VENDOR SUPPLIED 20A
										FUSES IN THE DC EMERG.
										OIL PUMP CONT PNL.
										INHERENTLY PROTECT A
										#12 CABLE AT 75°C THERE-
										FOR NO FURTHER ANALYSIS
										IS REQUIRED.

Luyel 8-22-91

WBPEVAR9001006 Sheet ~~B59B~~ A1

APPENDIX B

Prepared [signature] Date 7-9-91
Checked [signature] Date 7-10-91

Note:

Circuit fed from compartment 201 of board 0-BD-239-2 contains cable 1B292 (mark number WJH), which has a insulation temperature rating of 75 degrees C (DS E12.6.3). The primary protective device for this circuit is a 400 Amp. circuit breaker (Curve 45). The 400 Amp. breaker on curve 45 does not protect a #12 AWG cable rated at 75 degrees C. However, the failure of these cables will not degrade Class 1E safety related cables or equipment since they are located entirely in the Turbine Building (non-category I structure).

3483q

WBPEVAR9001006
REV. # 5

APPENDIX B

SHEET B59B

PREPARED BY: Jeffrey T. [illegible] DATE 5-6-91
CHECKED BY: J. McCarthy DATE 6-17-91

BOARD: 1. 0-BD-239-2(PNL 2) 2. ______ 3. ______
4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES/ REF. DWG.
6	47	1	45	202	2B287 2B290 *					
										* THE CABLES WITHIN
										THIS CIRCUIT THAT ARE
										PAST THE TRANSFER
										SWITCH ARE ADDRESSED
										BY CABLE 2B288 ON
										PAGE B54

WBPEVAR9001006

REV. # 5

APPENDIX B

SHEET B59C

PREPARED BY: Jeffrey J. Mrozek DATE 5-14-91

CHECKED BY: J. McCarthy DATE 6-17-91

BOARD: 1. 0-BD-239-2(~~PNLZ~~ PNLZ 9SM) 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	CMPT. BKR. #/ FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/ REF. DWG.
6	35	1	42	211	18276/18278*					
										* THE CABLES WITHIN THIS CIRCUIT THAT ARE PAST THE TRANSFER SWITCH ARE ADDRESSED BY CABLES 18275/18278 ON PAGE B54

WBPEVAR9001006

REV. # 5

APPENDIX B

PREPARED BY: Jeffrey S. Mrazek DATE 5-14-91

CHECKED BY: J. McCarthy DATE 6-17-91

SHEET B59D

BOARD: 1. 0-BD-239-2(PNL 2) 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
6	35	~~212~~ 1	42	212	2B275/2B278*					
										* THE CABLES WITHIN THIS CIRCUIT THAT ARE PAST THE TRANSFER SWITCH ARE ADDRESSED BY CABLES 2B276/2B278 ON PAGE B54

WB PEVAR 9001006
REV. # 5

APPENDIX B

SHEET 859E

PREPARED BY: Jeffrey T. Mingle DATE 7-9-91
CHECKED BY: J. McCarthy DATE 7-11-91

BOARD: 1. 0-BD-239-2 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES / REF. DWG.
					2B307/2B309					45N704-2
6	46	1	41	213	2B310	WDG	2	✓		45W600-46-2
										45W2642-4
										45W2614-1
										45W2614-4
										NO FURTHER EVALUATION
										REQUIRED DC EOP
										STARTER CAB CONTAINS
										A 20 A FUSE WHICH
										INHERENTLY PROTECTS
										A #14 WIRE @ 75°.

WBPEVAR9001006
REV. # 5

APPENDIX B

SHEET B59F

PREPARED BY: Jeffrey T. Mrozek DATE 2-9-91

CHECKED BY: J. McCarthy DATE 2-10-91

BOARD: 1. 0-BD-239-2 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE No.	COMPT. BKR. #/ FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES / REF. DWG.
					2B318/2B319					45W704-2
2B	46	1	41	214	2B321	WDG	#2	✓		45W600-46-2
										45W2614-8
										45W2614-5
										45W2642-3

VENDOR SUPPLIED 20A FUSES IN THE MFPTB DC EMERG. OIL PUMP CONT. PNL INHERENTLY PROTECTS A #14 CABLE AT 75°C NO ~~FUTHER~~ FURTHER EVALUATION IS REQUIRED

DJM 9.5.91

WBPEVAR9001006

PAGE B60

COMPUTED WOM DATE 2-5-90

CHECKED WAC DATE 2-5-90

BOARD: 1. 0-DBD-239-7 2. ________ 3. ________

4. ________ 5. ________ 6. ________

BOARD REF #	CURVE NO.	COMPT/ BKR #/ FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/REF.
1	36	1	B324	WGB	12	✓		55W716-7 R3
	36	2	N/A					
	37	5	B339	WFB	10	✓		
	36	7	B348	WGB	12	✓		
	37	11	B327	WFB	10	✓		
	37	12	B326	WFB-1	10	✓		

WBPEVAR 9001006

REV. # 5

APPENDIX B

SHEET 360A

PREPARED BY: [signature] DATE 7-9-91

CHECKED BY: G. L. Day DATE 7/15/91

BOARD: 1. 0-DBD-239-7/1 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES / REF. DWG.
			*		B 339					
6	245	1	~~37~~	5	J41	WGG	12	X		55W641-1 55W657-1
					J169	WGD				55W641-1 55W656
					J173					55W641-1 55W669
					J38	WGK				55W641-1 55W615-5
					J71	WGN				
					J72					
					BBT 1070	WGM				55W615-5 45N1641-5
					BBT 1071					
					BBT 1095	WFD	10			75W1520-3 55W641-1
					BBT 1096	WFB				75W1520-3
					BBT 1097					
					BBT 1098					
					BBT 1140	WGB	12			75W1520-3 75W1520-7
					BBT 1141					
					BBT 1142					
					BBT 1143					75W1520-7 75W1521-7
					BBT 1144					75W1520-3 75W1520-7
					BBT 1145					
					BBT 1146					
					BBT 1147					75W1520-7 75W1521-7
					BBT 1074					75W1521-7 75W1521-8
					BBT 1075	WFL	10			55W641-1 75W1521-7
					BBT 1076					
					BBT 1020	WGK	12			75W1521-7 75W1521-8
					BBT 1021	WGG				
					BBT 1022	WGK				
					BBT 1024					
					BBT 1025	WGG				
					BBT 1026	WGK				
					BBT 1028					

WBPEVAR 9001006
REV. # 5

APPENDIX B

SHEET B60B

PREPARED BY [signature] DATE 7-9-91
CHECKED BY: [signature] DATE 7/15/91

BOARD: 1. ~~Z-D~~ 0-DBD-239-7/1
JSB 7.9.91
2. ______ 3. ______
4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE No.	COMPT./BKR. #/FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
6	245	1	* ~~37~~	5	BBT 1029	WGG	12	X		75W1521-7 75W1521-8
					BBT 1030	WGK				
					BBT 1032	WGG				
					BBT 1033	WGH				
					BBT 1034	WGG				
					BBT 1036	WGG				
					BBT 1037	WGH				
					BBT 1038	WGG				
					BBT 1040	WGG				
					BBT 1041	WGH				
					BBT 1042	WGG				

* NOTE:
*12 CABLES PASS
PER CURVE ~~37~~ 36
AND FUSE PLOT
FOR 15A FUSE
wygl 9-4-91
~~(SEE SHEETS ATTACHED)~~
wygl 9-4-91
DK 9.5.91

(SEE CURVE 112)

WBPEVAR9001006

COMPUTED WOM DATE 2-5-90
CHECKED WAC DATE 2-5-90

BOARD: 1. 0-DBD-239-8 2. ______ 3. ______
4. ______ 5. ______ 6. ______

BOARD REF #	CURVE NO.	COMPT/BKR #/FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/REF.
1	36	1	B315	WGB	12	✓		55W716-8 R2
	36	3	B316	WGB	12	✓		
	36	4	B318	WGB	12	✓		
	36	5	B505R	WGB-1	12	✓		
	36	6	B504R	WGB-1	12	✓		
	37	8	B340	WFB	10	✓		
	37	9	B341	WFB	10	✓		
	37	10	B342	WFB	10	✓		
	37	17	B343	WFB	10	✓		
	36	25	B360	WGB	12	✓		
	36	26	B361	WGB	12	✓		
	36	27	B362	WGB	12	✓		
	36	29	B349	WGB	12	✓		
	36	30	B350	WGB	12	✓		
	36	31	B351	WGB	12	✓		
	36	33	B373	WGB	12	✓		
	36	34	B374	WGB	12	✓		
	36	35	B375	WGB	12	✓		
	36	36	B376	WGB	12	✓		

WBPEVAR9001006
REV. # 5

APPENDIX B

SHEET B6 1A

PREPARED BY: Jeff Ball DATE 5/16/91

CHECKED BY: G.L. Ray DATE 7/2/91

BOARD: 1. 0-DBD-239-8 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	CMPT. BKR. #/ FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/ REF. DWG.
6	200	1	36	3	B316 SS 408	WGB	12	X		55W635-1 75W510

WBPEVAR9001006 APPENDIX B SHEET B61B

REV. # 5

PREPARED BY: [signature] DATE 5/16/91

CHECKED BY: [signature] DATE 7/2/91

BOARD: 1. 0-DBD-239-8 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
					B318					
6	200	1	36	4	J86	WGC	12	X		55W612-1 55W635-1
6	200	1	36	4	SS100	WFC	10	X		55W635-1 75W520

WBPEVAR9001006 APPENDIX B SHEET B61C

REV. # 5

PREPARED BY: [signature] DATE 7-1-91

CHECKED BY: [signature] DATE 7/11/9

BOARD: 1. 0-~~BD~~ OBD-239-8/1 DJR 9.5.91 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES/ REF. DWG.
6	200	1	36	6	R504R SS558	WGC	12	X		75W510-1 55W635-1

WBPEVAR9001006
REV. # 5

APPENDIX B

SHEET B61D

PREPARED BY: [signature] DATE 6-26-91
CHECKED BY: G. L. Kay DATE 7/10/91

BOARD: 1. 0-~~RD~~ DBD-239-8/1 DJC 9.5.91 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT./BKR.#/FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
			*		B340					
6	245	1	~~37~~ DJC 9.5.91	8	J26	WGN	12	X		55W638-1 55W616-5 SEE NOTE
					J30	WGK				55W638-1 55W657-1
					J32	WGH				55W638-1 55W616-5
					J35	WGC-1				55W638-1 55W658-1
					J168	WGD				55W638-1 55W656
					FBT 3020	WGK				75W1521-11 75W1521-12
					FBT 3021	WGH				
					FBT 3022	WGK				
					FBT 3024	WGK				
					FBT 3025	WGH				
					FBT 3026	WGK				
					FBT 3028	WGK				
					FBT 3029	WGH				
					FBT 3030	WGK				
					FBT 3032	WGG				
					FBT 3033	WGK				
					FBT 3034	WGH				
					FBT 3036	WGG				
					FBT 3037	WGK				
					FBT 3038	WGH				
					FBT 3040	WGG				
					FBT 3041	WGK				
					FBT 3042	WGH				
					FBT 3073	WGR				
					FBT 3075	WFL	10			55W638-1 75W1521-11
					FBT 3076	WFL	10			
					FBT 3080	WGB	12			75W1520-5 75W1520-7
					FBT 3081	WGB				
					FBT 3082	WGB				
					FBT 3083	WGR				

WBPEVAR 9001006 — APPENDIX B — SHEET B61E

REV. # 5

PREPARED BY: [signature] DATE 6-26-91

CHECKED BY: [signature] DATE 7/10/91

BOARD: 1. 0-~~BD~~ DBD 239-8/1 (DJC 9.5.91) 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO:	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
6	245	1	~~37~~ * (DJC 9.5.91)	8	FBT 3084	WGB	12	X		75W1520-5 75W1520-7 SEE NOTE
					FBT 3085	WGB				
					FBT 3086	WGB				
					FBT 3087	WGB				
					FBT 2990	WFD	10			55W633-1 75W1520-5
					FBT 2991	WFB				75W1520-5
					FBT 2992	WFB				
					FBT 2993	WFB				
					V33	WF[illegible]				55W616-5 55W633-1

* NOTE:
*12 CABLES WILL PASS PER CURVE #36 AND FUSE PLOT FOR 15A FUSE. ~~(SEE ATTACHED SHEETS B61E1,2,3)~~
(SEE CURVE 112)

DJC 9.5.91

W3PEVAR9001006

REV. # 5

APPENDIX B

SHEET B61F

PREPARED BY: [illegible] DATE 6-27-91

CHECKED BY: [illegible] DATE 7/8/91

BOARD: 1. 0-~~RD~~ DBD-239-8/1 .DJC 9.5.91 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	CCMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES/ REF. DWG.
					B341					
6	245	1	~~37~~ *	9	J14	WGN	12	✓		55W637-1 55W616-5 *SEE NOTE
					J18	WGC-1		✓		55W637-1 55W660-1
					J19	WGK		✓		55W637-1 55W659-1
					J20	WGH		✓		55W637-1 55W616-5
					J21	WFG	10	✓		
					J167	WGD	12	✓		55W637-1 55W636
					FBT 3990	WFD	10	✓		75W1520-5 55W637-1
					FBT 3991	WFB		✓		75W1520-5
					FBT 3992			✓		
					FBT 3993			✓		
					FBT 4054	WGB	12	✓		75W1521-13 75W1521-14
					FBT 4075	WFL	10	✓		55W637-1 75W1521-13
					FBT 4076			✓		
					FBT 4080	WGB	12	✓		75W1520-5 75W1520-7
					FBT 4081			✓		
					FBT 4082			✓		
					FBT 4083			✓		75W1521-13 75W1520-7
					FBT 4084			✓		75W1520-5 75W1520-7
					FBT 4085			✓		
					FBT 4086			✓		
					FBT 4087			✓		75W1520-7 75W1521-13
					FBT 4020	WGK		✓		75W1521-13 75W1521-14
					FBT 4021	WGH		✓		
					FBT 4022	WGK		✓		
					FBT 4024			✓		
					FBT 4025	WGH		✓		
					FBT 4026	WGK		✓		
					FBT 4028			✓		
					FBT 4029	WGH		✓		
					FBT 4030	WGK		✓		

WBPEVAR9001006

REV. # 5

APPENDIX B

SHEET B61G

PREPARED BY: [signature] DATE 6-29-91

CHECKED BY: [signature] DATE 7/8/91

BOARD: 1. 0-DBD-239-8/1 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES/ REF. DWG.
6	24	1	~~37~~ *	9	FBT 4032	WGG	12	✓		75W1521-13 * 75W1521-14 See Note
					FBT 4033	WGK		✓		
					FBT 4034	WGH		✓		
					FBT 4036	WGG		✓		
					FBT 4037	WGK		✓		
					FBT 4038	WGH		✓		
					FBT 4040	WGG		✓		
					FBT 4041	WGK		✓		
					FBT 4042	WGH		✓		
					FBT 5170	WHD-1	14	✓		75W1521-13 45W1520-7
					FBT 5171	WHD-1	14	✓		
					FBT 5172	WHD-1	14	✓		

*NOTE:
#12 & #14 CABLES WILL PASS PER CURVE #36 AND FUSE PLOT FOR 15A FUSE ~~(SEE ATTACHED 3 SHEETS B61E1, 2, 3)~~
(SEE CURVE 112)

DJC 9-5-91

WBPEVAR9001006 | APPENDIX B | SHEET B61H

REV. # 5

PREPARED BY: [signature] DATE 6-24-91

CHECKED BY: [signature] DATE 7/12/91

BOARD: 1. 0-~~BD~~ DBD 239-8/1 DJK 9.5.91   2. ______   3. ______

4. ______   5. ______   6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO:	MK#	SIZE	PASS	FAIL	NOTES/ REF. DWG.
					B342					
6	245	1	~~37~~*	10	J1	WGH	12	✓		55W636-1 55W617-1 SEE NOTE
					J2	WGN		✓		
					J9	WGK ~~WGC~~		✓		55W636-1 55W662-1
					J10	WGC ~~WGK~~		✓		
					FBT 5075	WFL	10	✓		55W636-1 75W1521-15
					FBT 5076	WFL	10	✓		
					FBT 5020	WGK	12	✓		75W1521-15 75W1521-16
					FBT 5021	WGH		✓		
					FBT 5022	WGK		✓		
					FBT 5024	WGK		✓		
					FBT 5025	WGH		✓		
					FBT 5026	WGK		✓		
					FBT 5028	WGK		✓		
					FBT 5029	WGH		✓		
					FBT 5030	WGK		✓		
					FBT 5032	WGG		✓		
					FBT 5033	WGK		✓		
					FBT 5034	WGH		✓		
					FBT 5036	WGG		✓		
					FBT 5037	WGK		✓		
					FBT 5038	WGH		✓		
					FBT 5040	WGG		✓		
					FBT 5041	WGK		✓		
					FBT 5042	WGH		✓		
					FBT 5054	WGB		✓		
					FBT 5080	WGB		✓		75W1520-6 75W1520-7
					FBT 5081	WGB		✓		
					FBT 5082	WGB		✓		
					FBT 5083	WGB		✓		
					FBT 5084	WGB		✓		

WBPEVAR9001006 APPENDIX B SHEET B61I

REV. # 5

PREPARED BY: [signature] DATE 6-24-91

CHECKED BY: [signature] DATE 7/12/91

BOARD: 1. 0-~~BD~~ DBD -239-8/1 2. ______ 3. ______

.DJK 9.5.91

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES/ REF. DWG.
6	245	1	~~37~~ *	10	FBT 5085	WGB	12	✓		75W1521-6 75W1521-7 SEE NOTE
↓	↓	↓	↓ D/K 9.5.91	↓	FBT 5086	WGB	12	✓		↓
					FBT 5087	WGB	12	✓		
					FBT 4990	WFD	10	✓		75W1520-6 55W636-1
					FBT 4991	WFB	10	✓		75W1520-6
					FBT 4992	WFB	10	✓		↓
					FBT 4993	WFB	10	✓		
↓	↓	↓	↓	↓	J 3	WFG	10	✓		55W636-1 55W617-1

*NOTE:

#12 CABLES WILL PASS PER CURVE #36 AND FUSE PLOT FOR 15A FUSE ~~(SEE ATTACHED SHEETS B61E1, 2, 3)~~ (SEE CURVE 112)

D/K 9.5.91

WBPEVAR 9001006 APPENDIX B SHEET B61J

REV. # 5

PREPARED BY: [signature] DATE 7-12-91

CHECKED BY: [signature] DATE 7/12/91

BOARD: 1. 0-DBD-239-8/1 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
			*		B 343					
6	245	1	37	17	J44	WGM	12	X		55W629-1 55W616-1 SEE NOTE
					J175	WGM				55W616-1 55W634-1 75W1521-9
					TBT 2020	WGK				75W1521-10
					TBT 2021	WGH				
					TBT 2022	WGK				
					TBT 2024	WGK				
					TBT 2025	WGH				
					TBT 2026	WGK				
					TBT 2028	WGK				
					TBT 2029	WGH				
					TBT 2030	WGK				
					TBT 2032	WGG				
					TBT 2033	WGH				
					TBT 2034	WGH				
					TBT 2036	WGG				
					TBT 2037	WGH				
					TBT 2038	WGH				
					TBT 2040	WGG				
					TBT 2041	WGH				
					TBT 2042	WGH				
					TBT 2072	WFL	10			75W1520-4 75W1521-9
					TBT 2073	WFL	10			
					TBT 2074	WGB-1	12			75W1521-9 75W1521-10
					TBT 2075	WFL	10			55W629-1 75W1521-9
					TBT 2076	WFL	10			
					TBT 2077	WGM	12			55W616-1 45N1641-5
					TBT 2080	WGB				75W1520-4 75W1520-7
					TBT 2081	WGB				
					TBT 2082	WGB				
					TBT 2083	WGB-1				75W1520-7 75W1521-9 75W1520-4

WBPEVAR9001006
REV. # 5

APPENDIX B

SHEET B6 1K

PREPARED BY: [signature] DATE 7-12-91
CHECKED BY: [signature] DATE 7/12/91

BOARD: 1. O-DBD-239-8/1 2. ______ 3. ______
4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
6	245	1	37*	17	TBT 2085	WGB	12	X		75W1520-4 75W1520-7 SEE NOTE
↓	↓	↓	↓	↓	TBT 2086	WGB	↓	↓		↓
↓	↓	↓	↓	↓	TBT 2087	WGB·1	↓	↓		75W1520-7 76W1621-9
↓	↓	↓	↓	↓	TBT 1985	WFD	10	↓		55W634-1 75W1520-4
↓	↓	↓	↓	↓	TBT 1986	WFB·1	↓	↓		75W1520-4
↓	↓	↓	↓	↓	TBT 1988	WFB·1	↓	↓		↓
↓	↓	↓	↓	↓	TBT 1987	WFB·1	↓	↓		↓
↓	↓	↓	↓	↓	TBT 1989	WFB·1	↓	↓		↓

* NOTE:
#12 CABLES WILL
PASS PER CURVE
#36 AND FUSE
PLOT FOR 15A FUSE
~~(SEE SHEETS ATT~~
~~ACHED) SHEETS~~
~~B6 1E1, 2, 3)~~
(SEE CURVE 112)

DJ 9-5-91

WBPEVAR9001006 APPENDIX B SHEET B6/L

REV. # 5

PREPARED BY: [signature] DATE 7-2-9

CHECKED BY: [signature] DATE 7/16/9

BOARD: 1. 0-DBD-239-8/1 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
					B373					
6	244	1	36	33	1G1	WGH	12	X		55W630-1 75W1602
					1G2	WGB				75W1602 75W1601
					1G3					
					1G4					
					1G6					75W1602 45W1600-3
					1G7					
					1G10	WGB-1				76W1520-4 75W1521-9
					1G11	WGB				55W641-1 75W1521-7
					1G13	WGB-1				75W1521-7 75W1521-8
					1G14	WGB				
					1G15	WGB				
					1G16	WGB1				55W641-1 75W1520-4
					1G17	WGB				76W1521-9 75W1521-10
					1G18					
					1G19					
					1G622	WGD				45N1610-1 45N1641-5
					1G623	WGD				45N1641-5 55N629-1
					J4	WGB				55W629-1 55W723

WBPEVAR 9001006 APPENDIX B SHEET B61

REV. # 5

PREPARED BY: [illegible] DATE 6-6-9

CHECKED BY: [illegible] DATE 7/9/

BOARD: 1. 0-DBD-239-8/1 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE No.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
					B374					
6	244	1	36	34	1G846	WGB1	12	X		55W629-1 45W1610-1
					1G40					75W1520-4 75W1521-9
					1G41					55W641-1 75W1520-4
					1G42	WGB				75W1521-9 75W1521-10
					1G43					76W1621-9 76W1521-10
					1G44					75W1521-9 75W1521-10
					1G45					55W641-1 76W1621-7
					1G46					75W1521-7 75W1521-8
					1G47					75W1521-7 75W1521-8
					1G48					75W1521-7 75W1521-8

WBPEVAR 9001006

SHEET B62
PREPARED W A [illegible] DATE 1-29-90
CHECKED RD Roberts DATE 1/30/90

BOARD: 1. 0-080-240-5 2. ________ 3. ________
4. ________ 5. ________ 6. ________

BOARD REF #	CURVE NO.	COMPT/ BKR #/ FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/REF.
1	36	1	B413	WGB	12	X		55W716-5R7
	36	2	B414	WGB	12	X		
	36	3	B415	WGB	12	X		
	36	4	SPARE	—	—			
	36	5	B417	WGB	12	X		
	36	6	B418	WGB	12	X		
	36	7	B419	WGB	12	X		
	36	8	SPARE	—	—			
	36	9	B421	WGB	12	X		
	36	10	B422P	WGB-1	12	X		
	36	11	B591	WGB-1	12	X		
		12	SPARE	—	—			
		13	SPARE	—	—			
		14	SPARE	—	—			
		15	SPARE	—	—			
		16	B428	WGB	12	X		
		17	B429	WGB	12	X		
		18	B430	WGB	12	X		
		19	B431	WGB	12	X		
		20	B447	WGB-1	12	X		
		21	B433	WGB	12	X		
		22	B434	WGB	12	X		
		23	B435	WGB	12	X		
		24	SPARE	—	—			
		25	B437	WGB	12	X		
		26	B438	WGB	12	X		
		27	B439	WGB	12	X		
		28	SPARE	—	—			
		29	L405	WGB	12	X		
		30	B446	WGB	12	X		
		33	SPARE	—	—			
		34	SPARE	—	—			
		35	B442R	WGB	12	X		
		36	SPARE	—	—			

WBPEVAR9001006

REV. # 5

APPENDIX B

SHEET B62A

PREPARED BY: [signature] DATE 5-17-91

CHECKED BY: [signature] DATE 6/5/91

BOARD: 1. 0-DBD-240-5 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES/ REF. DWG.
					B 415					
6	245	1	36	3	J66	WGK	12	X		55W614-5
6	245	1	36	3	FBT 1017	WGH	12	X		55W643-1
										55W2324

WBPEVAR9001006 APPENDIX B SHEET B 62B

REV. # 5

PREPARED BY: [signature] DATE 5-30-91

CHECKED BY: [signature] DATE 6/5/91

BOARD: 1. O-DBD-240-5 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE No.	CMPT. BKR. #/ FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/ REF. DWG.
					B 419					
6	245	1	36	7	J53	WGK	12	X		55W615-1, 55W642-1
↓	↓	↓	↓	↓	FBT 2027	WGG	↓	X		55W615-1, 55W2322
↓	↓	↓	↓	↓	FBT 5017	WGG	↓	X		55W2322, 55W617-1
↓	↓	↓	↓	↓	J56	WGK	↓	X		55W617-1, 55W636-1

WBPEVAR 9001006
REV. # 5

APPENDIX B

SHEET B 62C
PREPARED BY: [signature] DATE 5-21-91
CHECKED BY: [signature] DATE 6/5/91

BOARD: 1. 0-DBD-240-5   2. ______   3. ______

4. ______   5. ______   6. ______

GROUP	SYS.	BOARD REF. #	CURVE No.	CMPT. BKR. #/ FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES / REF. DWG.
					B 422 P					
6	200	1	36	10	55 125 P	WG11	12	X		55W613-5, 55W2319
↓	↓	↓	↓	↓	J 97 P	WGE	↓	X		55W624-1,

WBPEVAR 9001006

REV. # 5

APPENDIX B

PREPARED BY: [signature] DATE 5-22-91

CHECKED BY: G. L. Ray DATE 6/5/91

SHEET B 62D

BOARD: 1. 0-DBD-240-5 2. ________ 3. ________

4. ________ 5. ________ 6. ________

GROUP	SYS.	BOARD REF. #	CURVE No.	COMPT. BKR. #/ FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES / REF. DWG.
					B 431					
6	245	1	36	19	J 75	WGK	12	X		55W616-5, 55W638-1
6	245	↓	↓	↓	FBT 2999	WGH	12	X		55N2323

WBPEVAR9001006 APPENDIX B SHEET B62E

REV. # 5

PREPARED BY: [signature] DATE 5-23-91

CHECKED BY: [signature] DATE 6/5/91

BOARD: 1. 0-DBD-240-5 2. ____ 3. ____

4. ____ 5. ____ 6. ____

GROUP	SYS.	BOARD REF. #	CURVE NO.	CMPT. BKR. #/ FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/ REF. DWG.
					B 435					
6	245	1	36	23	J15	WGK	12	X		55W616-5, 55W637-1
↓	↓	↓	↓	↓	FBT 4017	WG11	12	X		55W2325

WBPEVAR9001006 APPENDIX B SHEET B62F

REV. # 5

PREPARED BY: [signature] DATE 6-4-91

CHECKED BY: [signature] DATE 6/5/91

BOARD: 1. O-DBD-240-5 2. ________ 3. ________

4. ________ 5. ________ 6. ________

GROUP	SYS.	BOARD REF. #	CURVE No.	CMPT. BKR #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
					L 405					
6	233	1	36	29	L 406	WQC	12	X		CONTRACT 84647
↓	↓	↓	↓	↓	L 407	↓	↓	X		DWG # 6947D96
										55W615-5

WBPEVAR9001006 APPENDIX B SHEET B62G

REV. # 5

PREPARED BY: [signature] DATE 5-30-91

CHECKED BY: [signature] DATE 6/5/91

BOARD: 1. 0-DBD-240-5 2. ____ 3. ____

4. ____ 5. ____ 6. ____

GROUP	SYS.	BOARD REF. #	CURVE No.	CMPT. BKR #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES/ REF. DWG.
					B442R					
6	200	1	36	35	SS122R	WGH	12	X		55W612-5/55W2319
↓	↓	↓	↓	↓	J87R	WGE	12	X		55W635-1

WBPEVAR9001006

BOARD: 1. 1-DPL-242-1 2. ______ 3. ______
4. ______ 5. ______ 6. ______

D.R. McNeil 1-28-90 DRM 1-31-90 WO Myers 2/1/90

BOARD REF #	CURVE NO.	COMPT/BKR #/FUSE	CABLE No.	MK #	SIZE	PASS	FAIL	NOTES/REF.
1	21	BKR 6	1RM112	WFB	#10	✓		45N708-3 R9, 45N1620-4 R8
		↓	~~1RM19~~	~~WFB-1~~	~~#10~~	✓ DRM 1-31-90		
1	21	BKR 7	NA, SPARE					45N708-3 R9,
1	21	BKR 8	1RM120	WFB	#10	✓		45N708-3 R9, 45N1620-4 R8
1	21	BKR 9	1RM132	WFB	#10	✓		45N708-3 R9, 45N1620-4 R8
1	21	BKR 10	1RM126	WFB	#10	✓		45N708-3 R9, 45N1620-4 R8
1	21	BKR 11	1RM65	WFB	#10	✓		INLINE FUSES 1-FU-242-DPL1/F11 45N708-3 R9, 45N1620-4 R8
		↓	~~1RM66~~	~~WPB~~	~~#12~~	DRM 1-31-90		
1	21	BKR 12	1RM80	WFB	#10	✓		INLINE FUSES 1-FU-242-DPL1/F12 45N708-3 R9, 45N1620-4 R8
		↓	~~1RM81~~	~~WPB~~	~~#12~~	✓ DRM 1-31-90		
1	21	BKR 13	1RM90	WFB	#10	✓		INLINE FUSES 1-FU-242-DPL1/F13 45N708-3 R9, 45N1620-4 R8
		↓	~~1RM91~~	~~WPB~~	~~#12~~	✓ DRM 1-31-90		
1	21	BKR 14	RM47	WFB	#10	✓		45N708-3 R9, 45N1620-3 R11, 45W1635-76 Rev 7
		↓	~~RM45~~	~~WFB-1~~	~~#10~~	✓ DRM 1-31-90		
1	21	BKR 15	RM40	WFB	#10	✓		45N708-3 R9, 45N1620-3 R11, 45W1620-12 R7
			~~RM554~~	~~WFB-1~~	~~#10~~	✓ DRM 1-30-90		
			~~RM558~~	~~WFB-1~~	~~#10~~	✓ DRM 1-30-90		
		↓	~~RM559~~	~~WHB-1~~	~~#14~~	✓ DRM 1-30-90		
1	21	BKR 16	RM22	WFB	#10	✓		45N708-3 R9, 45N1620-2 R5
1	21	BKR 17	RM60	WFB	#10	✓		45N708-3 R9, 45N1620-4 R8
1	21	BKR 18	RM66	WFB	#10	✓		45N708-3 R9, 45N1620-4 R8
1	21	BKR 19	RM72	WFB	#10	✓		45N708-3 R9, 45N1620-4 R8
1	21	BKR 20	RM80	WFB	#10	✓		45N708-3 R9, 45N1620-4 R8
1	21	BKR 21	RM86	WFB	#10	✓		45N708-3 R9, 45N1620-4 R8
1	21	BKR 22	RM39	WFB	#10	✓		45N708-3 R9, 45N1620-4 R8
1	21	BKR 23	RM588	WGB-1	#12	✓		45N708-3 R9, 45N1620-4 R8

WBPEVAR 9001006

REV. # 5

APPENDIX B

PREPARED BY: [signature] DATE 6/04/91

CHECKED BY: [signature] DATE 6/12/91

SHEET BC3A

BOARD: 1. 1-DPL-242-1 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES/ REF. DWG.
					1RM112					
6	90	1	21	6	1RM19	WFB-1	10	✓		45N1620-4/45W1620-12

WBPEVAR9001006
REV. # 5

APPENDIX B

PREPARED BY: [signature] DATE 6-12-91
CHECKED BY: [signature] DATE 6/12/91

SHEET B63B

BOARD: 1. 1-DPL-242-1 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE No.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES/ REF. DWG.
6	90	1	21	12	1RM80 1RM81	WPB	12	✓		45A860-53/45N1620-4

WBPEVAR9001006
REV. # 5

APPENDIX B

PREPARED BY [signature] DATE 6-12-91
CHECKED BY: J. L. Kay DATE 6/12/91

SHEET B630

BOARD: 1. 1-DPL-242-1 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES/ REF. DWG.
					1RM90					
6	90	1	21	13	1RM91	WPB	12	✓		45A860-53/45N1620-4

NBPEVAR9001006
REV. # 5

APPENDIX B

SHEET B63D

PREPARED BY: [signature] DATE 6-12-91
CHECKED BY: [signature] DATE 6/12/91

BOARD: 1. 1-DPL-242-1 2. 3.
4. 5. 6.

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES / REF. DWG.
					RM47					
6	90	1	21	14	RM45	WFB-1	10	✓		45N1620-3/45W1635-76

WBPEVAR9001006

REV. # 5

APPENDIX B

SHEET: B63E

PREPARED BY: [signature] DATE 6-12-91

CHECKED BY: T. L. Ray DATE 6/12/91

BOARD: 1. 1-DPL-242-1 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
					RM 40					
6	90	1	21	15	RM554	WFB-1	10	✓		45W1620-3 / 45W1620-12
6	90	1	21	15	RM 558	WFB-1	10	✓		45W1620-12 / 45W1620-12
6	90	1	21	15	RM559	WHB-1	14	✓		45W1620-12 / 45W1620-12

WBPEVAR9001006

BOARD: 1. 1-DPL-242-1 2. 2-DPL-242-1 3. ______
4. ______ 5. ______ 6. ______

D.R.McNeil 1-26-90 DRM ~~DRM 1-31-90~~ WO Myer 2/1/90

BOARD REF #	CURVE NO.	COMPT/BKR #/FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/REF.
1	21	BKR 24	RM593	WGB-1	#12	✓		45N708-3 R9, 45N1620-4 R8
1	21	BKR 25	1RM472	WFB-1	#10	✓		45N708-3 R9, 45N1620-12 R7
1	21	BKR 26	NA, SPARE					45N708-3 R9,
2	21	BKR 1	2RM28	WFB	#10	✓		45N708-3 R9, 45N2620-2 R2
2	21	BKR 2	2RM100	WFB	#10	✓		45N708-3 R9, 45N2620-1 R8
2	21	BKR 3	2RM24	WFB	#10	✓		45N708-3 R9, 45N2620-2 R2
2	21	BKR 4	2RM106	WFB	#10	✓		45N708-3 R9, 45N2620-1 R8
2	21	BKR 5	2RM60	WFB	#10	✓		45N708-3 R9, 45N2620-3 R9
		↓	~~2RM180~~	~~WGB~~	~~#12~~	~~✓~~	DRM 1-31-90	
		↓	~~2RM190~~	~~WFB~~	~~#10~~	~~✓~~	DRM 1-31-90	
2	21	BKR 6	2RM112	WFB	#10	✓		45N708-3 R9, 45N2620-1 R8,
		↓	~~2RM19~~	~~WFB-1~~	~~#10~~	~~✓~~	DRM 1-31-90	45N2620-4 R7
2	21	BKR 7	NA, SPARE	—	—	—	—	45N708-3 R9
2	21	BKR 8	2RM120	WFB	#10	✓		45N708-3 R9, 45N2620-1 R8
2	21	BKR 9	2RM132	WFB	#10	✓		45N708-3 R9, 45N2620-1 R8
2	21	BKR 10	2RM126	WFB	#10	✓		45N708-3 R9, 45N2620-1 R8
2	21	BKR 11	2RM65	WFB	#10	✓		INLINE FUSES 2-FU-242-DPL1-/F11 45N708-3 R9, 45N2620-1 R8
		↓	~~2RM66~~	~~WPB~~	~~#12~~	~~✓~~	DRM 1-31-90	
2	21	BKR 12	2RM80	WFB-1	#10	✓		INLINE FUSES 2-FU-242-DPL1/F12 45N708-3 R9, 45N2620-1 R8
		↓	~~2RM81~~	~~WPB~~	~~#12~~	~~✓~~	DRM 1-31-90	
2	21	BKR 13	2RM90	WFB	#10	✓		INLINE FUSES 2-FU-242-DPL1-/F13 45N708-3 R9, 45N2620-1 R8
		↓	~~2RM91~~	~~WPB~~	~~#12~~	~~✓~~	DRM 1-31-90	
2	21	BKR 14	1RM388	WFB-1	#10	✓		45N708-3 R9, 45N1620-4 R8
2	21	BKR 15	NA, SPARE	—	—	—	—	
2	21	BKR 16	2RM472	WFB-1	#10	✓		45N708-3 R9, 45N2620-4 R7
2	21	BKR 17	NA, SPARE	—	—	—	—	45N708-3 R9,

WBPEVAR9001006

REV. # 5

APPENDIX B

SHEET B64B

PREPARED BY: L Brannon DATE 5/24/91

CHECKED BY: V. L. Ray DATE 6/14/91

BOARD: 1. 2-DPL-242-1 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
					2RM112					
6	90	1	21	6	2RM19	WFB-1	10	X		45W2620-4/45N2620-1
										NOTE: CABLES DOWN-STREAM ARE PROTECTED BY 5A FUSES. NO FURTHER EVALUATION IS REQUIRED.

WBREVAR9001006
REV. # 5

APPENDIX B

SHEET B64C

PREPARED BY: [signature] DATE 6/13/91

CHECKED BY: [signature] DATE 6/14/91

BOARD: 1. 2-DPL-242-1 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
					2RM65					
6	90	1	21	11	2RM66	WPB	12	X		45N2620-1 J281-5011, SH.3 45N708-3
										NOTE: CIRCUITRY DOWN-STREAM IS PROTECTED BY 5A FUSES. NO FURTHER EVALUATION IS REQUIRED

WBPEVAR9001006 APPENDIX B SHEET 1364E

REV. # 5

PREPARED BY: L. Branson DATE 6/13/91

CHECKED BY: G. L. Ray DATE 6/14/91

BOARD: 1. 2-DPL-242-1 2. ________ 3. ________

4. ________ 5. ________ 6. ________

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
					2RM90					
6	90	1	21	13	2RM91	WPB	12	X		45N2620-1 J281-5011, SH.3 45N708-3
										<u>NOTE: CIRCUITRY DOWN STREAM IS PROTECTED BY 5A FUSES. NO FURTHER EVALUATION IS REQUIRED.</u>

WBPEVAR9001006

COMP DRM DATE 1-31-90
CHECKED WOM DATE 1-31-90

BOARD: 1. 2-DPL-242-1 2. 1-BD-242-1 3. ______
4. ______ 5. ______ 6. ______

BOARD REF #	CURVE NO.	COMPT/ BKR #/ FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/REF.
1	21	BKR 18	NA/SPARE	-	-	-	-	45N708-3 R9
1	21	BKR 19	NA/SPARE	-	-	-	-	45N708-3 R9
1	21	BKR 20	NA/SPARE	-	-	-	-	45N708-3 R9
1	21	BKR 21	NA/SPARE	-	-	-	-	45N708-3 R9
1	21	BKR 22	NA/SPARE	-	-	-	-	45N708-3 R9
2	28	BKR 1	1RM10	WDF	#4	✓		45N708-4 R9, 45N1620-1 R9
2	28	BKR 2	1RM1	WDF	#4	✓		INLINE FUSE 1-FU-242-BD/F2 45N708-4 R9, 45N1620-1 R9
2	28	BKR 3	RM4	WDF	#4	✓		45N708-4 R9, 45N1620-1 R9
2	28	BKR 4	RM7	WDF	#4	✓		45N708-4 R9, 45N1620-1 R9
2	28	BKR 5	RM10	WDF	#4	✓		45N708-4 R9, 45N1620-1 R9
2	-	BKR 6	NA/SPARE	-	-	-	-	45N708-4 R9
2	-	BKR 7	NA/SPARE	-	-	-	-	45N708-4 R9
2	21	BKR 8	1RM20	WFB	#10	✓		45N708-4 R9, 45N1620-2 R5
2	21	BKR 9	1RM32	WFB	#10	✓		45N708-4 R9, 45N1620-2 R5
2	21	BKR 10	RM25	WFB	#10	✓		45N708-4 R9, 45N1620-2 R5
2	21	BKR 11	1RM210	WFB	#10	✓		45N708-4 R9, 45N1620-1 R9

WBPEVAR 9001006 | APPENDIX B | SHEET B65A

REV. # 5

PREPARED BY: Louis Guzman DATE 06-05-

CHECKED BY: T. L. Ray DATE 6/17/9

BOARD: 1. 1-BD-242-1 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
					1RM1					
6	90	1	28	2	1RM2	WP.B	12		✓	45N708-4 / 45N1620-1 R9 *
										TERMINAL BLOCK IN
										MOBILE AIR PARTICULATE
										MONITOR (TA) IS
										PROTECTED BY 5 AMP
										FUSE. CABLES 1RM3,
										1RM4 ARE NV 2, NO
										FUTHER EVALUATION
										REQUIRED.
										REF DRAWINGS
										1281-5011
										CABLE 1RM2 IS #12 &
										DOES NOT PASS PER
										CURVE #28.
										* SEE NOTE ON ATTACHED
										SHEET B65B

APPENDIX B

Prepared by: J.C. Duevan Date: 11-25-91
Checked by: ________ Date: ______

Note:

Circuit fed from Breaker 2 of 1-BD-242-1 contains cable 1RM1 which is protected by a 30A circcuit breaker (curve 28) and 30A fuses (curve 78). Cable 1RM2 (Mark No. WPB) is Daisy Chain circuit from cable 1RM1. The 30A circuit breaker does not portect cable 1RM2 (12 AWG). However, the 30A fuses (AT-DE-30R) per trip curve 78 will protect a 12 AWG cable mark WPB which has an insulation temperature rating of 125 degrees C.

WBPEYAR9001006

COMP OKM DATE 1-31-90
CKED WOM DATE 1-31-90

BOARD: 1. 1-BD-242-1 2. 2-BD-242-1 3. ______
4. ______ 5. ______ 6. ______

BOARD REF #	CURVE NO.	COMPT/BKR #/FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/REF.
1	21	BKR12	RM598	WGB-1	#12	✓		45N708-4 R9, 45N1620-3 R11
1	–	BKR13	NA/ SPARE	–	–	–	–	45N708-4 R9
1	21	BKR14	RM137	WGB-1	#12	✓		45N708-4 R9, 45N1620-1 R9
1	21	BKR15	1RM506	WFB-1	#10	✓		45N708-4R9, 45W1620-14R3
1	21	BKR16	1RM507	WFB-1	#10	✓		45N708-4R9, 45W1620-14 R3
1	21	BKR17	1RM508	WFB-1	#10	✓		45N708-4R9, 45W1620-14 R3
1	21	BKR18	1RM243	WGB-1	#12	✓		45N708-4 R9, 45W1620-15 R1, & 45N1635-109 R4.
1	21	BKR19	1RM231	WGB-1	#12	✓		45N708-4 R9, 45W1620-15 R1, & 45N1635-109 R4
2	28	BKR1	2RM10	WDF-1	#4	✓		45N708-4R9, 45N2620-1 R8
2	28	BKR2	2RM1	WDF	#4	✓		INLINE FUSE 2-RE-90-E2 45N708-4 R9, 45N2620-1 R8
2	28	BKR3	RM1	WDG-1	#2	✓		45N708-4R9, 45N1620-1 R9
2	28	BKR4	RM13	WDF	#4	✓		45N708-4R9, 45N1620-1 R9
2	28	BKR5	RM16	WDG-1	#2	✓		45N708-4 R9, 45N1620-1 R9

WBPEVAR9001006 APPENDIX D SHEET [illegible]

REV. # 5

PREPARED BY: [signature] DATE 6-04-91

CHECKED BY: J. L. Ray DATE 6/18/91

BOARD: 1. 1-BD-242-1 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES / REF. DWG.
					1RM507					
6	90	1	21	16	1RM509	WFC-1	10	✓		45N708-4 / 45N1620-14

WBPEVAR9001006
REV. # 5

APPENDIX B
PREPARED BY: [signature] DATE 6-5-91
CHECKED BY: [signature] DATE 6/18/91

SHEET B66B

BOARD: 1. 1-BD-242-1 2. ______ 3. ______
4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT./BKR. #/FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
					1RM243					
6	90	1	21	18	1RM237	WGB-1	12	✓		45N1620-15
↓	↓	↓	↓	↓	1M1789	↓	↓	✓		45N1620-15/45N1635-109
↓	↓	↓	↓	↓	1M1790	↓	↓	✓		45N1635-109

WBPEVAR9001006 APPENDIX B SHEET B66C

REV. # 5

PREPARED BY: [signature] DATE 6/3/91

CHECKED BY: [signature] DATE 6/14/91

BOARD: 1. 2-BD-242-1 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE No.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES/ REF. DWG.
					2RM1					
6	90	1	28	2	2RM2	WPB	12		* GRL 11/21/91	45N2620-1
										NOTE: CABLE FAILS DUE TO INADEQUATE CKT. BKR/FUSE PROTECTION PER CURVE #28. CIRCUITRY DOWNSTREAM FROM CABLE 2RM2 IS PROTECTED BY 5A FUSES. NO FURTHER EVALUATION REQUIRED.
										* SEE NOTE ON ATTACHED SHEET B66D

R7

R7

APPENDIX B

Prepared by: J.A. Queven Date: 11-25-91
Checked by: ________ Date: ______

Note:

Circuit fed from Breaker 2 of 2-BD-242-1 contains cable 2RM1 which is protected by a 30A circcuit breaker (curve 28) and 30A fuses (curve 78). Cable 2RM2 (Mark No. WPB) is Daisy Chain circuit from cable 2RM1. The 30A circuit breaker does not portect cable 1RM2 (12 AWG). However, the 30A fuses (AT-DE-30R) per trip curve 78 will protect a 12 AWG cable mark WPB which has an insulation temperature rating of 125 degrees C.

WBPEVAR9001006

BOARD: 1. 2-BD-242-1 2. ______ 3. ______
4. ______ 5. ______ 6. ______

D.R. McNEIL 1-28-90 DRM DRM 1-31-90 WOMYR 1/31/90

BOARD REF #	CURVE NO.	COMPT/ BKR #/ FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES / REF.
1	28	BKR 6	RM20	WDE-1	# 6	✓		45N708-4 R9, 45N1620-1
1	—	BKR 7	NA / SPARE	—	—			45N708-4 R9 (No Walkdown Pkg.
1	21	BKR 8	2RM20	WFB-	# 10	✓		45N708-4 R9, 45N2620-2 R2
1	21	BKR 9	2RM32	WFB	# 10	✓		45N708-4 R9, 45N2620-2 R2
1	—	BKR 10	NA / SPARE	—	—			45N708-4 R9 (No Walkdown Pkg)
1	21	BKR 11	2RM210	WFB	# 10	✓		45N708-4 R9, 45N2620-3 R9
1	—	BKR 12	NA / SPARE	—	—			45N708-4 R9 (No Walkdown Pkg)
1	—	BKR 13	NA / SPARE	—	—			45N708-4 R9
1	—	BKR 14	NA / SPARE	—	—			45N708-4 R9
1	21	BKR 15	2RM506	WFB-1	# 10	✓		45N708-4 R9, 45W2620-5 R3
1	21	BKR 16	2RM507	WFB-1	# 10	✓		45N708-4 R9, 45W2620-5 R3
			~~2RM509~~	~~WFC-1~~	~~# 10~~	~~✓~~	DRM 1-31-90	
1	21	BKR 17	2RM508	WFB-1	# 10	✓		45N708-4 R9, 45W2620-5 R3
1	21	BKR 18	2RM243	WGB-1	# 12	✓		45N708-4 R9, 45W2620-6 R6,
			~~2RM237~~			~~✓~~	DRM 1-31-90	45N2635-109 R2
			~~2M1789~~			~~✓~~	DRM 1-31-90	
			~~2M1790~~			~~✓~~	DRM 1-31-90	
1	21	BKR 19	2RM231	WGB-1	# 12	✓		45N708-4 R9, 45W2620-6 R6,
			~~2RM225~~			~~✓~~	DRM 1-31-90	45N2635-109 R2
			~~2M1788~~			~~✓~~	DRM 1-31-90	
			~~2M1791~~			~~✓~~	DRM 1-31-90	

WBPEVAR9001006 APPENDIX B SHEET B67A

REV. # 5

PREPARED BY: L Brannon DATE 6/13/91

CHECKED BY: J. L. Ray DATE 6/13/91

BOARD: 1. 2-BD-242-1 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
					2RM507					
6	90	1	21	16	2RM509	WCE1	10	✓		45W2620-5 &
										Dwg. #11121-D83

WBPEVAR9001006
REV. # 5

APPENDIX B

PREPARED BY: L Branson DATE 6/13/91
CHECKED BY: [illegible] DATE 6/13/91

SHEET B67B

BOARD: 1. 2-BD-242-1 2. ______ 3. ______
4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
					2RM243					
6	90	1	21	18	2RM237	WGB-1	12	✓		45W2620-6/
6	90	1	21	18	2M1789	WGB-1	12	✓		45W2620-6/45N2635-109
6	90	1	21	18	2M1790	WGB-1	12	✓		45N2635-109

WBPEVAR 9001006
REV. # 5

APPENDIX B

PREPARED BY: L Branham DATE 6/13/91
CHECKED BY: T. L. Day DATE 6/14/9

SHEET B67C

BOARD: 1. 2-BD-242-1 2. ________ 3. ________

4. ________ 5. ________ 6. ________

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES/ REF. DWG.
					2RM231					
6	90	1	21	19	2RM225	WGB-1	12	✓		45W2620-6/~~45W~~
6	90	1	21	19	2M1788	WGB-1	12	✓		45W2620-6/45N2635-109
6	90	1	21	19	2M1791	WGB-1	12	✓		45N2635-109

WBPEVAR 9001006

BOARD: 1. 0-MCC-249-1   2. 1-DPL-242-1   3. ______
4. ______   5. ______   6. ______

D.R. McNeil 1-28-90 DRM   DRM 1-31-90   CHECKED WO Myers 1/31/90

BOARD REF #	CURVE NO.	COMPT/ BKR #/ FUSE	CABLE No.	MK #	SIZE	PASS	FAIL	NOTES/REF.
1	49	7A/ BKR 1	LIGHTING CABLE	THHN	#12	✓		~~4B~~ DRM 1-31-90 45B766-7AR1, 45W2416-5RL
1	49	7A/ BKR 2	↓	↓	↓	✓		↓
1	49	7A/ BKR 5				✓		
1	48	7C/ BKR 1				✓		
1	48	7C/ BKR 2				✓		
1	47	7C/ BKR 3				✓		
1	47	7C/ BKR 5				✓		
1	47	7C/ BKR 9				✓		
1	47	7C/ BKR 10				✓		
1	47	7C/ BKR 11				✓		
1	47	7C/ BKR 12	↓	↓	↓	✓		↓
2	21	BKR 1	1RM28	WFB	#10	✓		45N708-3 R9, 45N1620-2 R5
2	21	BKR 2	1RM100	WFB	#10	✓		45N708-3 R9, 45N1620-4 R8,
2	21	BKR 3	1RM24	WFB	#10	✓		45N708-3 R9, 45N1620-2 R5
2	21	BKR 4	1RM106	WFB	#10	✓		45N708-3 R9, 45N1620-4 R8
2	21	BKR 5	1RM60	WFB	#10	✓		45N708-3 R9, 45N1620-3 R11, 45N1620-4 R
		↓	~~1RM180~~	~~WGB~~	~~#12~~	✓	DRM 1-31-90 WOM 1/31/90	
		↓	~~1RM190~~	~~WFB~~	~~#10~~	✓	DRM 1-31-90 WOM 1/31/90	

WBPEVAR9001006 APPENDIX B SHEET B68A

REV. # 5

PREPARED BY: [signature] DATE 6-7-91

CHECKED BY: [signature] DATE 6/18/91

BOARD: 1. 1-DPL-242-1 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
					1RM60					
6	90	1	21	5	~~1RM180~~	WGB	12	✓		45N1620-3
6	90	1	21	5	1RM190	WFB	10	✓		45N1620-3 & -4

NOTE: CIRCUITRY DOWNSTREAM IS PROTECTED BY 5A FUSES NO FURTHER EVALUATION REQUIRED.

WBPEVAR9001006

PAGE B69

COMPUTED TMB DATE 1-30-90

CHECKED JCButler DATE 1-31-90

BOARD: 1. 0-MCC-257-1 2. ______ 3. ______

4. ______ 5. ______ 6. ______

BOARD REF #	CURVE NO.	COMPT/ BKR #/ FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/REF.
1	48	6A	1PL4476	WFB-1	10	X		SORT OF V3 CABLES FOR THIS MCC REVEALS 2 CABLES, OTHER CABLE DOES NOT LEAVE THE BUILDING. REMAING CKTS IN COMPT 6A DO NOT LEAVE BUILDING PER 15W420-4 (R3)

WBPEVAR 9001006

COMPUTED [signature] DATE 1/31/90
CHECKED [signature] DATE 1/31/90

BOARD: 1. 1-PNL-278-M18 2. 2-PNL-278-M18. 3. ______
4. ______ 5. ______ 6. ______

BOARD REF #	CURVE NO.	COMPT/ BKR #/ FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/REF.
1	N/A	35Amp BKR	NO CABLE					HEINEMAN 2 POLE (35A) 6065D50 REV. E, 1054E58 REV. C SH 2, CONTR 54114-1
1	N/A	25Amp BKR	NO CABLE					HEINEMAN AM2-A3 (25A) 6065D50 REV. E, 1054E58 REV. C SH 2, CONTR 54114-1
2	N/A	35Amp BKR	NO CABLE					HEINEMAN 2 POLE (35A) 6065D50 REV. E, 1054E58 REV. C SH 2, CONTR 54114-1
2	N/A	25Amp BKR	NO CABLE					HEINEMAN AM2-A3 (25A) 6065D50 REV. E, 1054E58 SH 2, CONTR 54114-1

WBPEVAR9001006

COMPUTED [illegible] DATE 2/1/90

CHECKED [illegible] DATE 2/1/90

BOARD: 1. 1-Cmpt-261-R103 2. 2-Cmpt-261-R103 3. ______
4. ______ 5. ______ 6. ______

BOARD REF #	CURVE NO.	COMPT/ BKR #/ FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/REF.
1	113		1C520	WLC	12		✓*	SEE NOTE ON ATTACHED SHEET B71A
	↓		1C522	MFR34	14		✓*	SEE ~~APPENDIX G~~ ATTACHMENT M16428A DJE 12/11/91
			1C523	WLC ~~MFR34~~	12		✓*	SEE NOTE ON ATTACHED SHEET B71A
			1C1180	WGC-1	12		✓*	↓
2			2C520	WLC	12		✓*	
			2C521	WLC	12		✓*	
			2C522	WLC	12		✓*	
			2C523	WLC	12		✓*	Bkrs are Bryant BR

* Curves for these Bkrs not available, so cables are failed until curves plotted

APPENDIX B

Prepared by: [signature] Date: 11-25-91
Checked by: __________ Date: ______

Note:

The primary protective device for each circuit of cables 1C520, 1C523, 1C1180, 2C520, 2C521, 2C522 and 2C523 is a Bryant Breaker BR type (curve 113). A review of this circuit based on walkdown data for non-class 1E equipment (RIMS B26900201400) and cable CCRS verifies the breaker to be BR type and the cable to be #12 (Mark No. WLC) which have an insulation temperature rating of 90 degrees C (DS-E12.6.3). This protective device inherently protects a #12 cable at 90 degrees C.

WBPEVAR9001006

PREPARER: [signature] 1-28-90
[initials] 2/2/90

BOARD: 1. 0-BD-200-SA 2. 0-BD-200-SB 3. ____
4. ____ 5. ____ 6. ____

BOARD REF #	CURVE NO.	COMPT/ BKR #/ FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/REF.
1	17	COMPT A1	NO CABLE	—	—	—	—	FUSE 0-FU-200-SA1/5 FOR BOARD HEATERS (CABLE HC3 TO CKT 2A, 2B, 2C, 2N (7SW412-1 R6) REF (0123D4603 R3 & 0123D4615) SH1, R3 CONTRACT 74-84376
2	17	COMPT B1	NO CABLE	—	—	—	—	FUSE 0-FU-200-SB/5 FOR BOARD HEATERS (CABLE HC3 TO CKT 2A, 2B, 2C, 2N (7SW412-1 R6) REF (0123D4609 R3 & 0123D4615) SH3, R3 CONTRACT 74-84376
	17	COMPT B1	NO CABLE	—	—	—	—	FUSE 0-FU-200-SB1/4 FOR BOARD FAN MOTORS.
	17	COMPT B1	NO CABLE	—	—	—	—	FUSE 0-FU-200-SB1/6 FOR BOARD AISLE LTGS.

WBPEVAR9001006

PREPARER: [illegible]
CHECKER: R.D. Roberts 1/31/90

PAGE ~~B73~~

BOARD: 1. 0-BD-200-A 2. 0-BD-200-C 3. 0-BD-200-D

4. 5. 6.

BOARD REF #	CURVE NO.	COMPT/BKR #/FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/REF.
1	17	COMPT 1A16	NO CABLE	—	—	—	—	FUSE 0-FU-200-A16/1 (FRN 15) FOR BOARD WIRING ONLY (REF 0145D7727, REV 903) CONTRACT 74C2-84376
2	17	COMPT B1	SS520R	WFG-1	10	X		FUSE 0-FU-200-CB1/1 (FRN 15) REF 81004 SH 12 & 45W1714-1) REV 903 REV 5 CONTRACT 81K5-829042 (DWG & CONTRACT INFO FOR 0-FU-200-CB1/3 FUSE ALSO)
	17	COMPT B1	NO CABLE	—	—	—	—	FUSE 0-FU-200-CB1/3 (FRN 15) FOR ELEVATE MECH
	17	COMPT B2	NO. CABLE	—	—	—	—	FUSE 0-FU-200-CB2/7 (FRN 15) FOR INTERNAL BOARD WIRING REF 81004, SH 11, REV 904 CONTRACT 81K5-8290 AND 45W1714-1, REV 5
3	17	COMPT A2	SS523P	WFG-1	10	X		FUSE 0-FU-200-DA2/1 (FRN 15) REF 81004 SH 11, REV 904 & 45W1714-1, REV 5 CONTRACT 81K5-829042
	17	COMPT A2	SS523P	WFG-1	10	X		FUSE 0-FU-200-DA2/2 (FRN 15
	17	COMPT A2	NO CABLE	—	—	—	—	FUSE 0-FU-200-DA2/3 (FRN FOR ELEVATE MECH (DWG & CONTRACT INFO FOR 0-FU-200-DA2/2 & 0-FU-200-DA FUSES ALSO)

WBPEVAR9001006

REV. # 5

APPENDIX B

PREPARED BY: [signature] DATE 6-7-91

CHECKED BY: [signature] DATE 6-18-91

SHEET B73A

BOARD: 1. 0-BD-200-D 2. ________ 3. ________

4. ________ 5. ________ 6. ________

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES / REF. DWG.
6					SS523					
6	200	1	17	A2	J181	WHB-1	14	✓		55W613-5/55W624-1

WBPEVAR 9001006

REV. # 5

APPENDIX B

SHEET B23B

PREPARED BY: [signature] DATE 6-11-91

CHECKED BY: J. McCarthy DATE 6-18-91

BOARD: 1. 0-BD-200C 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES / REF. DWG.
6	200	1	17	B1	SS520 J182	WF6-1	14	✓		55W612-1/45W1714-1

PREPARED: [illegible] [illegible]
OCS 2/2/90.

WBPEVAR9001006

BOARD: 1. 1-BD-201-A 2. 1-BD-201-C 3. 1-BD-201-D

4. ______ 5. ______ 6. ______

BOARD REF #	CURVE NO.	COMPT/BKR #/FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/REF.
1	91	COMPT 1A2	NO CABLE	—	—	—	—	BREAKER (TEB122020) IS WIRED TO INSPECTION BOX (REF 0126D3931, SH6, REV 903 CONTRACT 74C2-84376
	17	COMPT 1A8	1PP1480	WGB-1	12	X		FUSE 1-FU-201-A8/4 IS A FRNIS (REF 0126D3924, R904) & 0126D3931, SH4, R907 CONTRACT 74C2-84376
2	91	COMPT 1C2	NO CABLE	—	—	—	—	BREAKER (TEB122020) IS WIRED TO INSPECTION BOX (REF 0126D4010) SH6, R904 CONTRACT 74C2-84376
	90	COMPT 1C3	NO CABLE	—	—	—	—	FUSE 1-FU-201-C3/1 PROTECTS INTERNAL BOARD WIRING ONLY (REF 0126D4008) REV 904 CONTRACT 74C2-84376
3	90	COMPT 1D5	NO CABLE	—	—	—	—	FUSE 1-FU-201-D5/4 IS SPARE PER (0126D3994) R904 CONTRACT 74C2-84376

WBPEVAR9001006

RS 2/2/90

PAGE B75

BOARD: 1. 2-BD-201-A 2. 2-BD-201-B 3. 2-BD-201-D
4. 2-BD-201-C 5. ______ 6. ______

BOARD REF #	CURVE NO.	COMPT/ BKR #/ FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/REF.
1	91	COMPT 2A2	NO CABLE	—	—	—	—	BREAKER (TEB122020) IS WIRED TO INSPECTION BOX (REF 0126D4623 SH6, R903 CONTRACT 74C2-84376
2	90	COMPT 2B5	NO CABLE	—	—	—	—	FUSE 2-FU-201-B5/4 IS SPARE PER (0126D4606) R905 CONTRACT 74C2-84376
3	90	COMPT 2D5	NO CABLE	—	—	—	—	FUSE 2-FU-201-D5/4 IS SPARE PER (0126D4656) R905 CONTRACT 74C2-84376
4	91	COMPT 2C2	NO CABLE	—	—	—	—	BREAKER (TEB122020) IS WIRED TO INSPECTION BOX (REF 0126D46 SH6, R9 CONTRACT 74C2-84376
	52	COMPT 2C9	NO CABLE	—	—	—	—	FUSE 2-FU-201-C9/4 IS SPARE PER (0126D4664) R905 CONDRACT 74C2-84376
	NOTE	COMPT 2C7	2PP235	WGH	12			FUSE 2-FU-201-C7/1 IS A RELIANCE TYPE KON15 (REF 0126D4666 R904 & 0126D4672) SI R905 CONTRACT 74C2-84376
								NOTE! MANUFACTURE INFO NOT AVAILABLE FOR FUSE, THEREFORE PASS/FAI FOR CABLE NOT DETERMINED.

WBPEVAR 9001006
REV. # 5

APPENDIX B

SHEET B 75A

PREPARED BY: [signature] DATE 7-12-91
CHECKED BY: [signature] DATE 7/12/91

BOARD: 1. 2-BD-201-D/4 2. ______ 3. ______

4. ______ 5. ______ 6. ______

GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR. #/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
					2PP235					
6	2	1	*	* 2C7	2PP234	WGG	12		X	0126D4672-5 45W2721-3
										* MANUFACTURER INFO NOT AVAILABLE FOR FUSE.
										SEE SHEET B75A1

JB 7/12/91

APPENDIX B

Prepared [signature] Date 7/16/91
Checked [signature] Date 7/16/91

Note:

Circuit fed from compartment 2C7 of board 2-BD-201-C/4 contains cable 2PP235 (mark number WGG), which has a insulation temperature rating of 75 degrees C (DS E12.6.3). The primary protective device for this circuit is a Reliance type KON 15. The manufacturers time/current curve for this fuse could not be obtained. However, the failure of these cables will not degrade Class 1E safety related cables or equipment since they are located entirely in the Turbine Building (non-category I structure).

WBPEVAR9001006

PREPARER: [illegible] 1-26-90
RS 2/2/90
PAGE ~~B76~~

BOARD: 1. 1-BD-202-A 2. 1-BD-202-C 3. 1-BD-202-D
4. 2-BD-202-A 5. 2-BD-202-D 6. ______

BOARD REF #	CURVE NO.	COMPT/BKR #/FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/REF.
1	94	COMPT 1A2	NO. CABLE	—	—	—	—	FUSE 1-FU-202-A2/4 (NON 20) FOR BOARD LIGHTS (REF 0126D1471) R90[illegible]
	106	COMPT 1A2	NO CABLE	—	—	—	—	FUSE 1-FU-202-A2/3 (A6Y30) FOR BOARD HEATERS (REF 0126D14[illegible] R909
								CONTRACT 74C2-84376
2	17	COMPT 1C2	1PP1108	WGD	12	X		FUSE 1-FU-202-C2/8 (FRN 15) (REF 0126D1486, R909 & 0126D1501,S[illegible] R912) CONTRACT 74C2-84376
	1	COMPT 1C2	NO CABLE	—	—	—	—	FUSE 1-FU-202-C2/5 (TR30R) FOR BOARD RECPTACLE
	106	COMPT 1C2	NO CABLE	—	—	—	—	FUSE 1-FU-202-C2/3 (A6Y30) FOR BOARD HEATERS (REF 0126D1486 R90[illegible]
								CONTRACT 74C2-84376
3	90	COMPT 1D2	NO CABLE	—	—	—	—	FUSE 1-FU-202-D2/1A (OT30) FOR BOARD WIRING ONLY (REF 0126D1489) R908
								CONTRACT 74C2-84376
4	NOTE	COMPT 2A3	NO CABLE	—	—	—	—	FUSE 2-FU-202-A3/4 (EON 30) FOR BOARD HEATERS (REF 0126D1482) R9[illegible]
								CONTRACT 74C2-84376
5	17	COMPT 2D3	2PP1075	WGB-1	12	X		FUSE 2-FU-202-D3/1 (FRN 15) (REF 0126D1495) REV907 & 0126D1501,SH1 REV916 CONTRACT 74C2-84376
	17	COMPT 2D3	—	—	—	—	—	FUSE 2-FU-202-D3/4 (FRN15, (REF 0126D1495) REV907 FOR BOARD WIRING ONLY
								NOTE: MANUFACTURE INFO NOT AVAILABLE FOR FUSE TYPE

WBPEVAR9001006
REV.# 5

APPENDIX B

SHEET B76A

PREPARED BY: Louis Guzman DATE 05-06-91
CHECKED BY: D.L. Day DATE 5/8/91

BOARD: 1. 2-BD-202-D 2. 3.
4. 5. 6.

	GROUP	SYS.	BOARD REF. #	CURVE NO.	COMPT. BKR.#/ FUSE	CABLE NO.	MK#	SIZE	PASS	FAIL	NOTES / REF. DWG.
						2PP1075					
	4	68	1	17	2D3	2PP1076	WXB1	12	✓		45B2756-8D R3 / 45N2616-7
*	4	68	1	17	2D3	2PP1077	WPA	14	✓		" "

* SEE DESIGN STANDARD DS-E12.6.3 FOR CABLE MARK NO. RATING OF TEMPERATURE (WPA-125 DEG. C)

WBPEVAR9001006

~~Page No. 1~~
~~02/01/90~~
TOD 2/2/90

SHEET C1
PREPARED TOD TOD 2/5/90 DATE 2/1/90
CHECKED RS RS DATE 2/1/90 2/5/90

MINIMUM ALLOWABLE CABLE SIZES FOR PLOTTED CURVE NUMBERS

CURVE NUMBER	MINIMUM CABLE SIZE 75 DEGREES	MINIMUM CABLE SIZE 90 DEGREES
1	10	12
2	14	14
3	14	14
4	12	14
5	10	12
6	4	6
7	8	10
8	10	10
9	12	12
10	12	14
11	14	14
12	10	10
13	14	14
14	14	14
15	14	14
16	14	14
17	12	14
18	14	14
19	2	4
20	12	12
21	12	14
22	10	12
23	8	8
24	8	8
25	2	4
26	2	4
27	2	2
28	10	10
29	10	10
30	10	10
31	6	6
32	14	14
33	14	14
34	14	14
35	14	14
36	12	14
37	10	10
38	10	10
39	~~12~~ 14 DK 9.5.91	14
40	10	12
41	2	4
42	1/0	2
43	1/0	1/0
44	4/0	2/0
45	4/0	4/0
46	12	14
47	12	12
48	8	10

R5

WBPEVAR9001006

SHEET: C2
PREPARED TAD [signature] 2/5/90 DATE 2/1/90
CHECKED RS RS 2/5/90 DATE 2/1/90

~~Page No. 2~~
~~02/01/90~~ TAD 2/1/90

MINIMUM ALLOWABLE CABLE SIZES FOR
PLOTTED CURVE NUMBERS

CURVE NUMBER	MINIMUM CABLE SIZE 75 DEGREES	MINIMUM CABLE SIZE 90 DEGREES
49	12	12
50	10	12
51	12	12
52	12	14
53	14	14
54	14	14
55	14	14
56	14	14
57	14	14
58	14	14
59	14	14
60	14	14
61	14	14
62	8	8
63	14	14
64	14	14
65	14	14
66	14	14
67	14	14
68	10	12
69	8	10
70	14	14
71	14	14
72	14	14
73	14	14
74	14	14
75	14	14
76	14	14
77	12	14
78	10	10
*79	14	14
*80	8	10
81	10	12
82	2/0	1/0
83	1/0	2
84	2	4
85	2/0	1/0
86	12	14
*87	14	14
*88	14	14
*89	14	14
90	14	14
91	12	12
92	14	14
93	8	8
94	14	14
95	14	14
96	12	12

* curve generated from Captor software library. Mfr data to verify not available - see section 2.1

WBPEVAR9001006

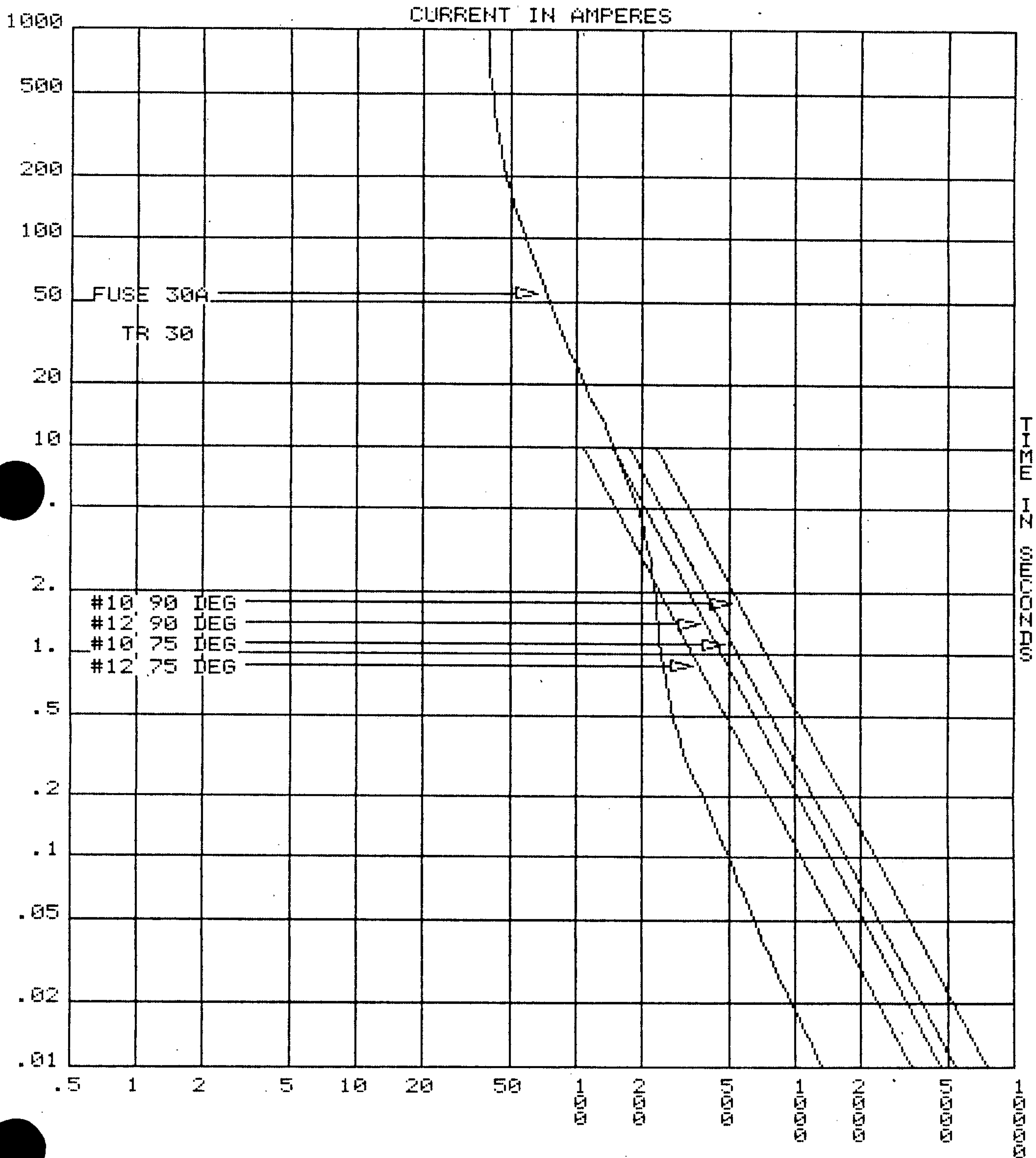
PREPARED TALK DATE 2/1/90
CHECKED ORS RS 2/5/90

MINIMUM ALLOWABLE CABLE SIZES FOR
PLOTTED CURVE NUMBERS

CURVE NUMBER	MINIMUM CABLE SIZE 75 DEGREES	MINIMUM CABLE SIZE 90 DEGREES	
97	14	14	
98	14	14	
99	12	14	
100	12	12	
101	10	12	
102	8	10	
103	6	8	
104	6	8	
105	6	6	
106	12	14	
107	14	14	
108	14	14	
109	8	8	
110	10	10	
111	10	~~12~~ 10 DK 2.5.91	R5
112	12	14	R7
113	12	12	

WBPEVAR 9001006

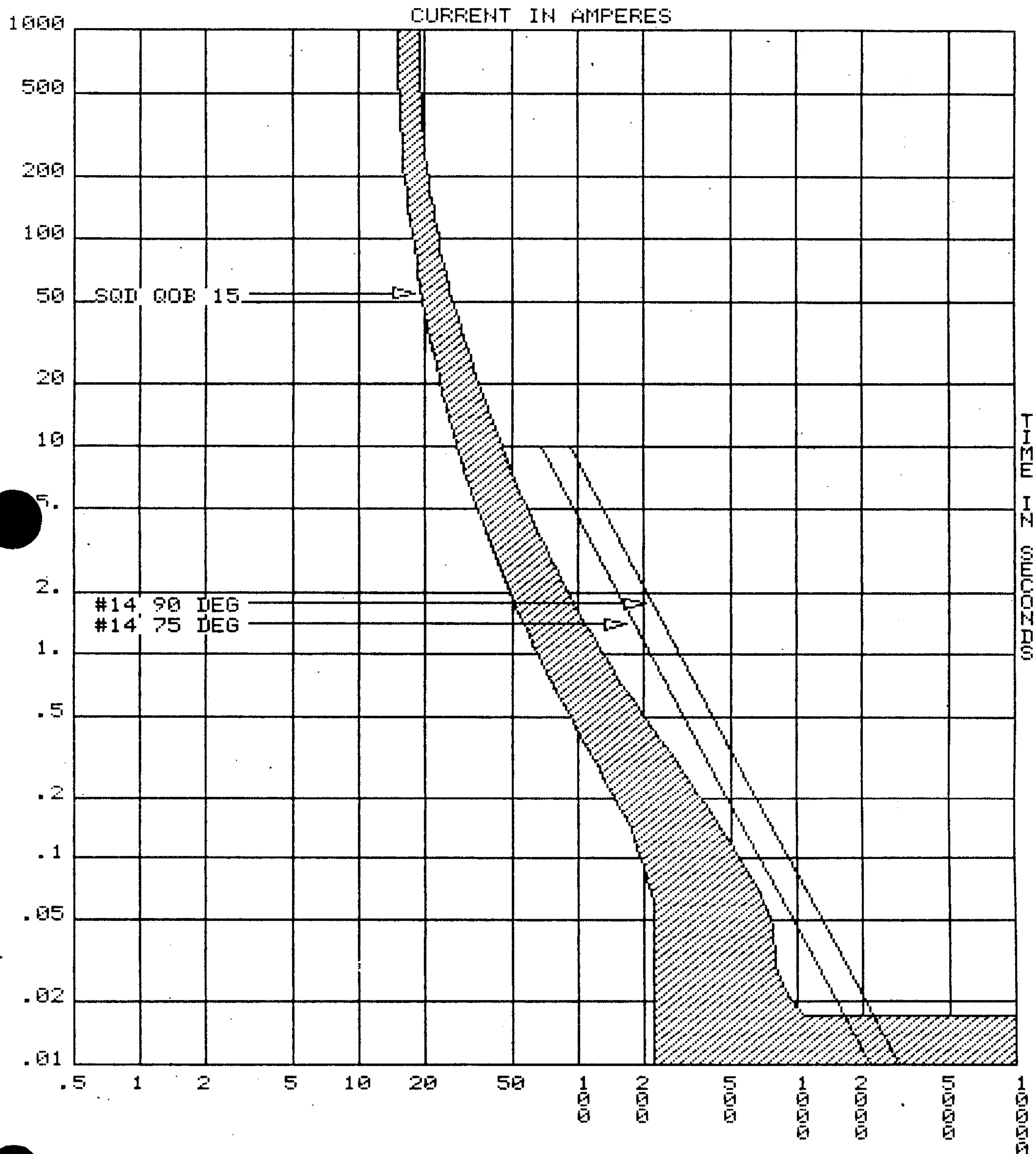
SHEET C4
PREPARED 7QD DATE 1-31-90
CHECKED GCP DATE 2-1-90



DRAWING CURVE1 PLOT ELL: 120 SCALE: 10^0

WBPEVAR 9001006

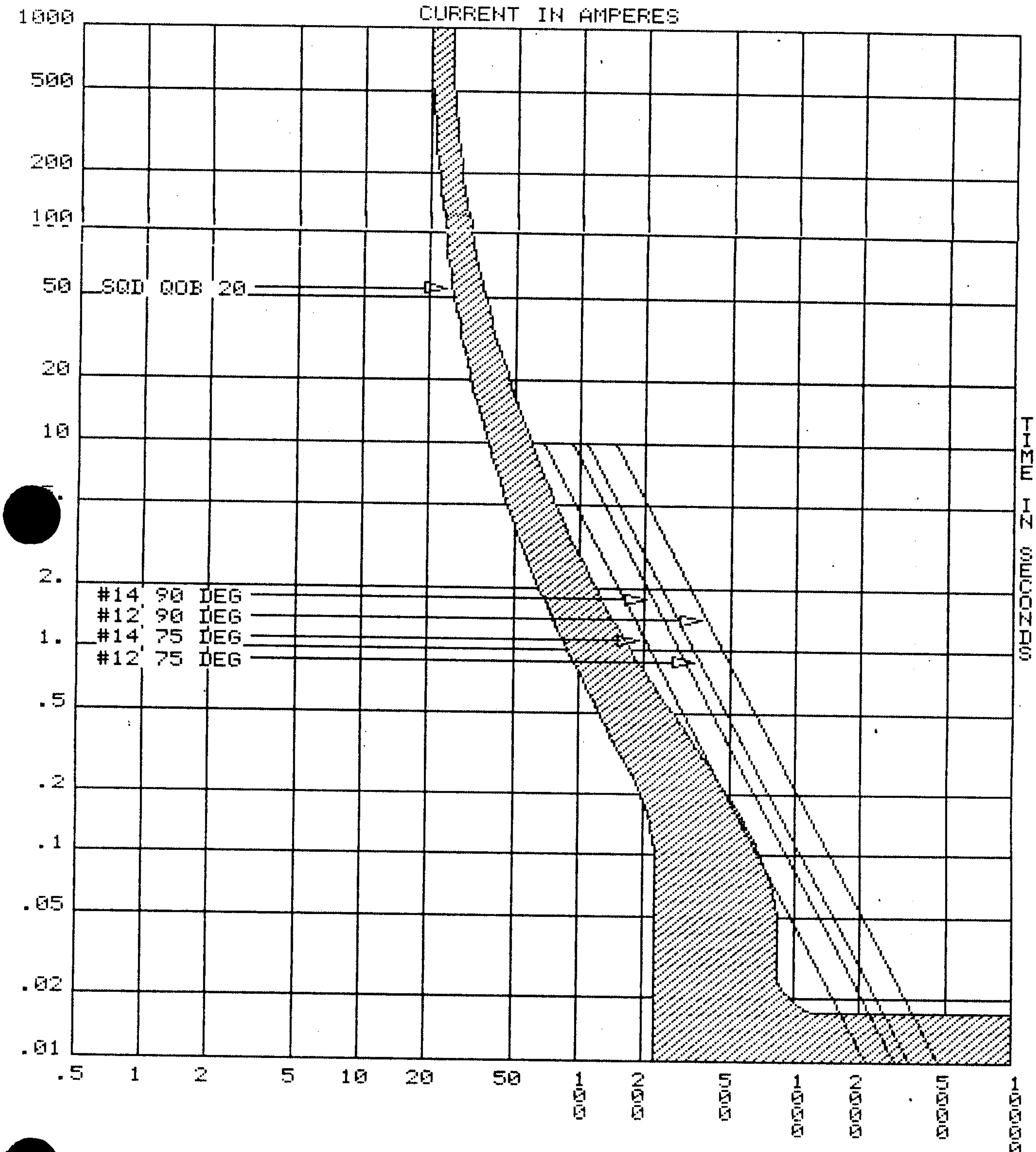
SHEET C5
PREPARED [illegible] DATE 1-31-90
CHECKED [illegible] DATE 2-1-90



DRAWING CURVE2 PLOT ELL: 120 SCALE: 10^0

WBPEVAR9001006

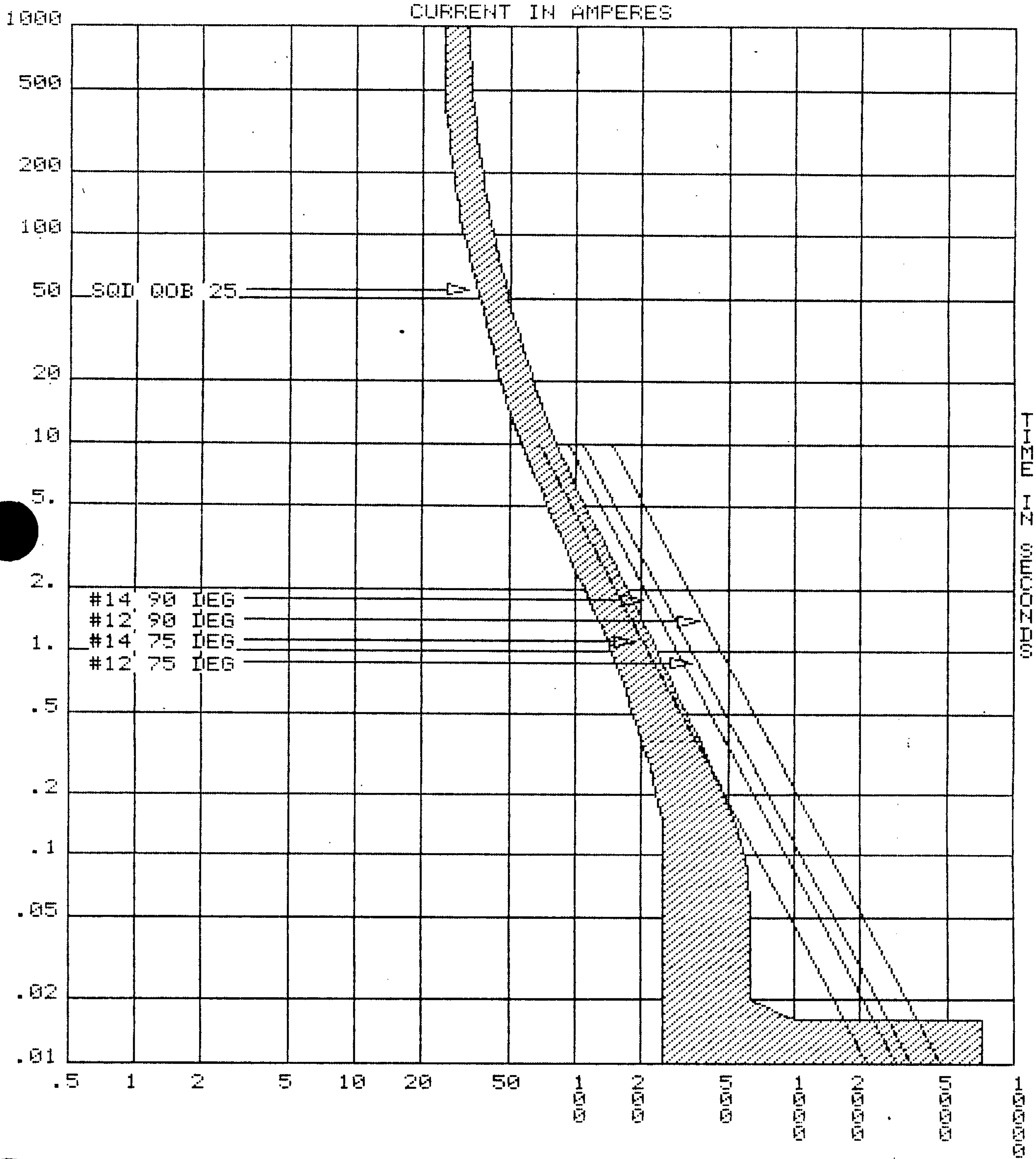
SHEET C6
PREPARED TAJ DATE 1-31-90
CHECKED GCP DATE 2-1-90



DRAWING CURVE3 PLOT ELL: 120 SCALE: 10^0

WBPEVAR9001006

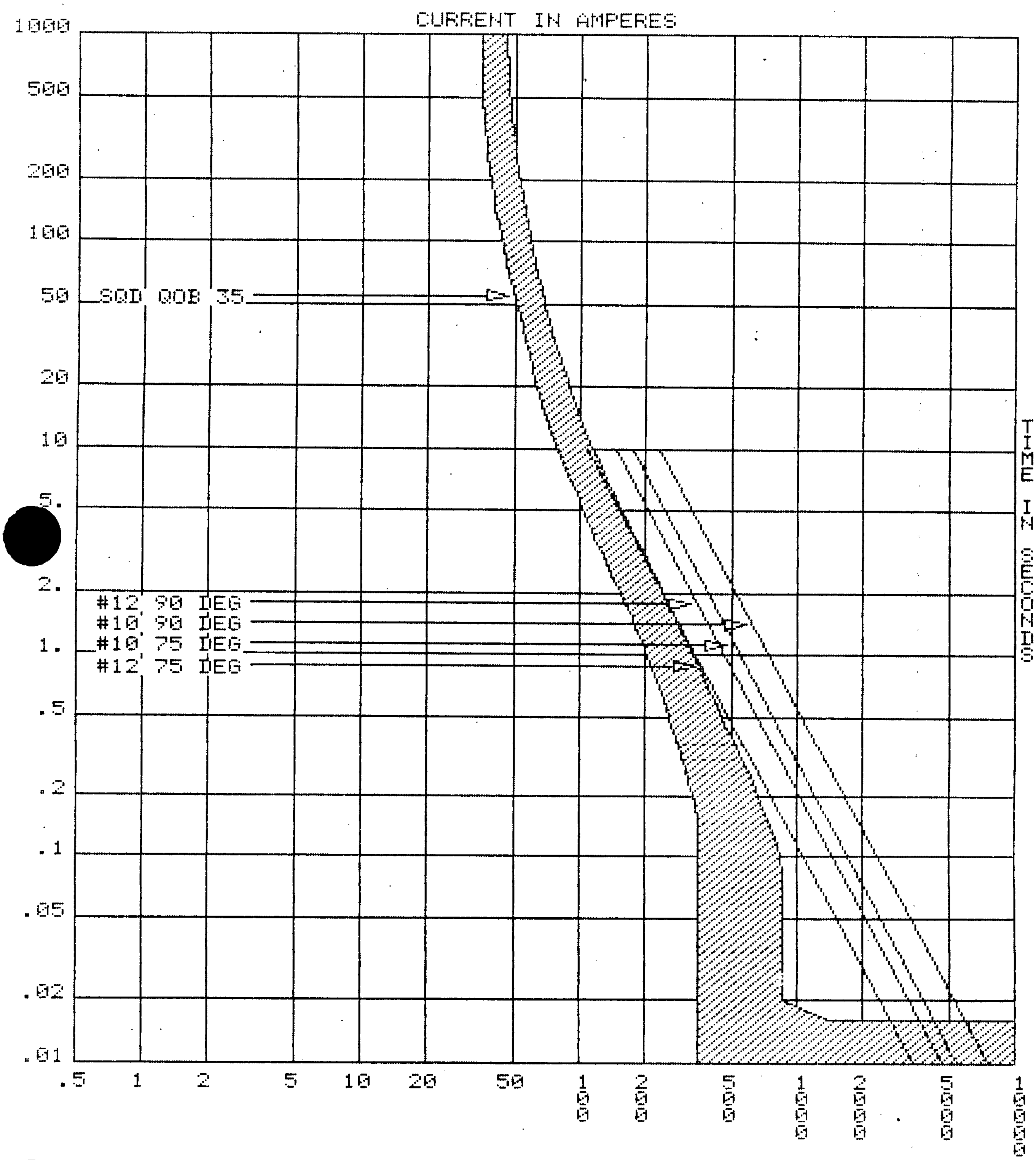
SHEET C7
PREPARED TAD DATE 1/31/90
CHECKED GCP DATE 2-1-90



DRAWING CURVE4 PLOT ELL: 120 SCALE: 10^0

WBPEVAR 9001006

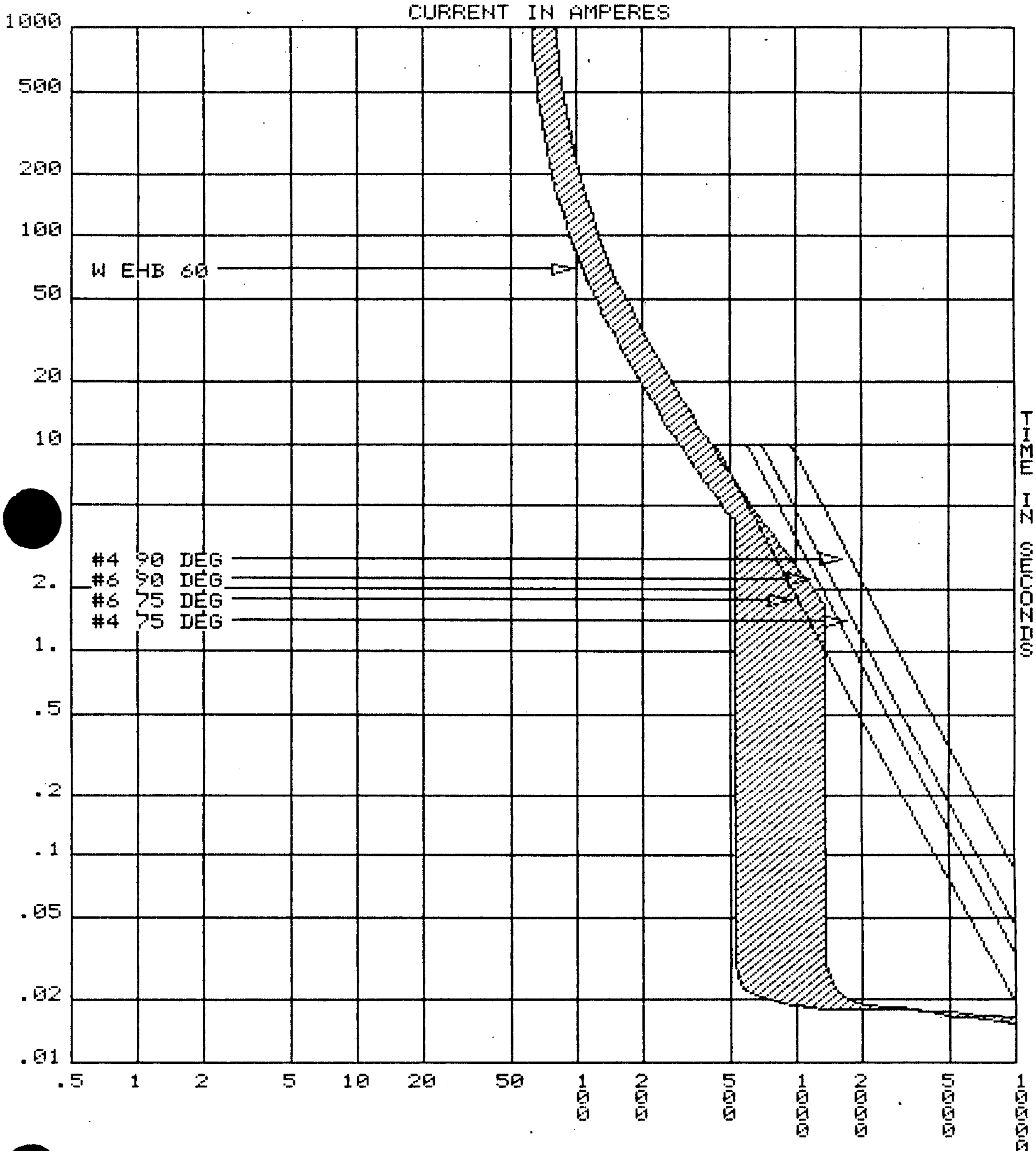
SHEET C8
PREPARED TLD DATE 1-31-90
CHECKED GCP DATE 2-1-90



DRAWING CURVES PLOT ELL: 120 SCALE: 10^0

WBPEVAR 9001006

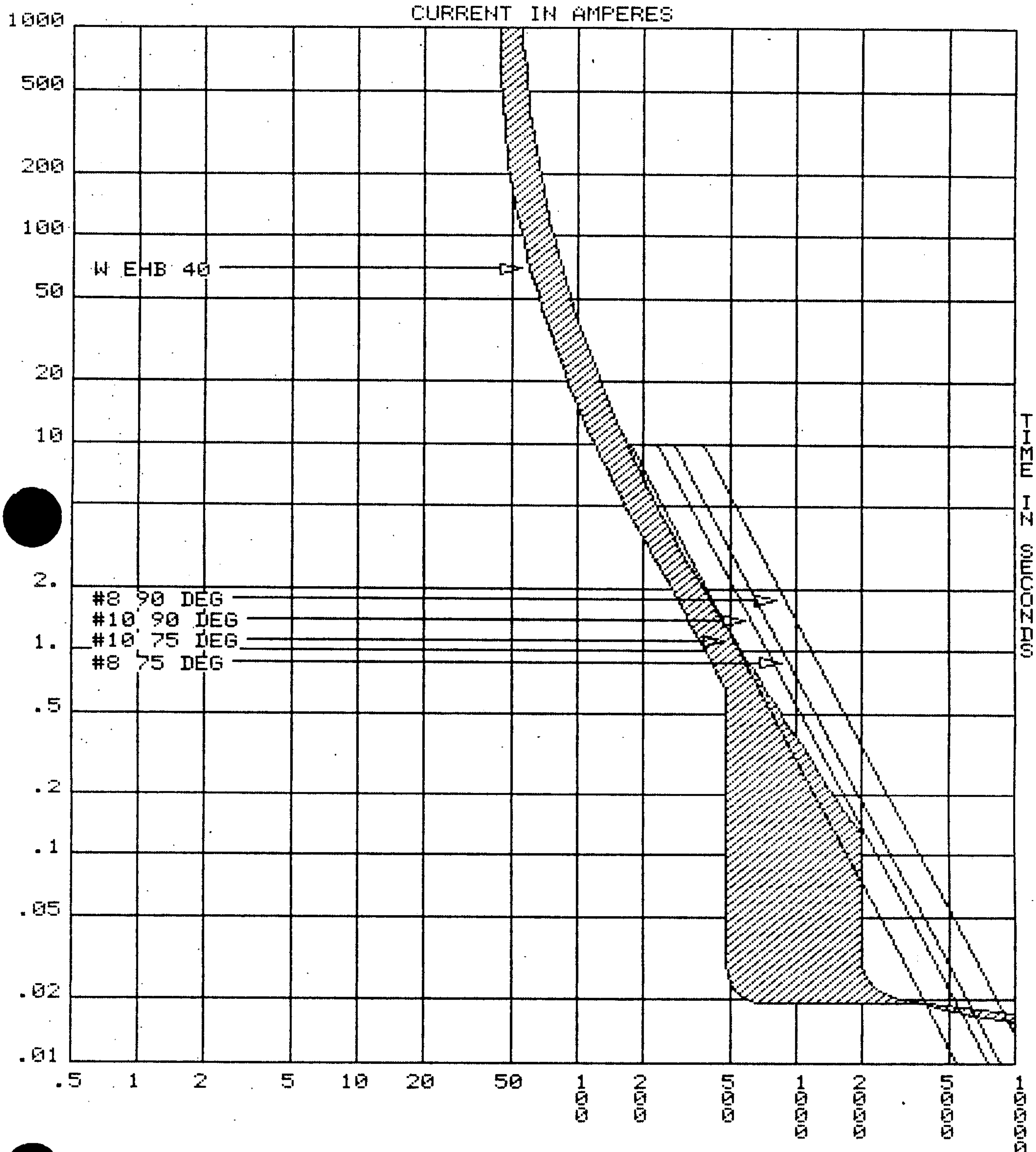
SHEET C9
PREPARED TKI DATE 1-31-90
CHECKED ORS DATE 1/31/90



DRAWING CURVE6 PLOT ELL: 120 SCALE: 10^0

WBPEVAR 9001006

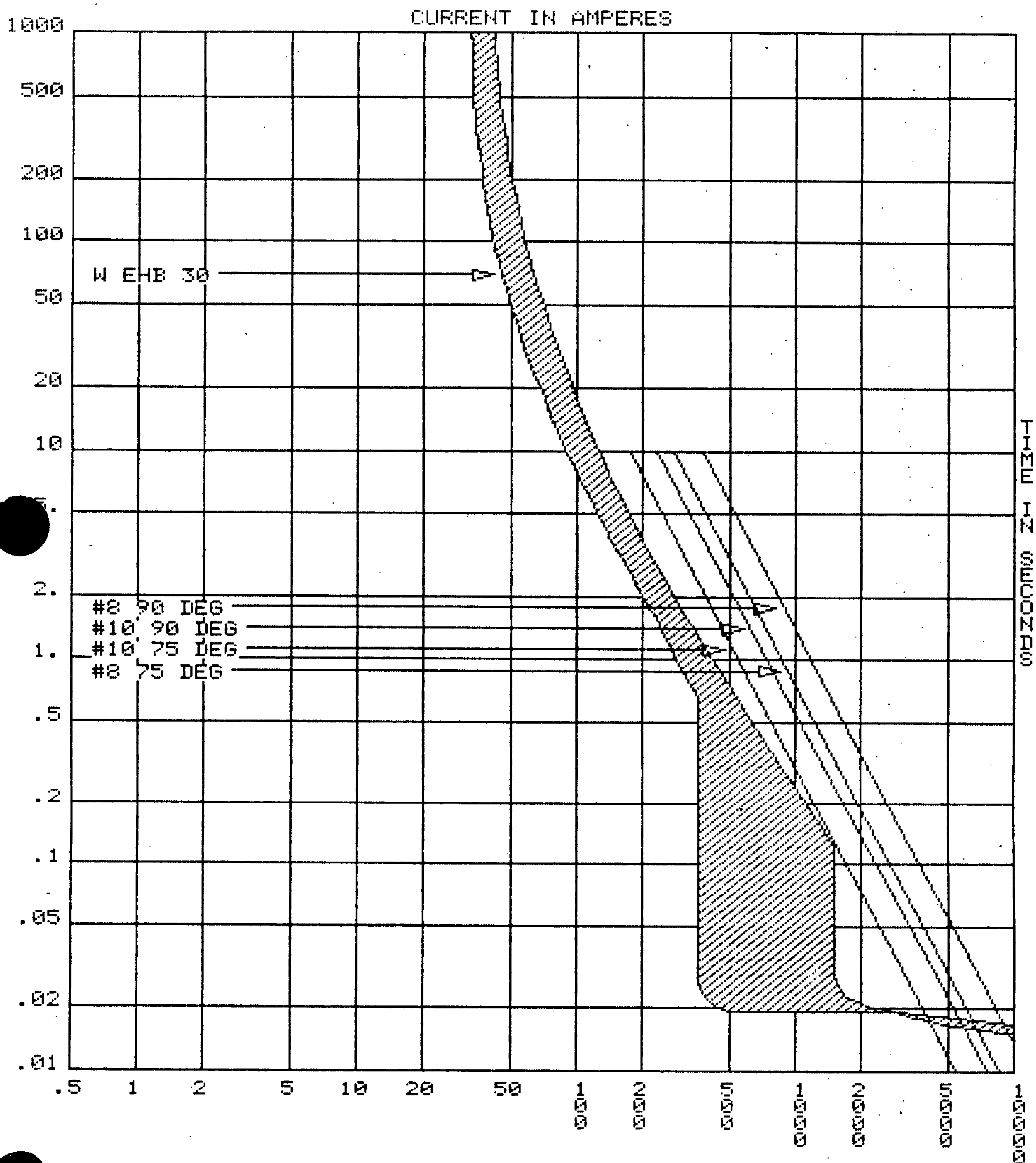
SHEET C10
PREPARED [illegible] DATE 1-31-90
CHECKED [illegible] DATE 1/31/90



DRAWING CURVE7 PLOT ELL: 120 SCALE: 10^0

WBPEVAR 9001006

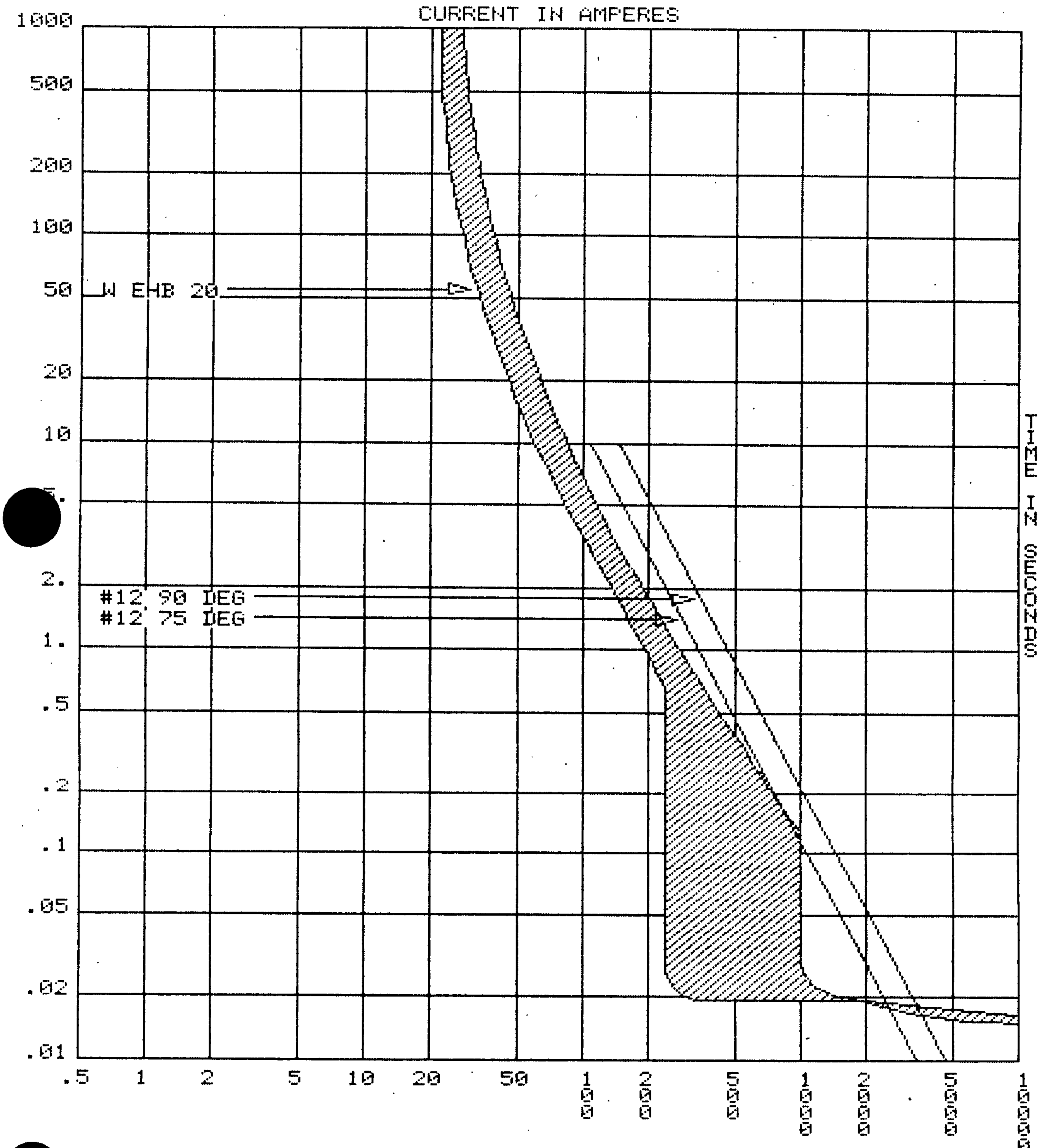
SHEET C11
PREPARED TAD DATE 1-31-90
CHECKED RS DATE 1/31/90



DRAWING CURVES PLOT ELL: 120 SCALE: 10^0

WBPEVAR9001006

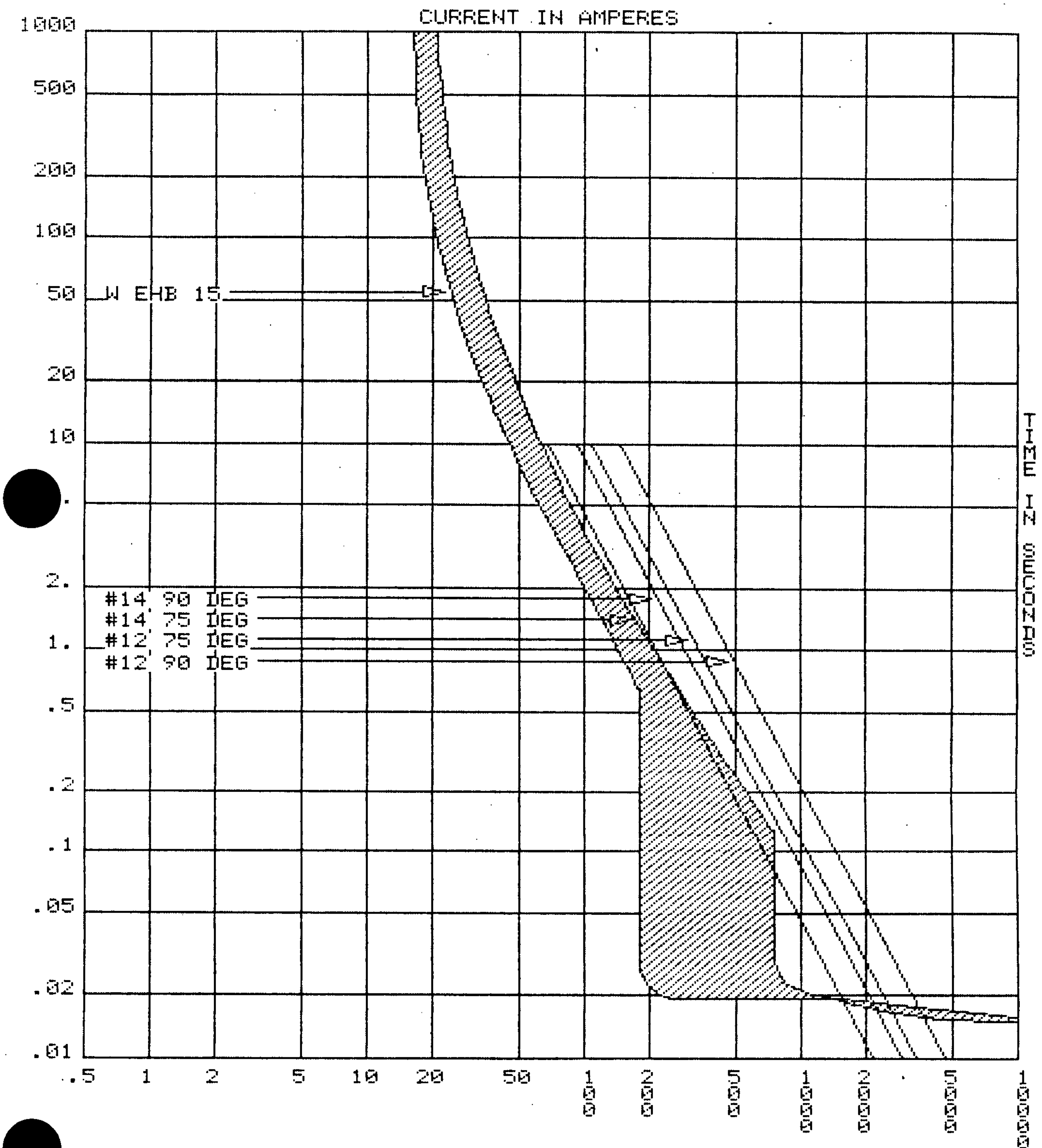
SHEET C/2
PREPARED [illegible] DATE 1-31-90
CHECKED RS DATE 1/31/90



DRAWING CURVE9 PLOT ELL: 120 SCALE: 10^0

WBPEVAR9001006

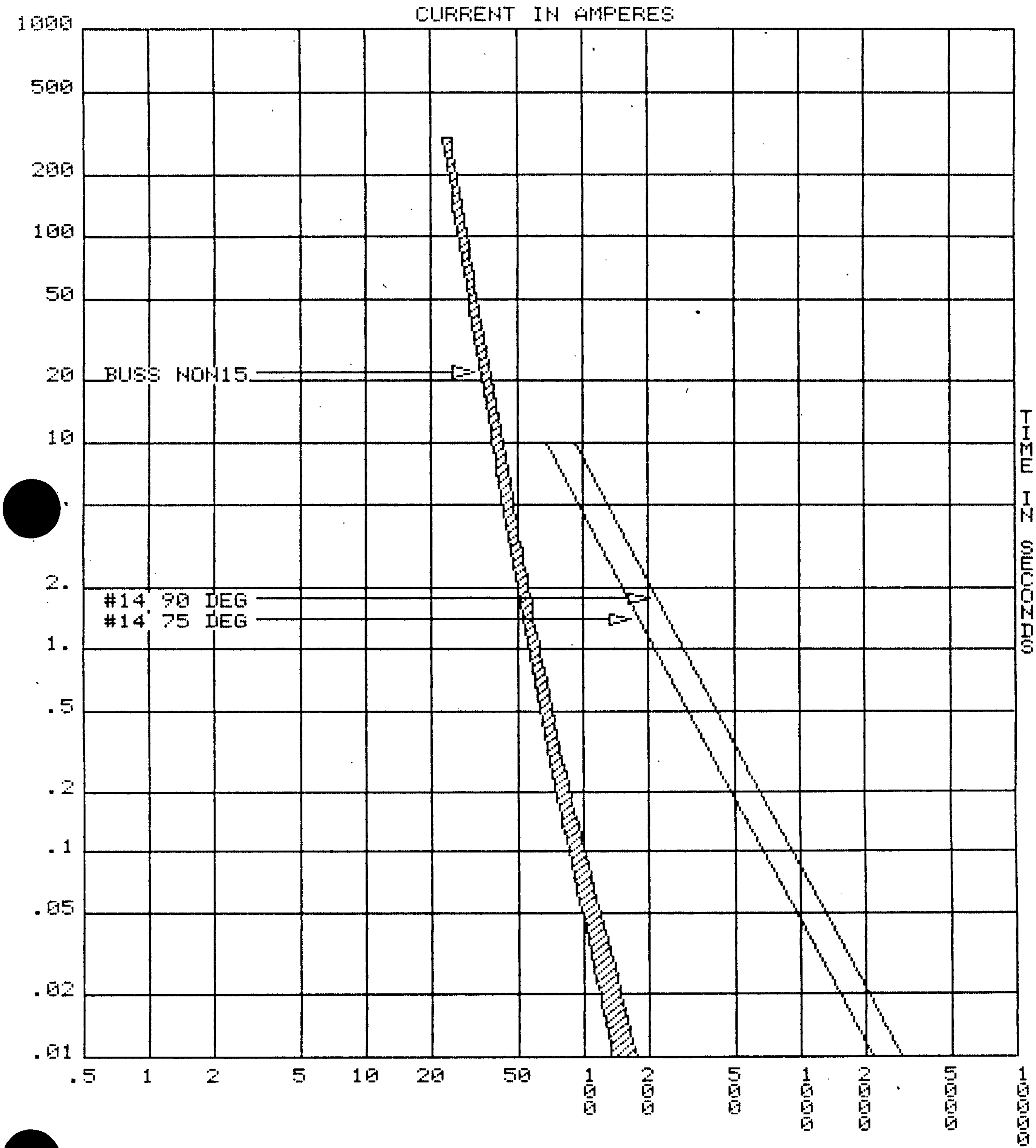
SHEET C13
PREPARED TAJ DATE 1-31-90
CHECKED RS DATE 1/31/90



DRAWING CURVE10 PLOT ELL: 120 SCALE: 10^0

WBPEVAR 9001006

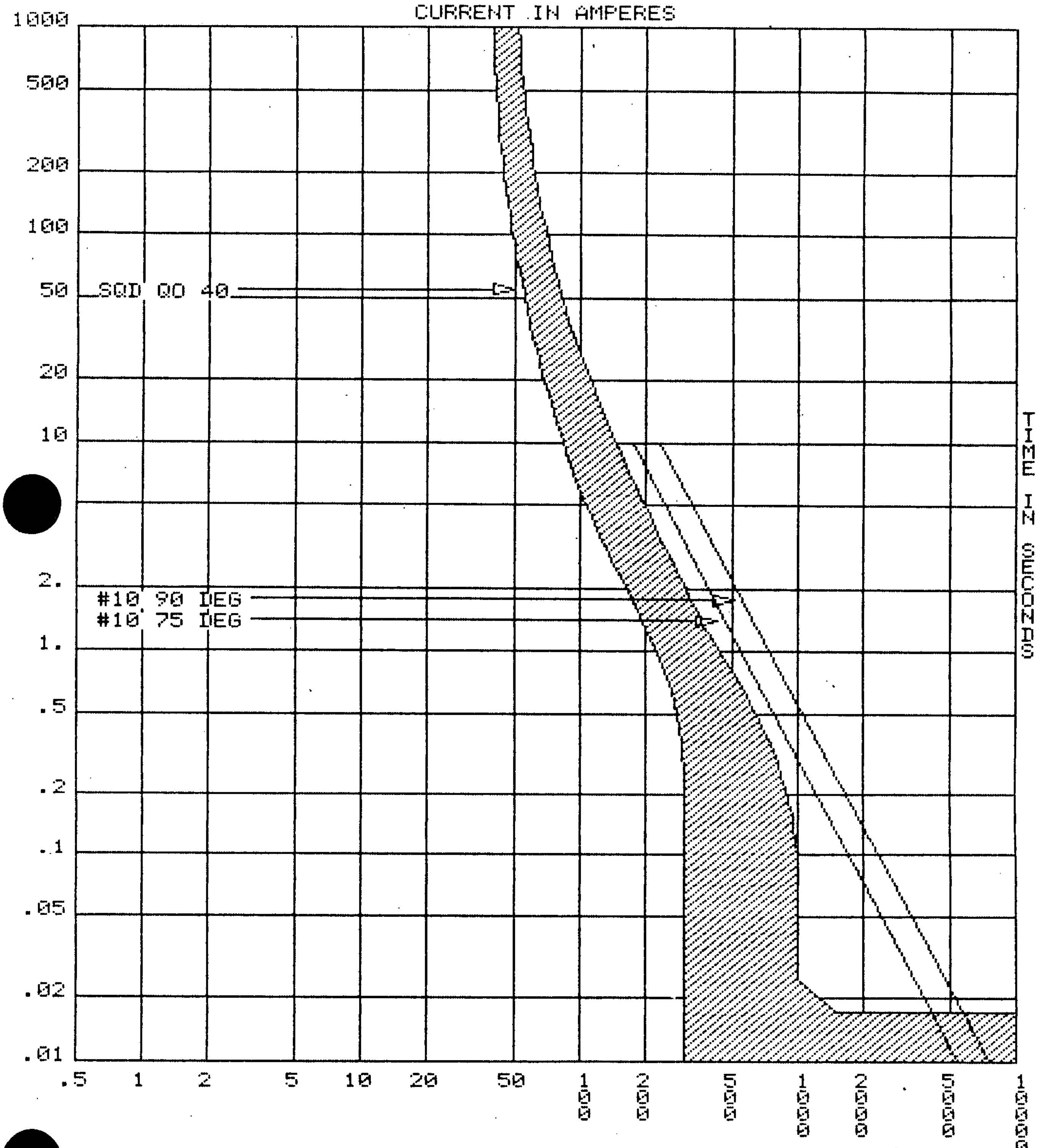
SHEET C14
PREPARED [signature] DATE 1-31-90
CHECKED GCP DATE 2-1-90



DRAWING CURVE11 PLOT ELL: 120 SCALE: 10^0

WBPEVAR9001006

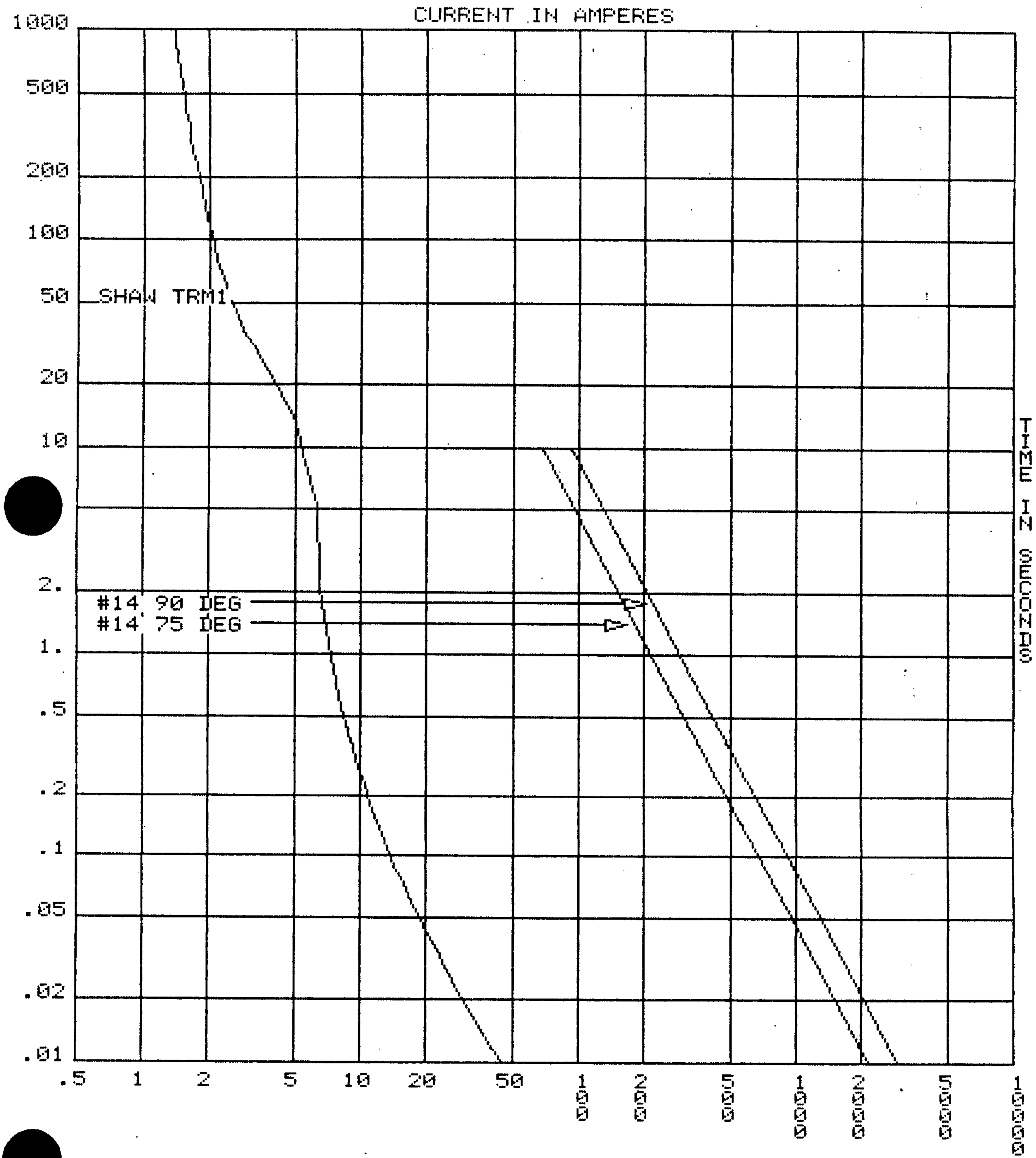
SHEET C15
PREPARED 2KJ DATE 1-31-90
CHECKED GCP DATE 2-1-90



DRAWING CURVE12 PLOT ELL: 120 SCALE: 10^0

WBPEVAR 9001006

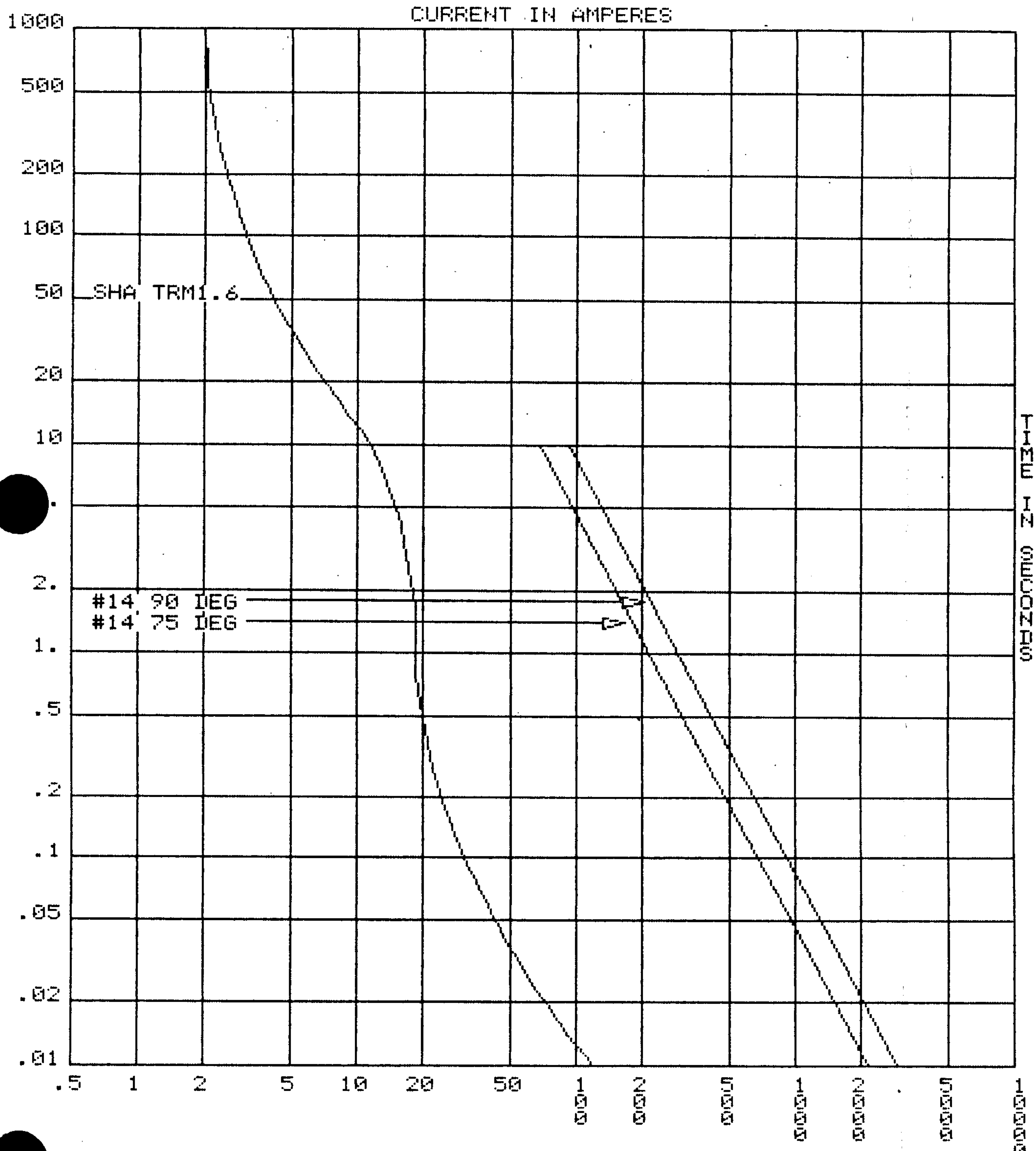
SHEET C16
PREPARED [illegible] DATE 1-31-90
CHECKED GCP DATE 2-1-90



DRAWING CURVE13 PLOT ELL: 120 SCALE: 10^0

WBPEVAR 9001 006

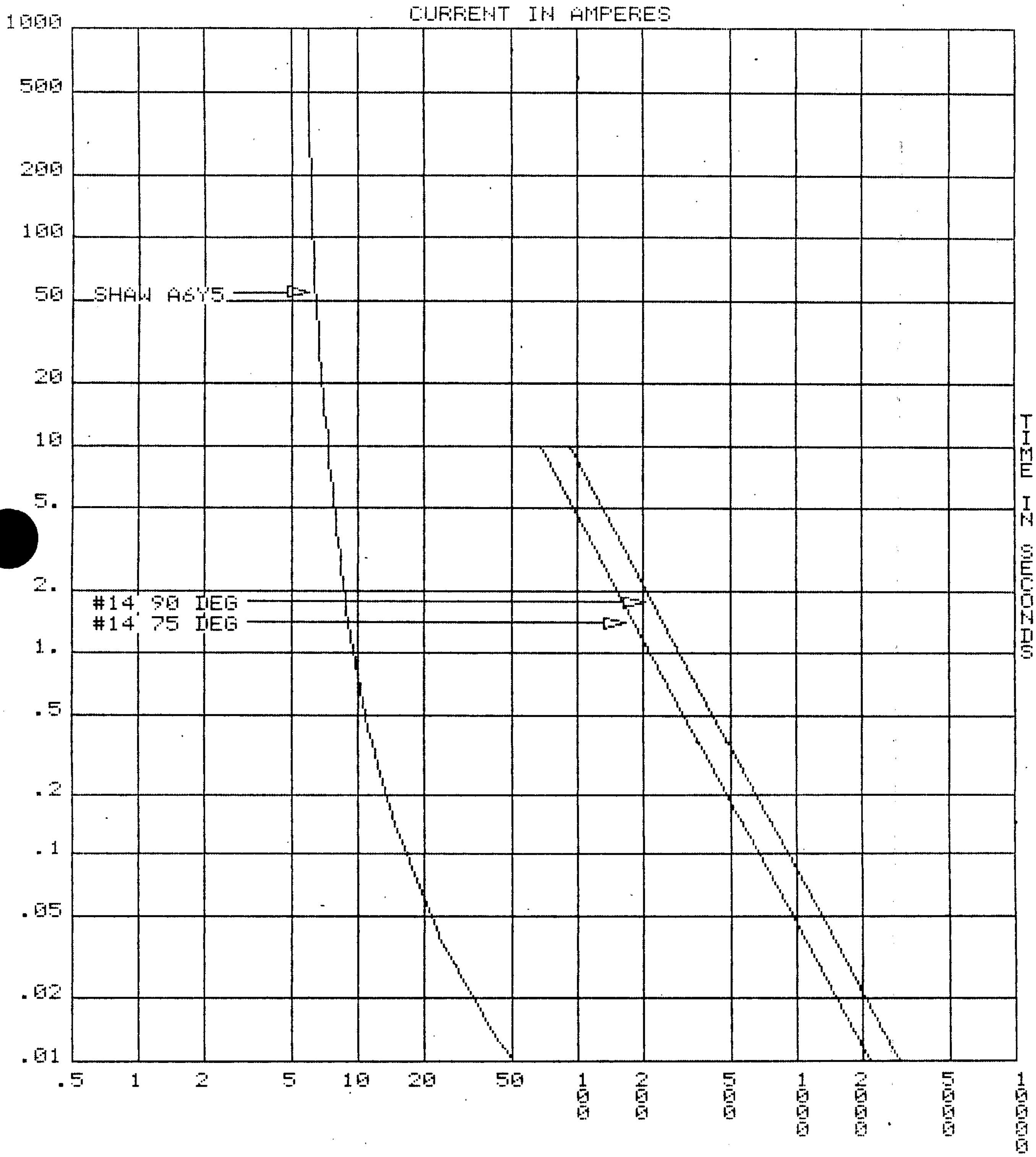
SHEET C17
PREPARED [illegible] DATE 1-31-90
CHECKED GCP DATE 2-1-90



DRAWING CURVE14 PLOT ELL: 120 SCALE: 10^0

WBPEVAR9001006

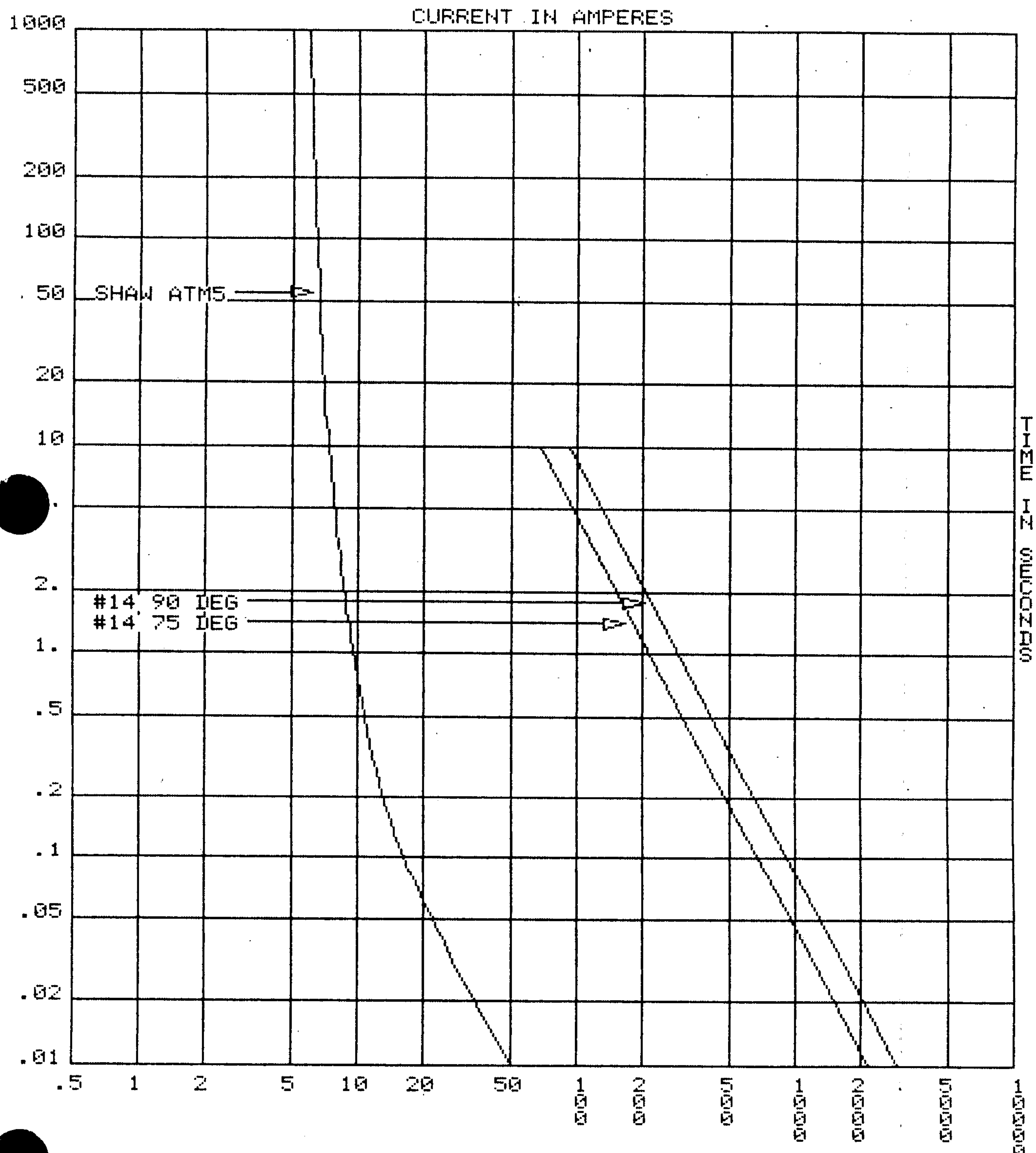
SHEET C18
PREPARED TAW DATE 1-31-90
CHECKED GCP DATE 2-1-90



DRAWING CURVE15 PLOT ELL: 120 SCALE: 10^0

WBPEVAR9001006

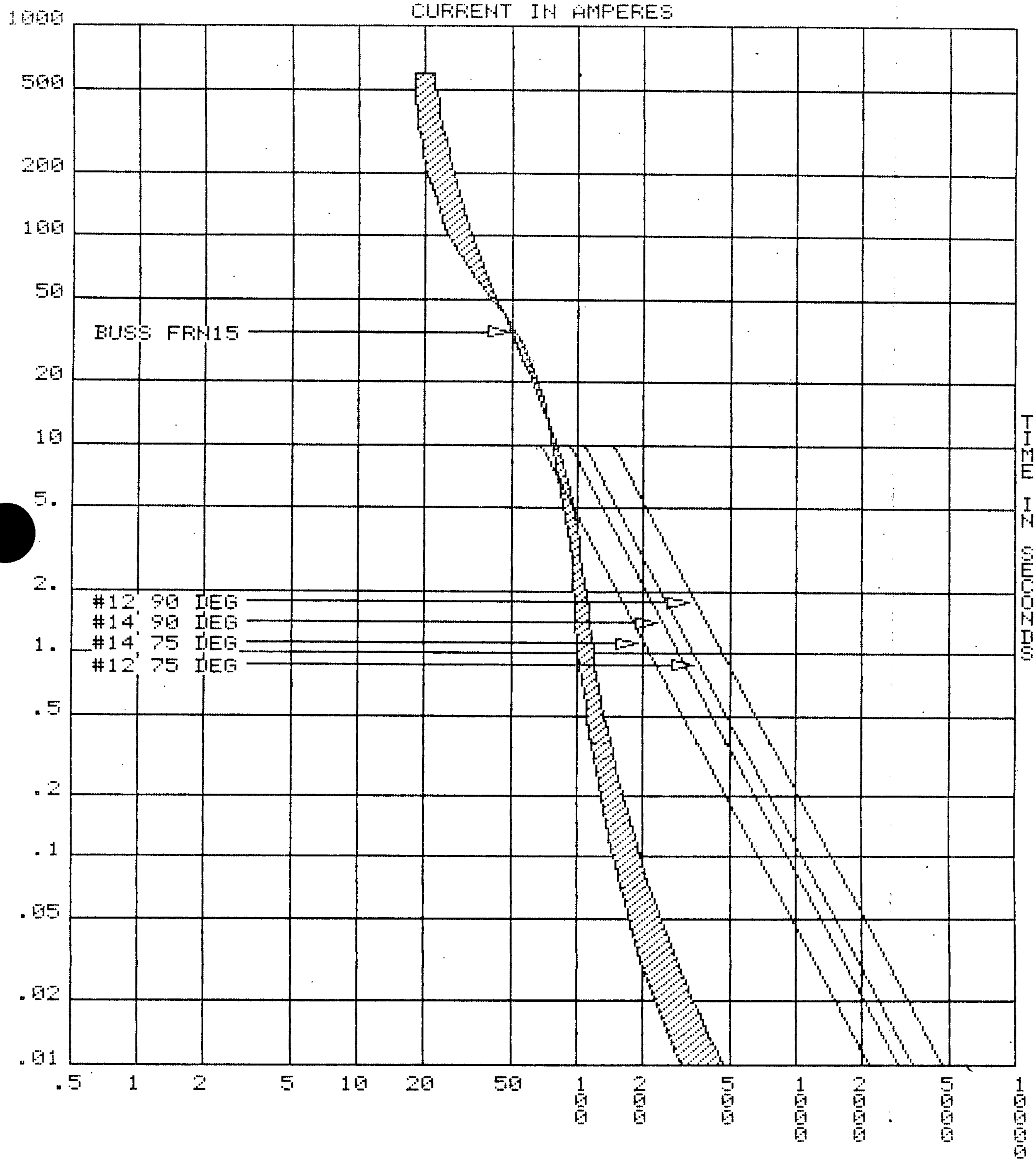
SHEET C19
PREPARED 7aS DATE 1-31-90
CHECKED GCP DATE 2-1-90



DRAWING CURVE16 PLOT ELL: 120 SCALE: 10^0

WBPEVAR 9001006

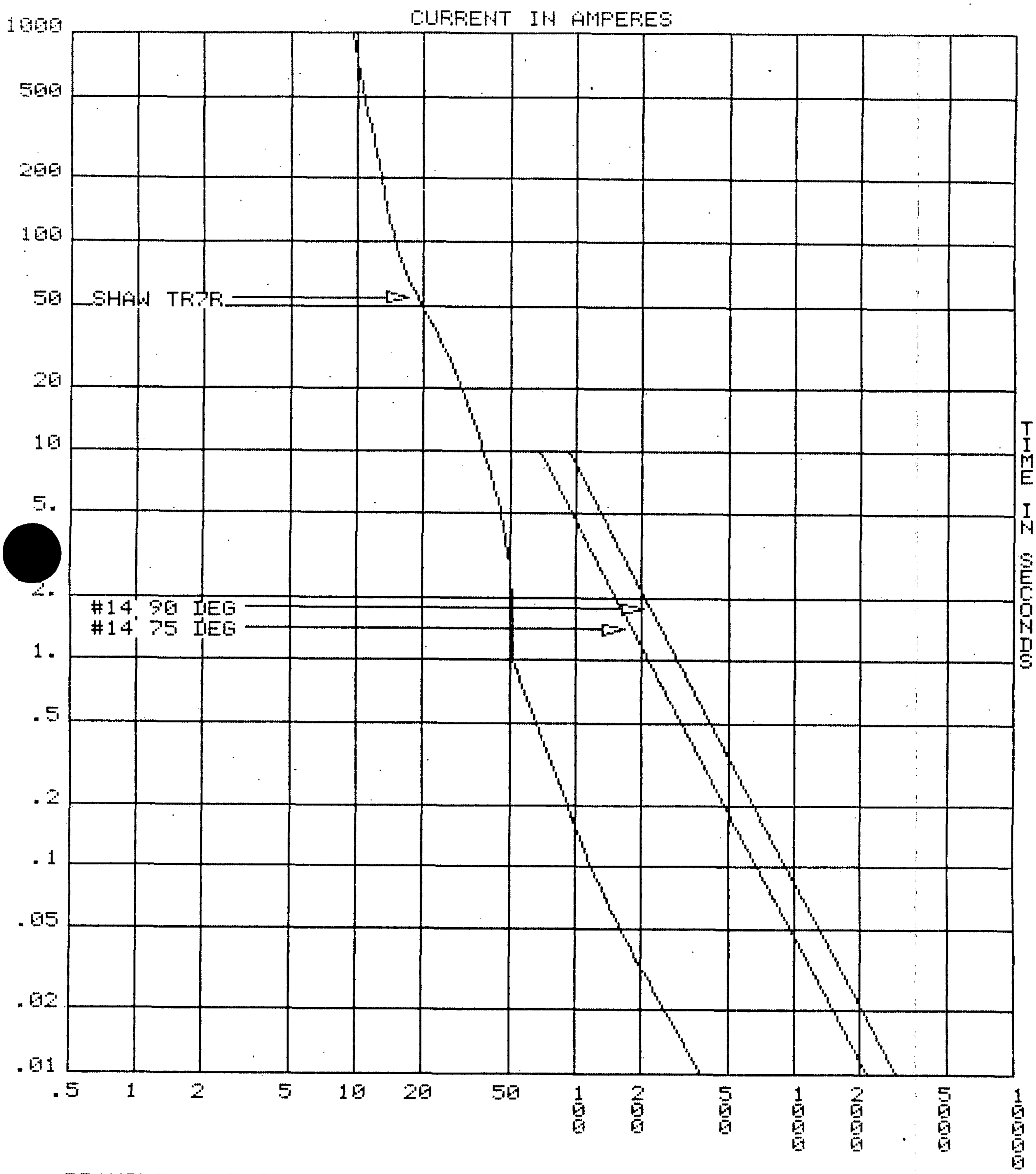
SHEET C20
PREPARED TDD DATE 1-31-90
CHECKED GCP DATE 2-1-90



DRAWING CURVE17 PLOT ELL: 120 SCALE: 10^0

WBDEVAR 9001006

SHEET C21
PREPARED TDD DATE 1-30-90
CHECKED GCP DATE 2-1-90



DRAWING CURVE18 PLOT ELL: 120 SCALE: 10^0

WBPEVAR9001006

SHEET C22
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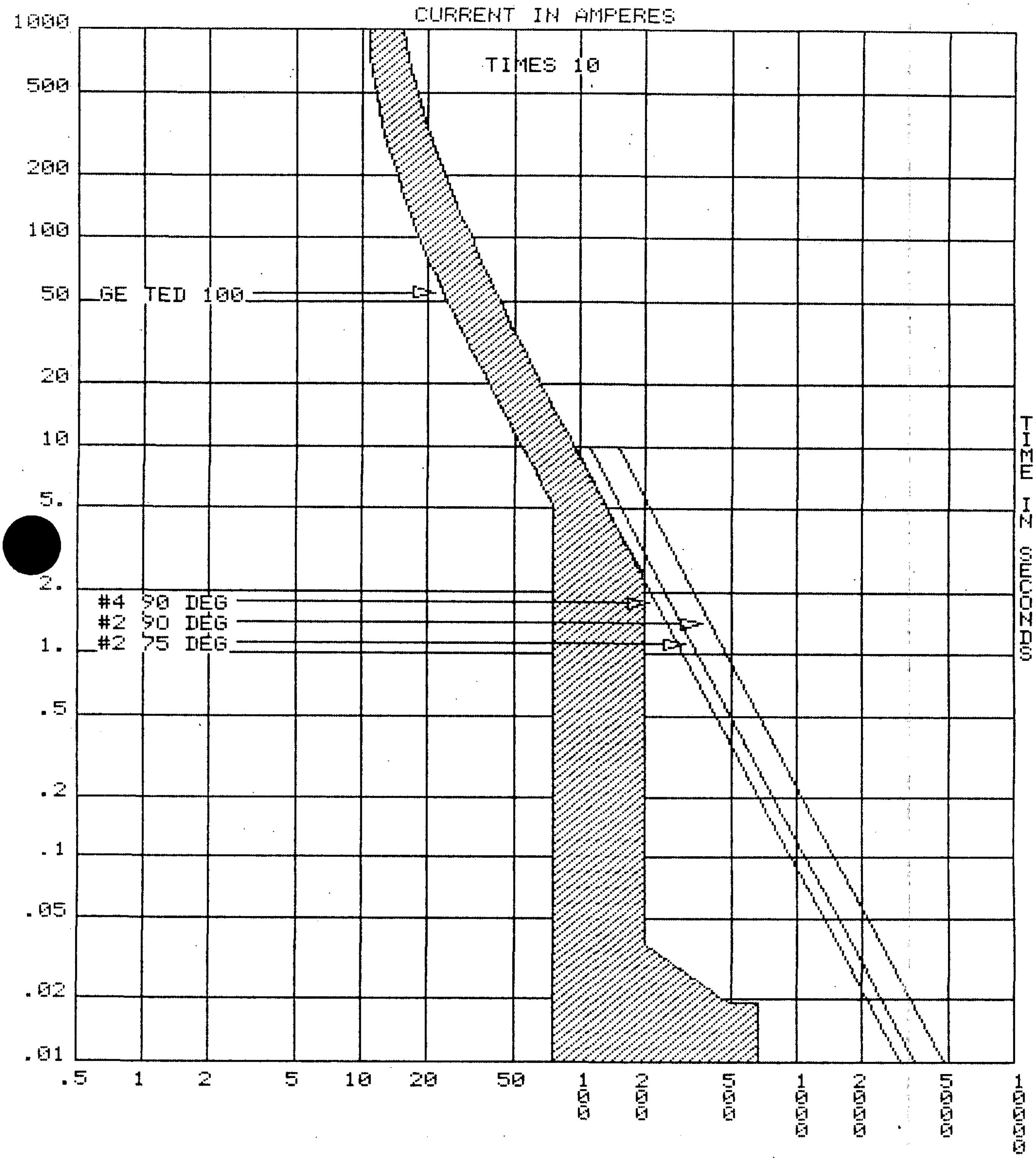
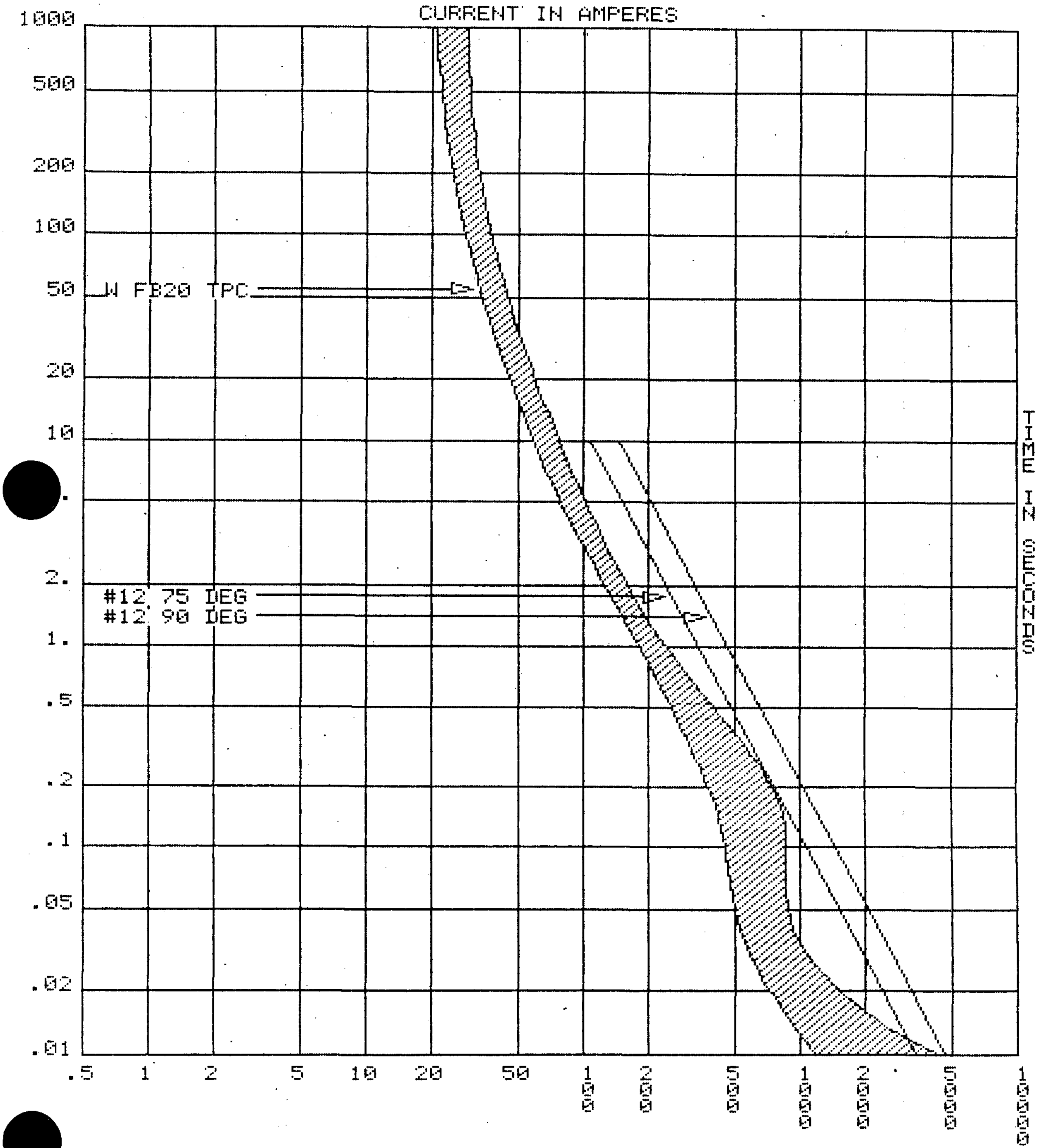
CHECKED GCP DATE 2-1-90



DRAWING CURVE19 PLOT ELL: 120 SCALE: 10^1

NBPEVAR 9001006

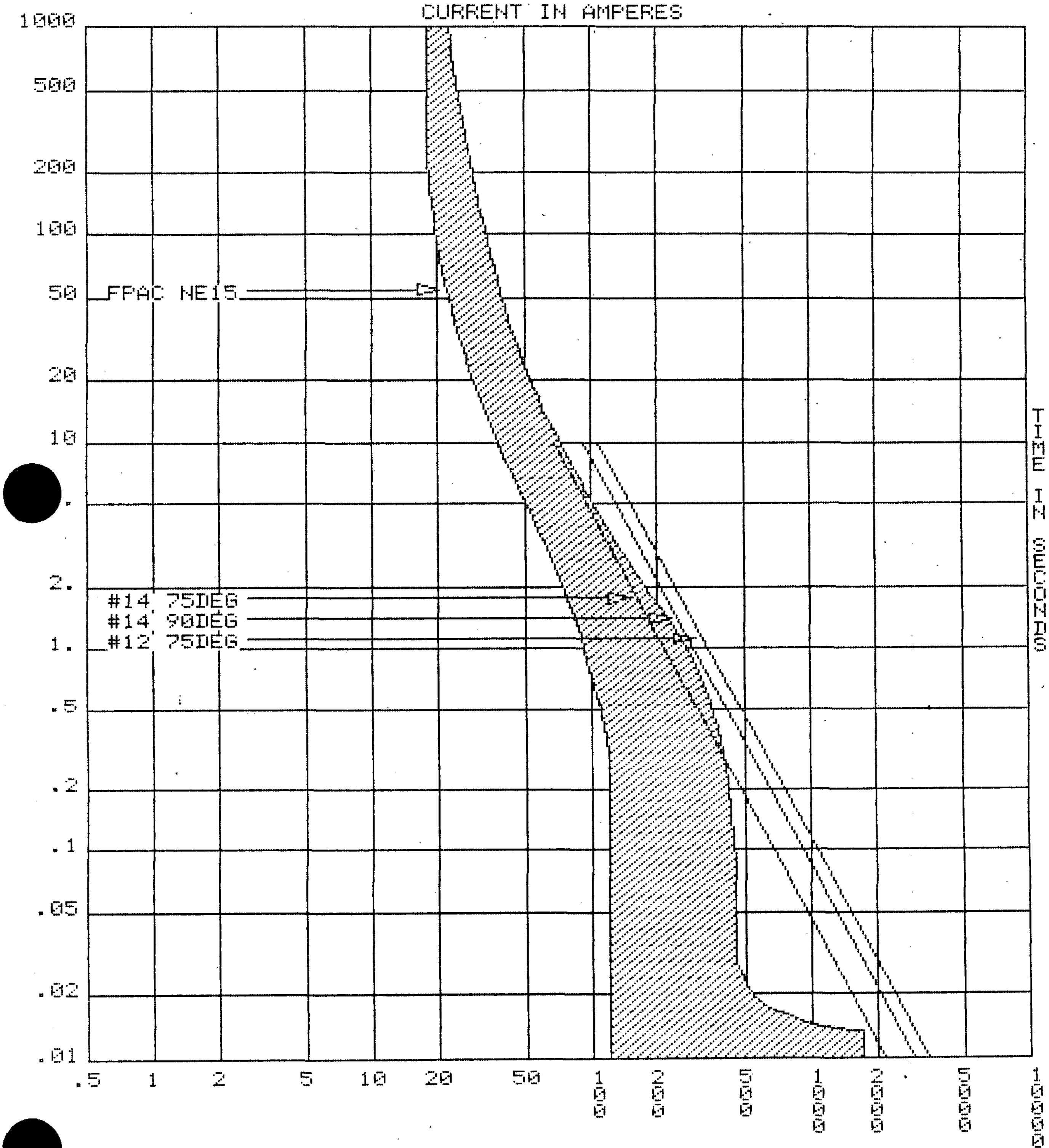
SHEET C23
PREPARED TAS DATE 1-31-90
CHECKED CS DATE 1/31/90



DRAWING CURVE20 PLOT ELL: 120 SCALE: 10^0

WBPEVAR9001006

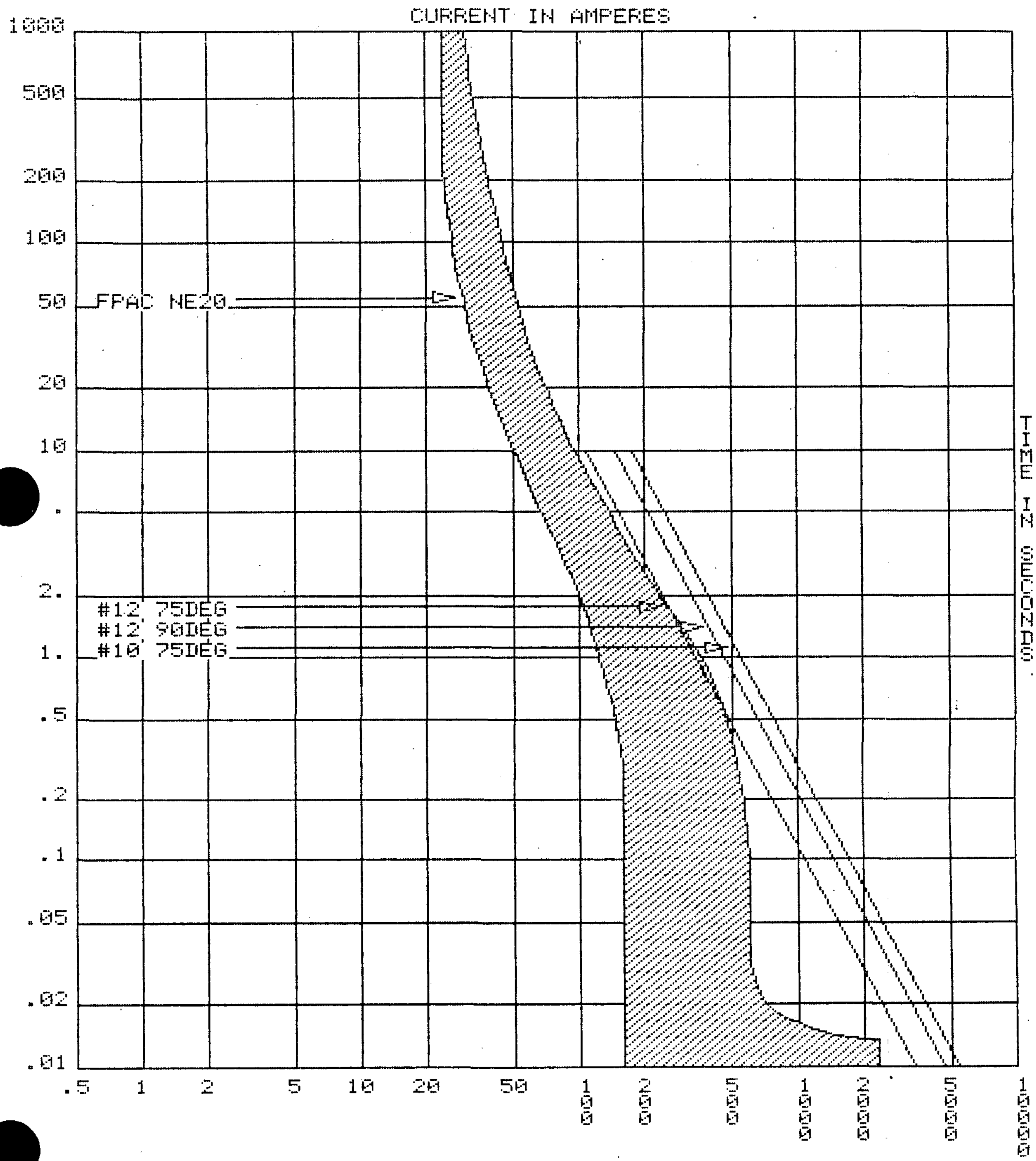
SHEET C24
PREPARED [illegible] DATE 1-31-90
CHECKED GCP DATE 2-1-90



DRAWING CURVE21 PLOT ELL: 120 SCALE: 10^0

WBPEVAR 9001006

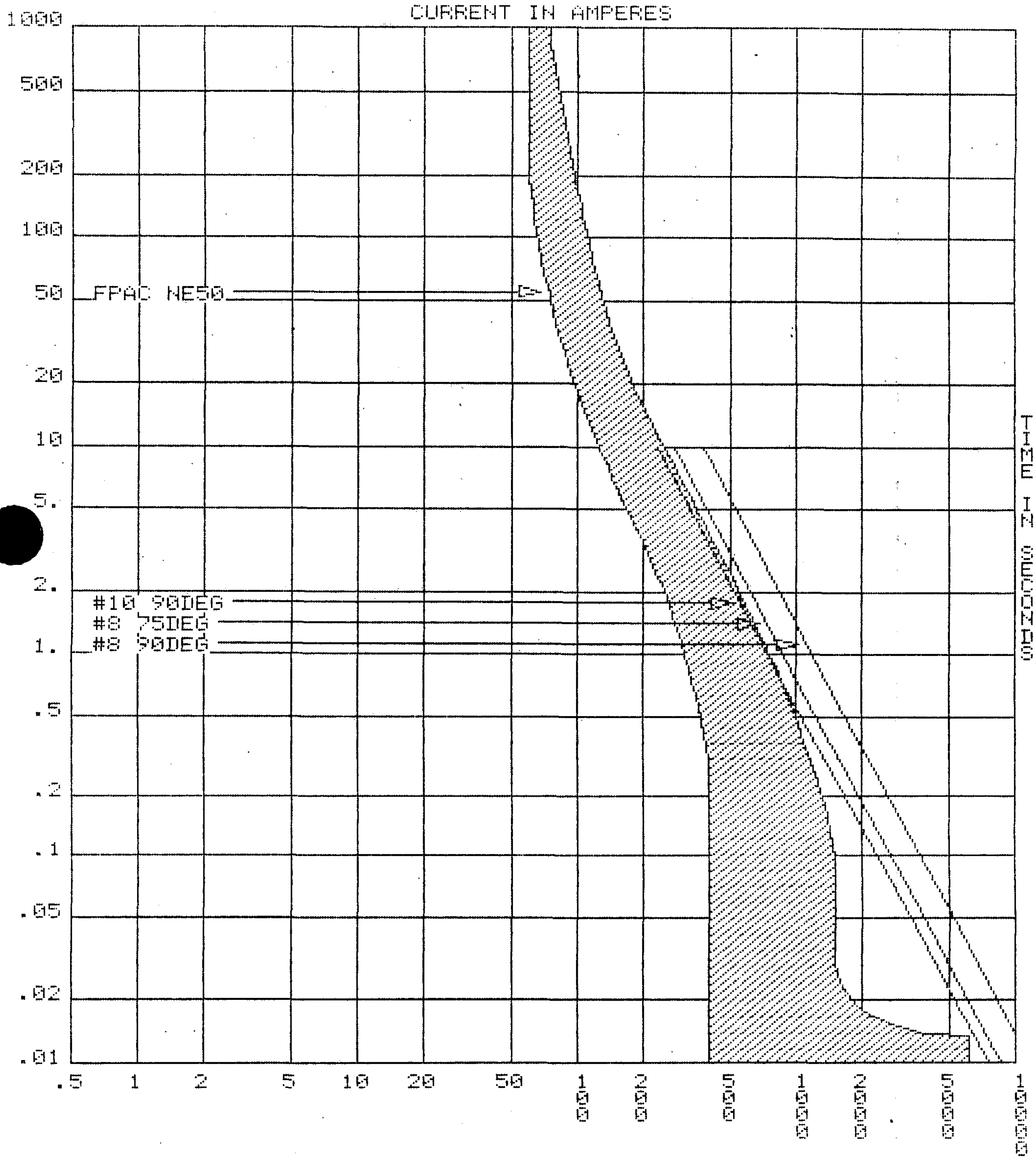
SHEET C25
PREPARED [illegible] DATE 1-31-90
CHECKED GCP DATE 2-1-90



DRAWING CURVE22 PLOT ELL: 120 SCALE: 10^0

WBPEVAR9001006

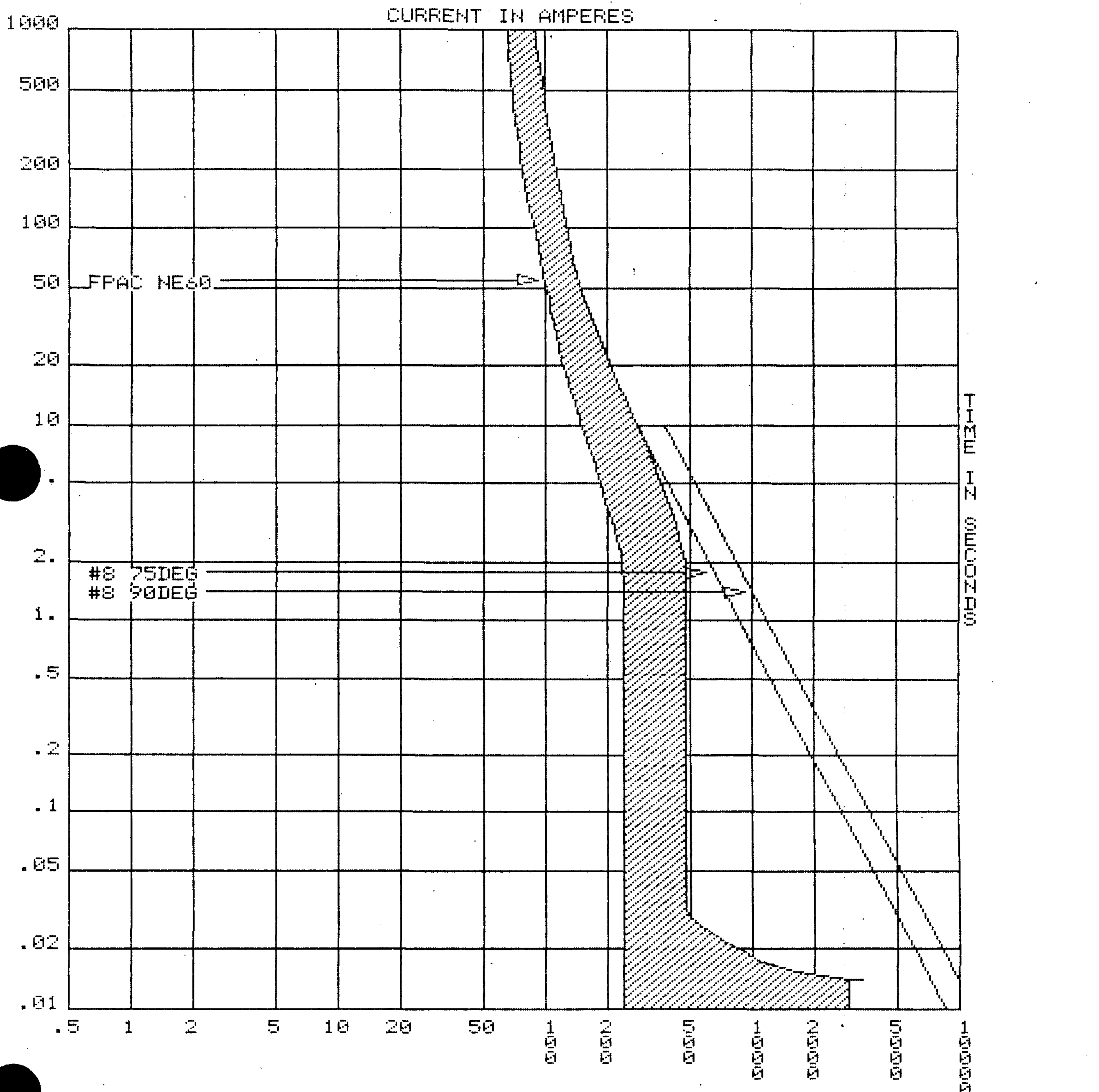
SHEET C26
PREPARED 7AD DATE 1-31-90
CHECKED GCP DATE 2-1-90



DRAWING CURVE23 PLOT ELL: 120 SCALE: 10^0

WBPEVAR 9001006

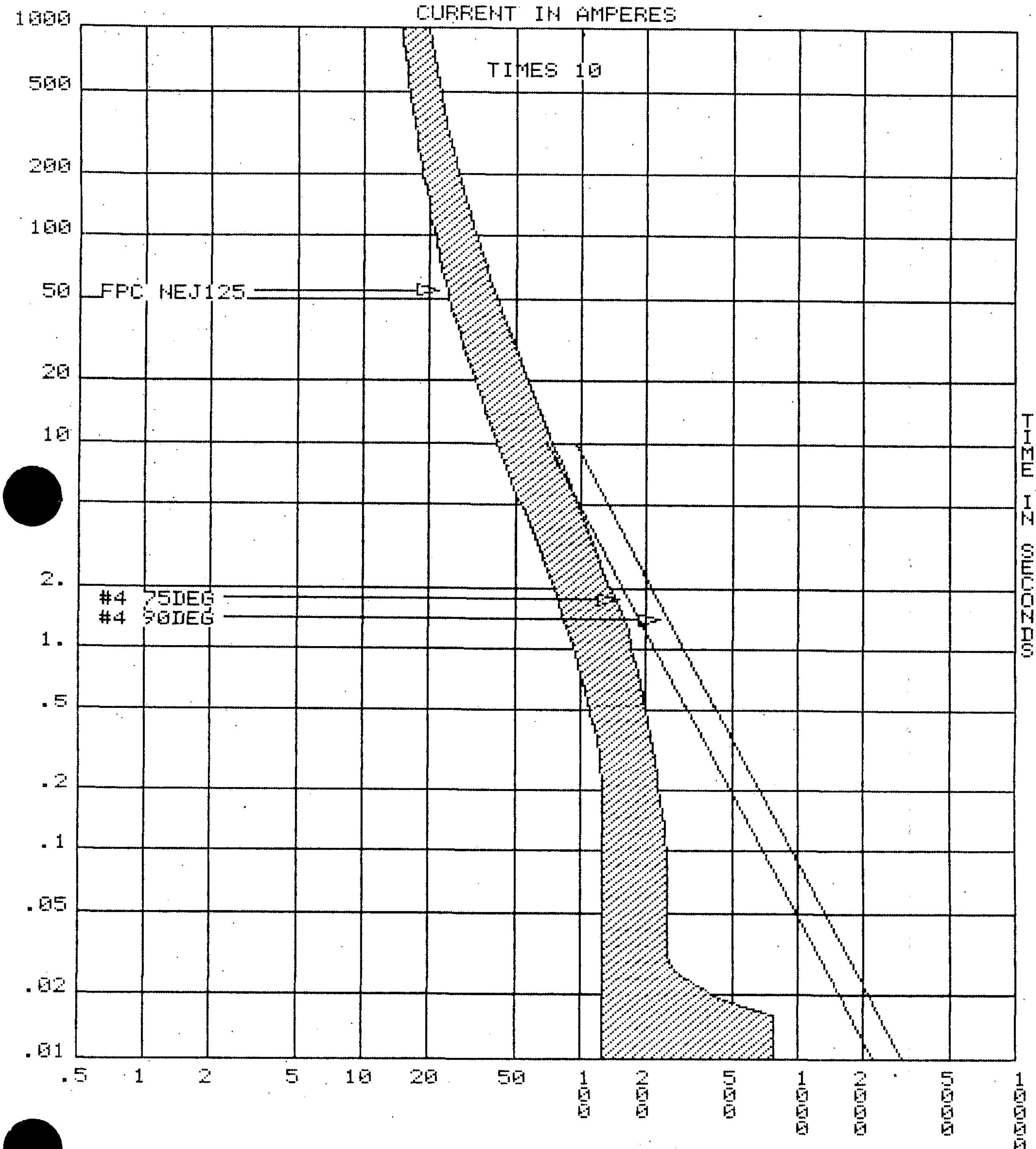
SHEET C27
PREPARED [illegible] DATE 1-31-90
CHECKED GCP DATE 2-1-90



DRAWING CURVE24 PLOT ELL: 120 SCALE: 10^0

WBPEVAR9001006

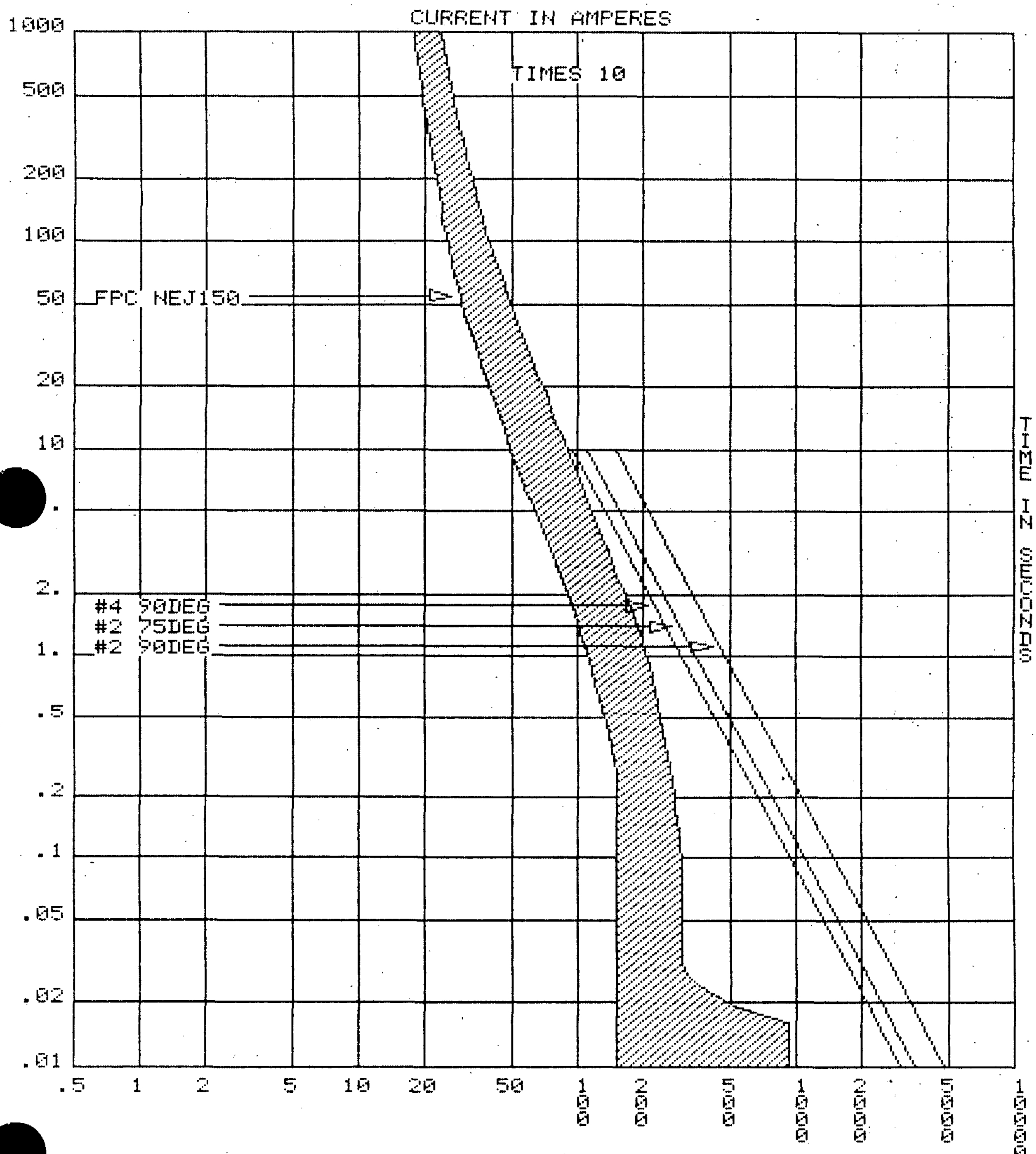
SHEET C28
PREPARED [illegible] DATE 1-31-90
CHECKED GCP DATE 2-1-90



DRAWING CURVE25 PLOT ELL: 120 SCALE: 10^1

WBPEVAR 9001006

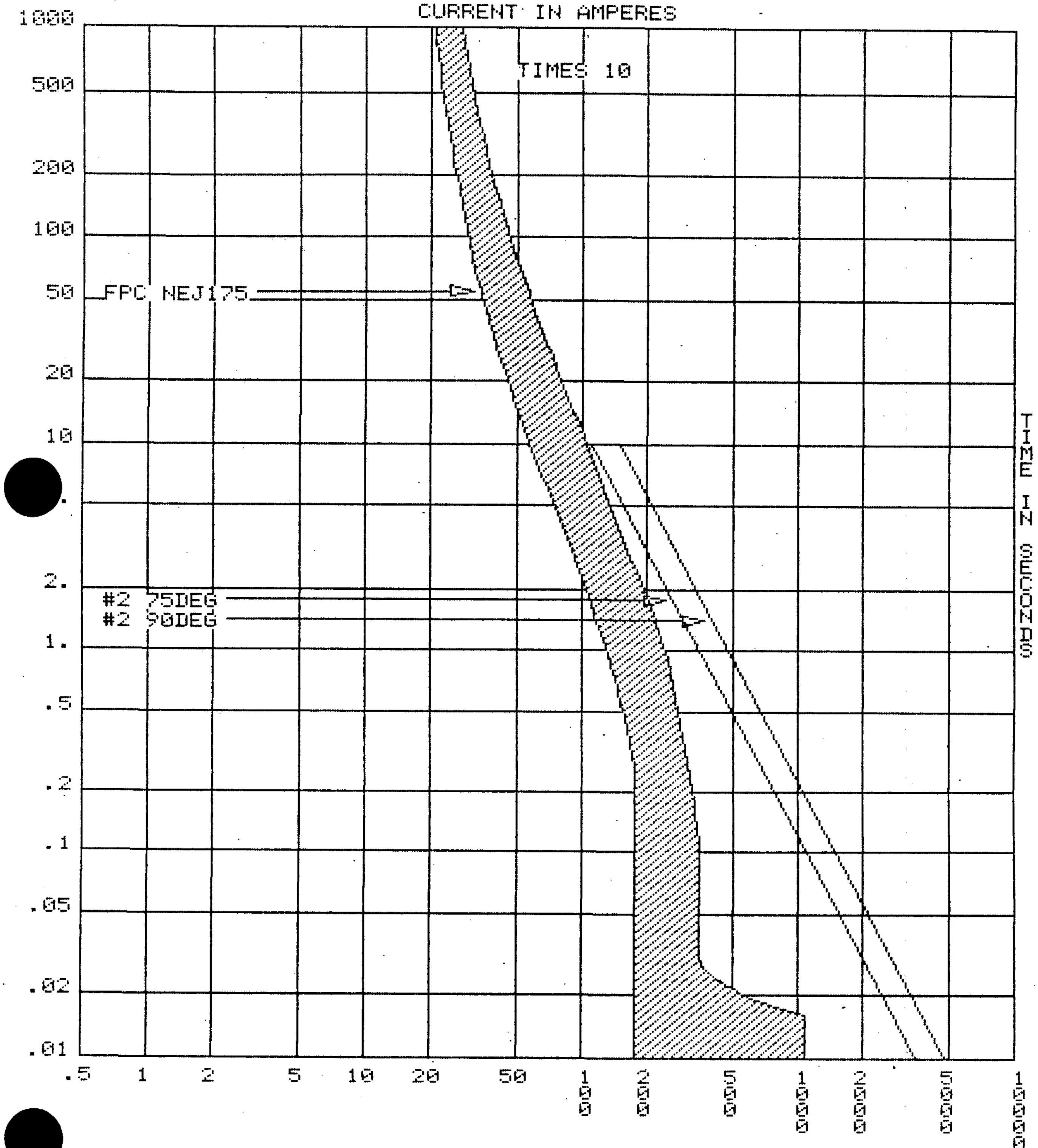
SHEET C29
PREPARED [initials] DATE 1-31-90
CHECKED GCP DATE 2-1-90



DRAWING CURVE26 PLOT ELL: 120 SCALE: 10^1

WBPEVAR 9001 006

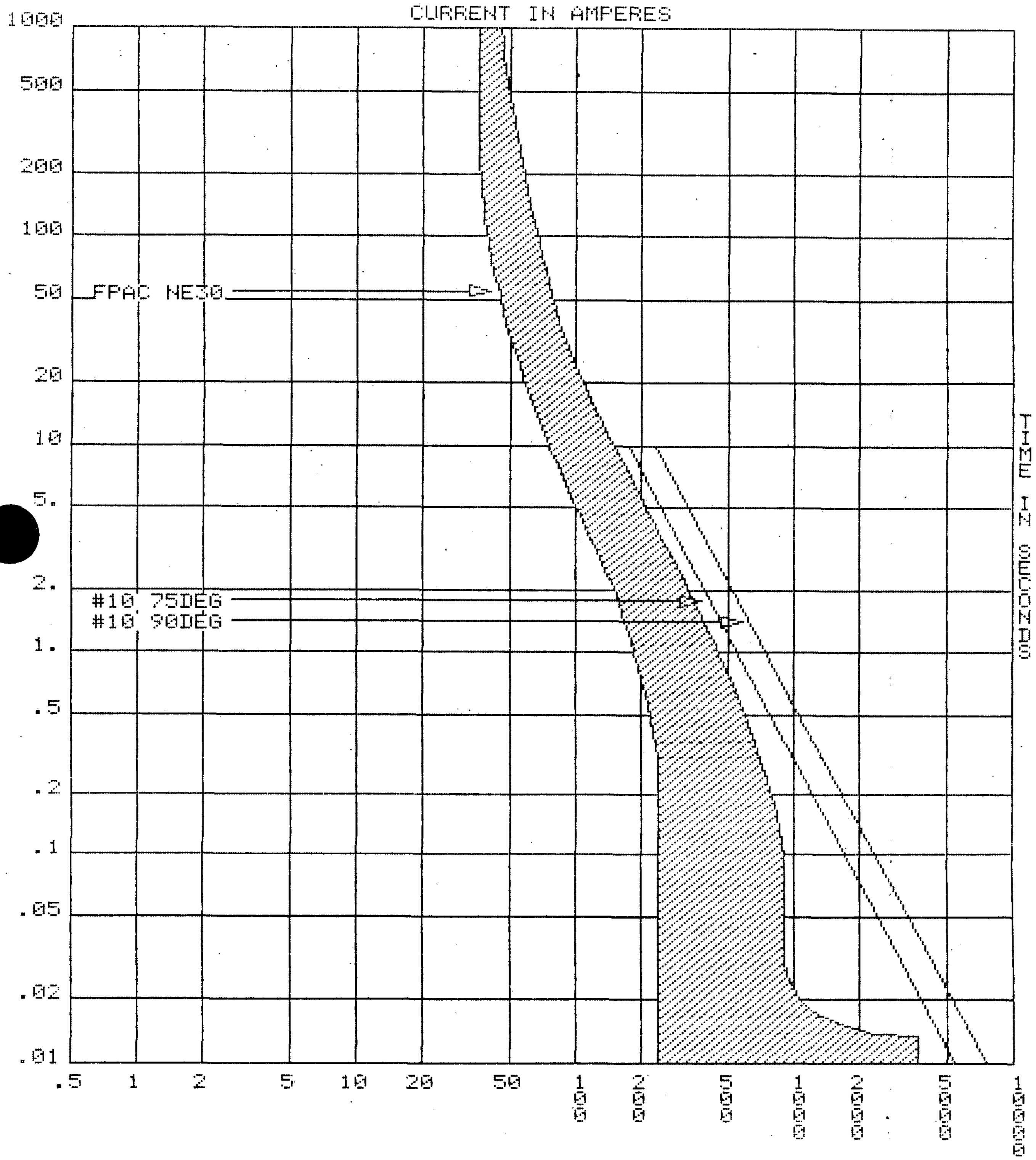
SHEET C 30
PREPARED [illegible] DATE 1-31-90
CHECKED GCP DATE 2-1-90



DRAWING CURVE27 PLOT ELL: 120 SCALE: 10^1

WBPEVAR 9001006

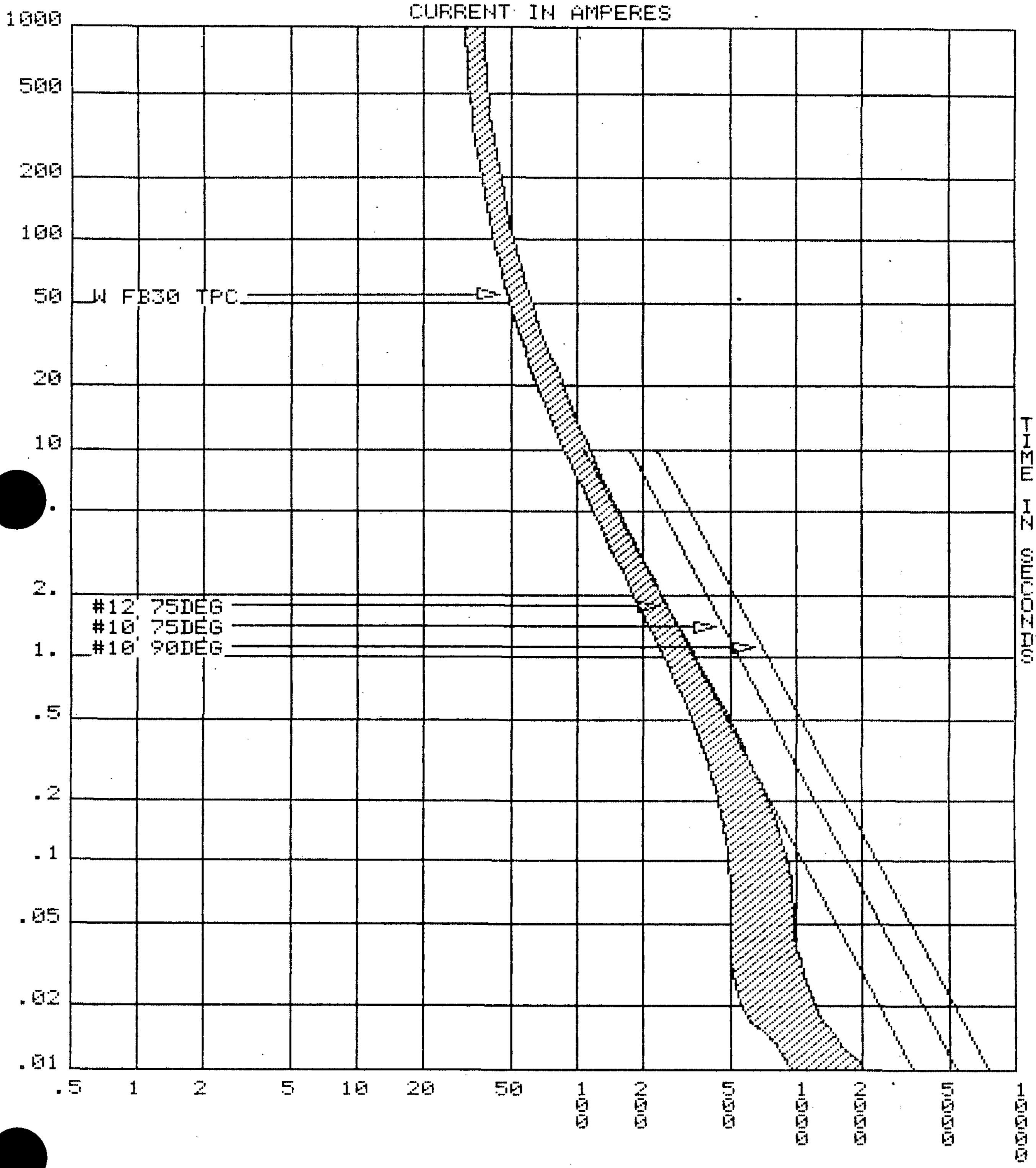
SHEET C31
PREPARED [illegible] DATE 1-31-90
CHECKED GCP DATE 2-1-90



DRAWING CURVE28 PLOT ELL: 120 SCALE: 10^0

WBPEVAR9001006

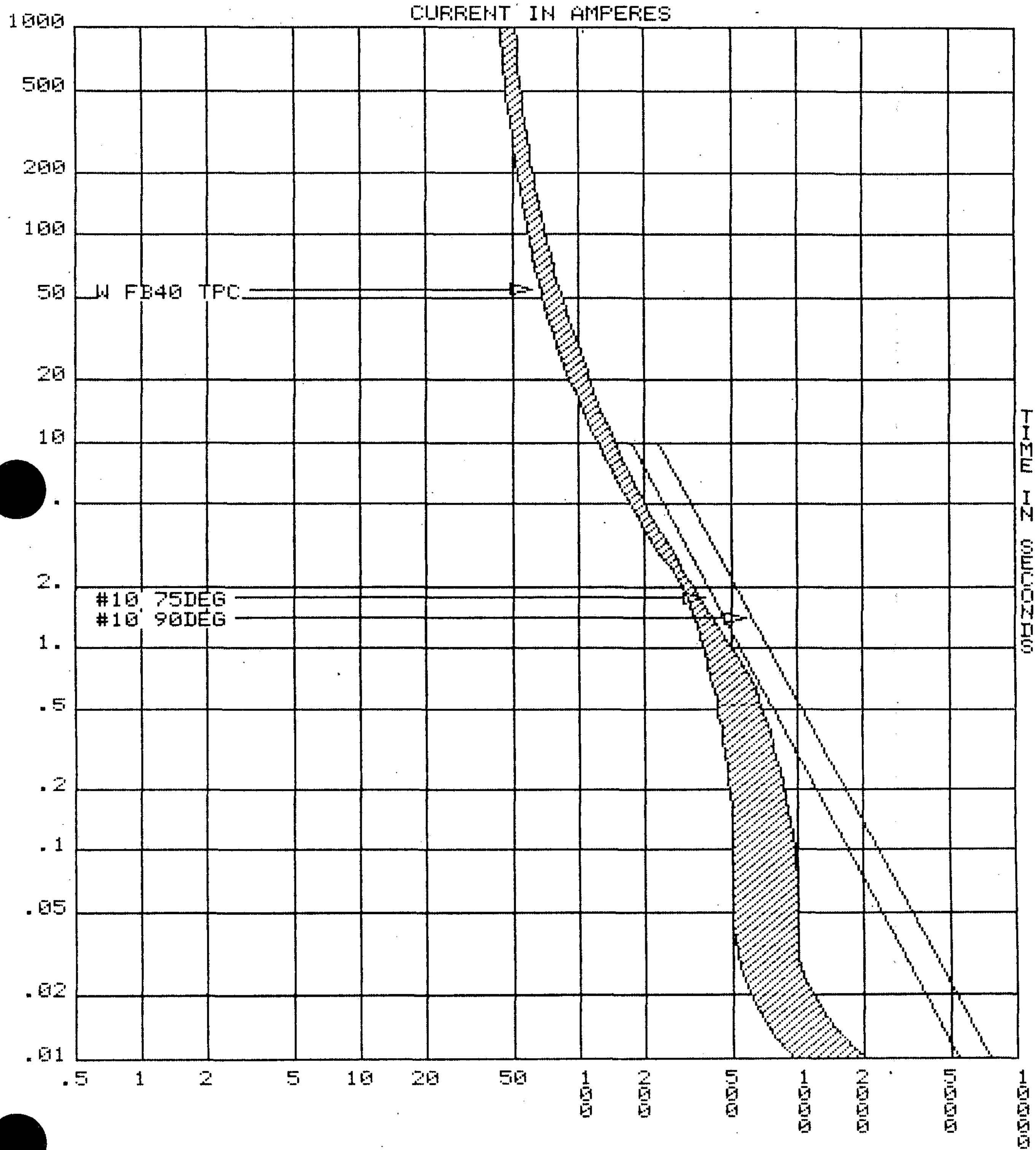
SHEET C32
PREPARED [illegible] DATE 1-31-90
CHECKED RS DATE 1/31/90



DRAWING CURVE29 PLOT ELL: 120 SCALE: 10^0

WBPEVAR 9001006

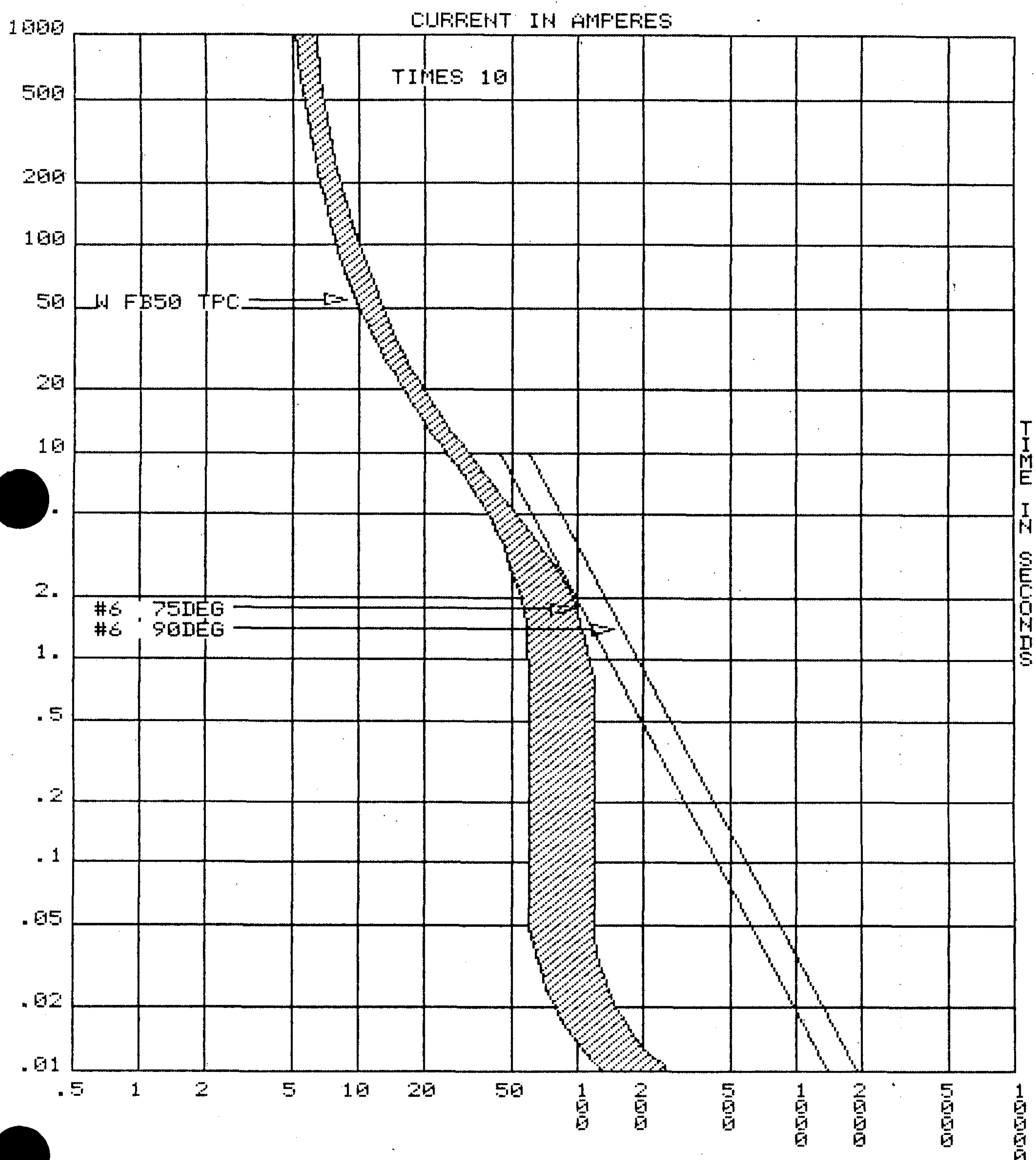
SHEET C33
PREPARED TAD DATE 1-31-90
CHECKED RS DATE 1/31/90



DRAWING CURVE30 PLOT ELL: 120 SCALE: 10^0

WBPEVAR 9001006

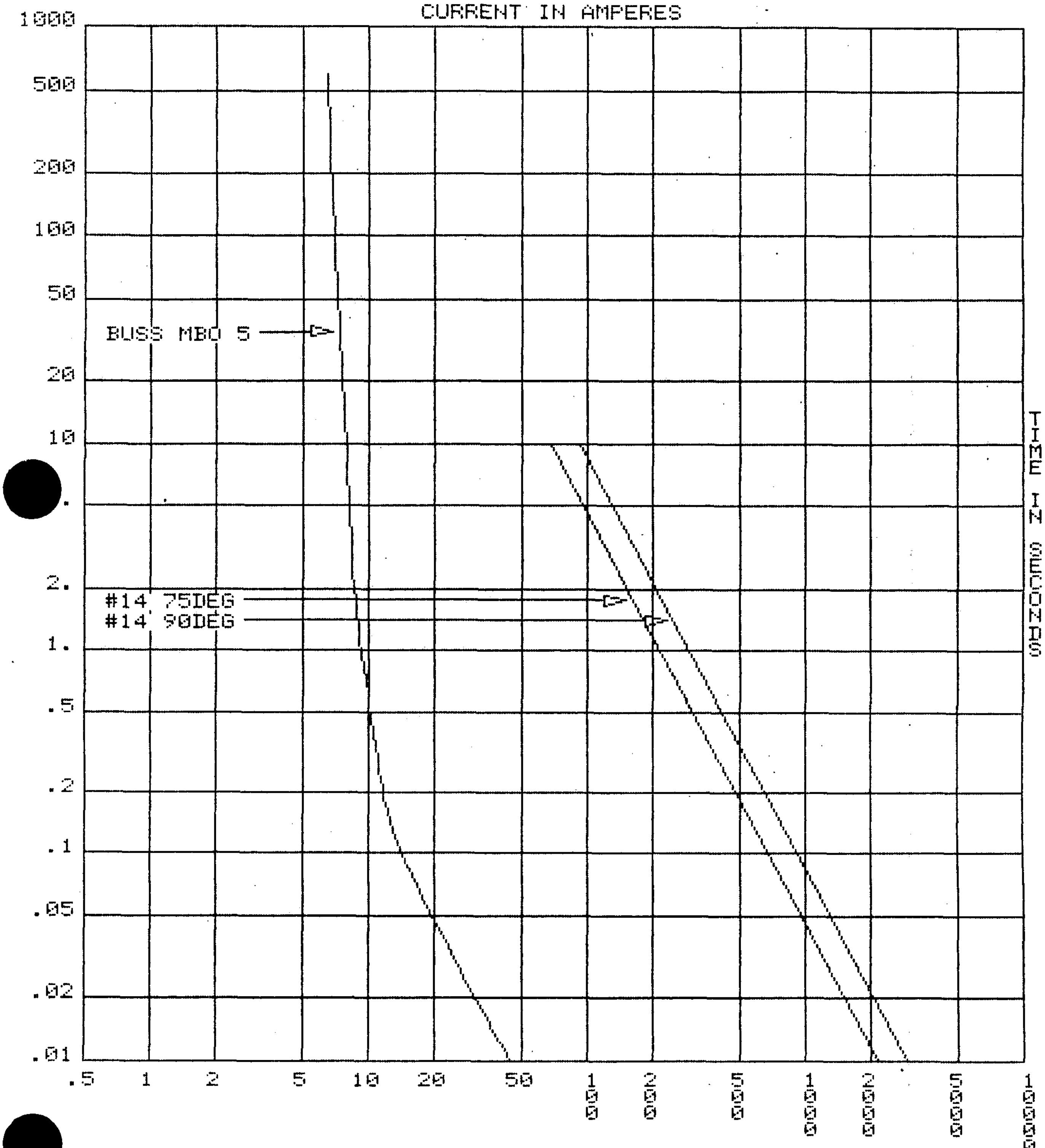
SHEET C 34
PREPARED 7WD DATE 1-31-90
CHECKED CS DATE 1/31/90



DRAWING CURVE31 PLOT ELL: 120 SCALE: 10^1

WBPEVAR 9001006

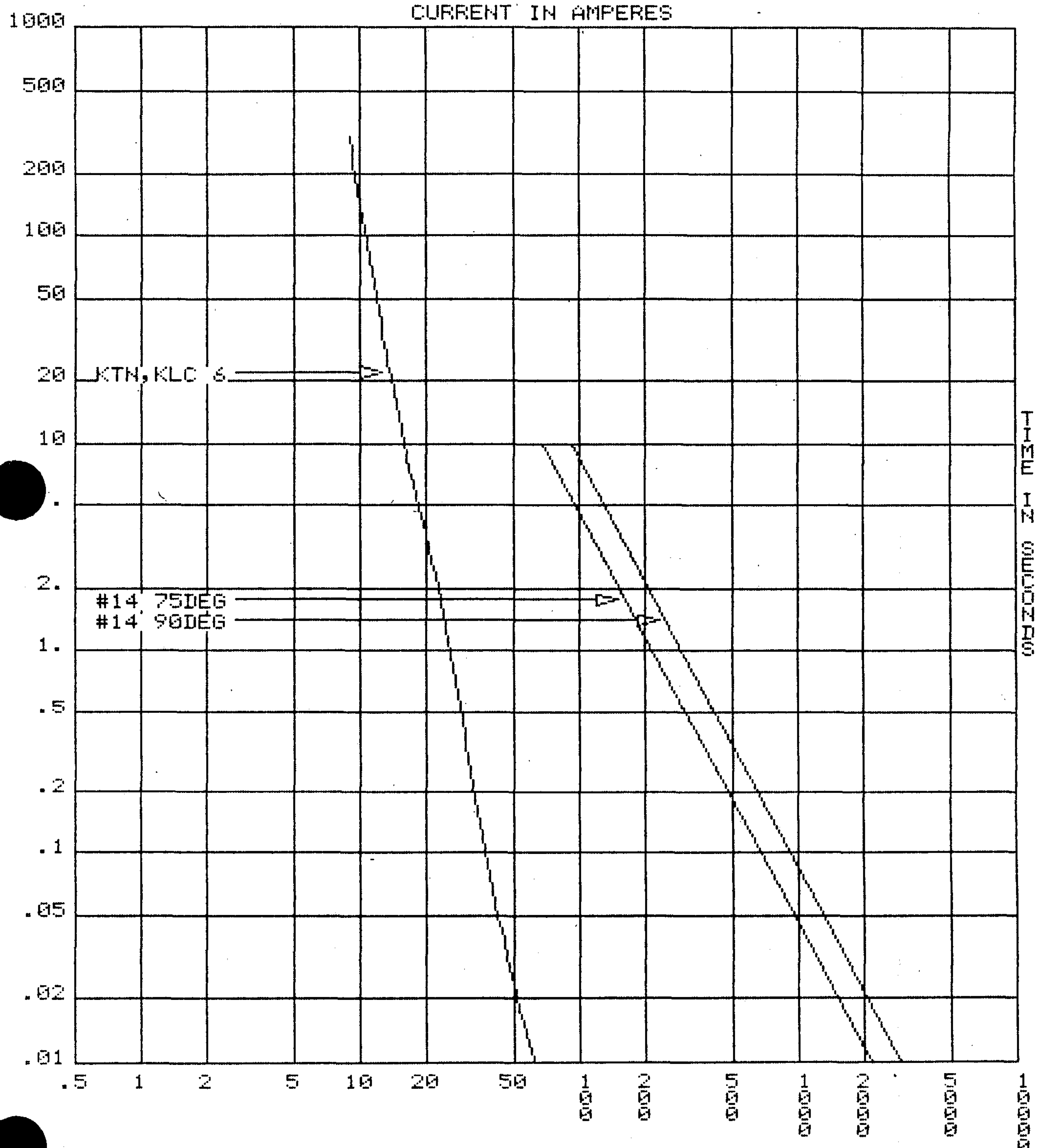
SHEET C35
PREPARED 7AD DATE 1-31-90
CHECKED GCP DATE 2-1-90



DRAWING CURVE32 PLOT ELL: 120 SCALE: 10^0

WBPEVAR 9001006

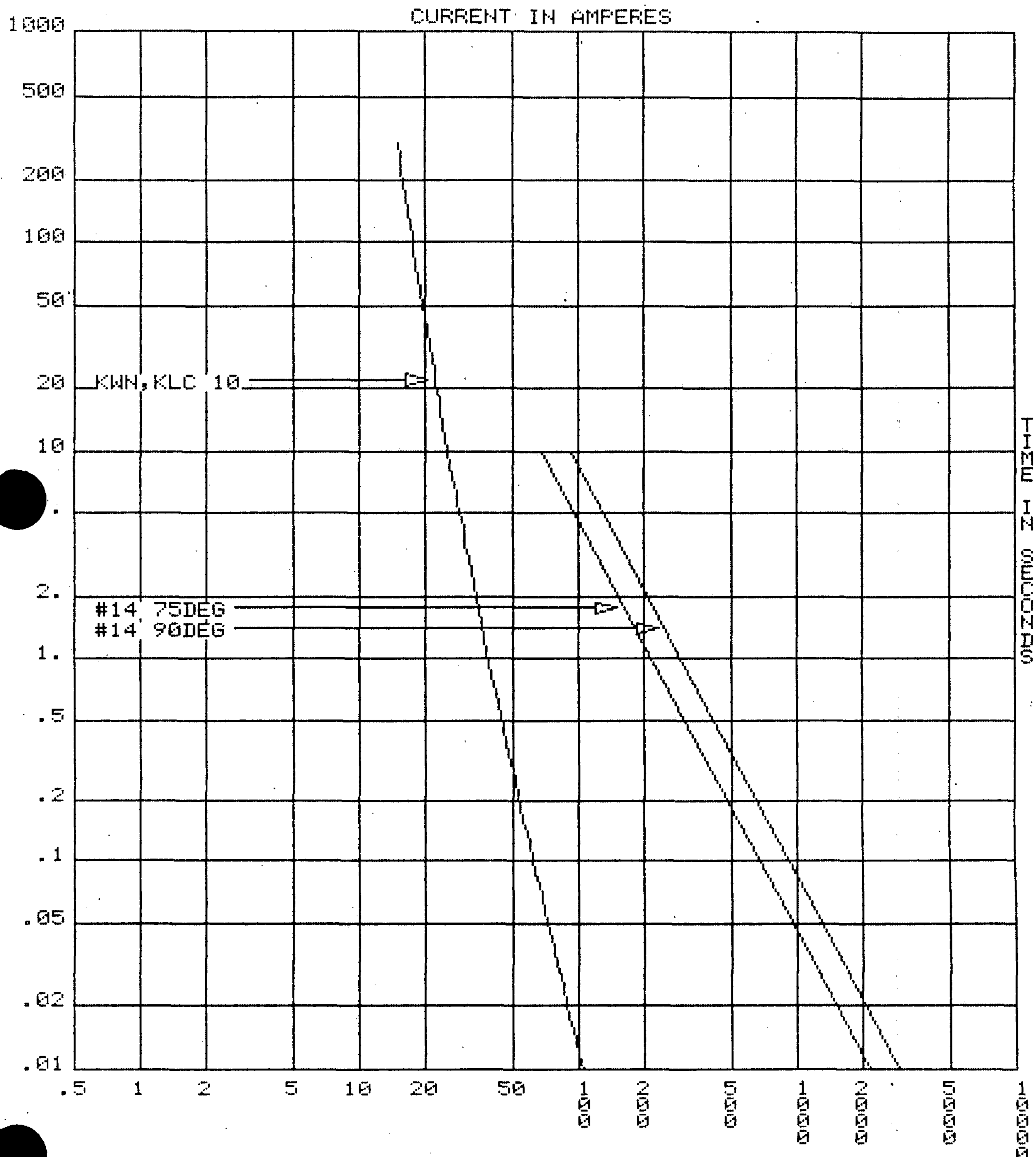
SHEET C 3 6
PREPARED 70D DATE 1-31-90
CHECKED GCP DATE 2-1-90



DRAWING CURVE33 PLOT ELL: 120 SCALE: 10^0

WBPEVAR 9001006

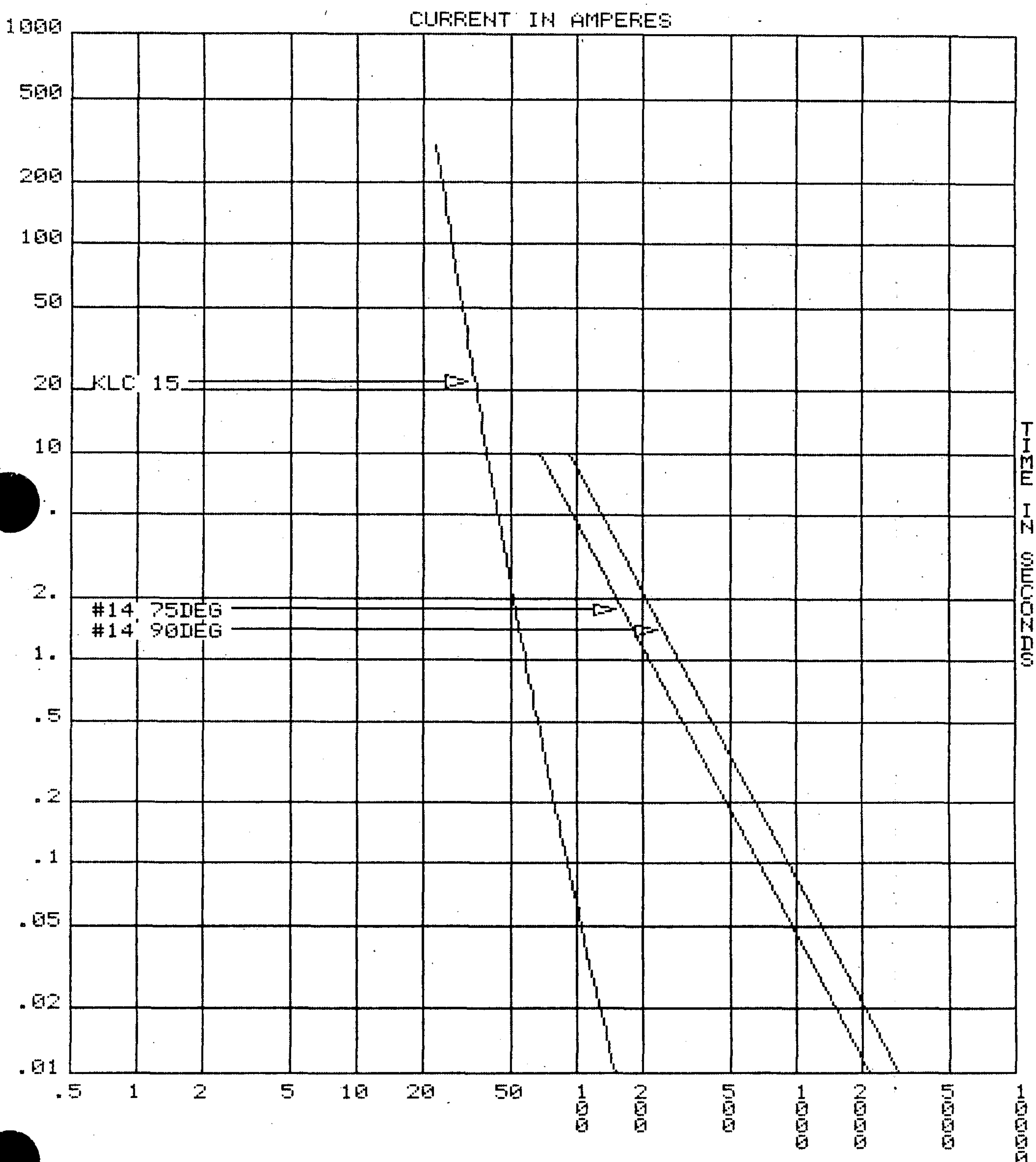
SHEET C37
PREPARED TLQ DATE 1-31-90
CHECKED GCP DATE 2-1-90



DRAWING CURVE34 PLOT ELL: 120 SCALE: 10^0

WBPEVAR 9001006

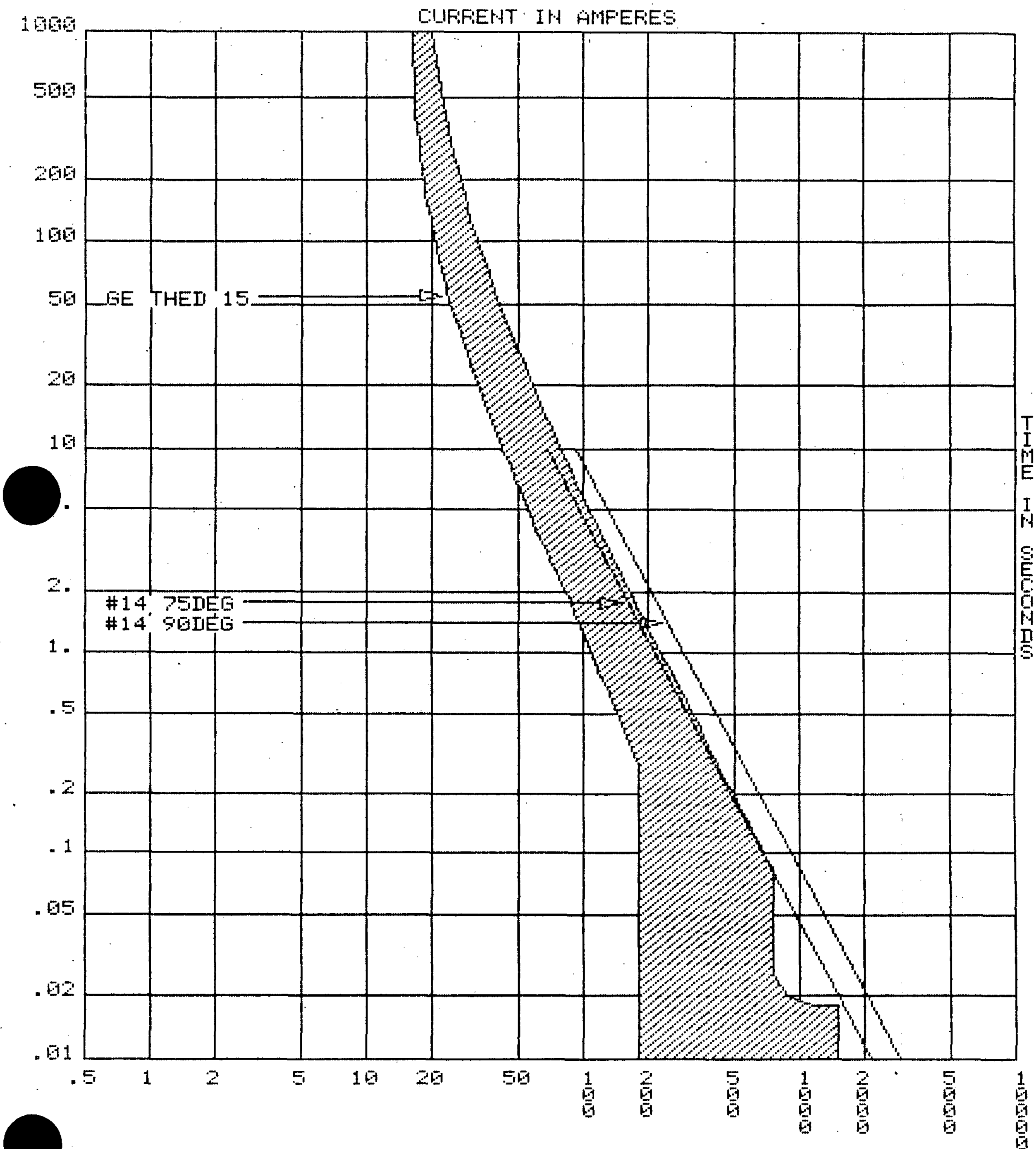
SHEET C38
PREPARED TAD DATE 1-31-90
CHECKED GCP DATE 2-1-90



DRAWING CURVE35 PLOT ELL: 120 SCALE: 10^0

WBPEVAR 9001006

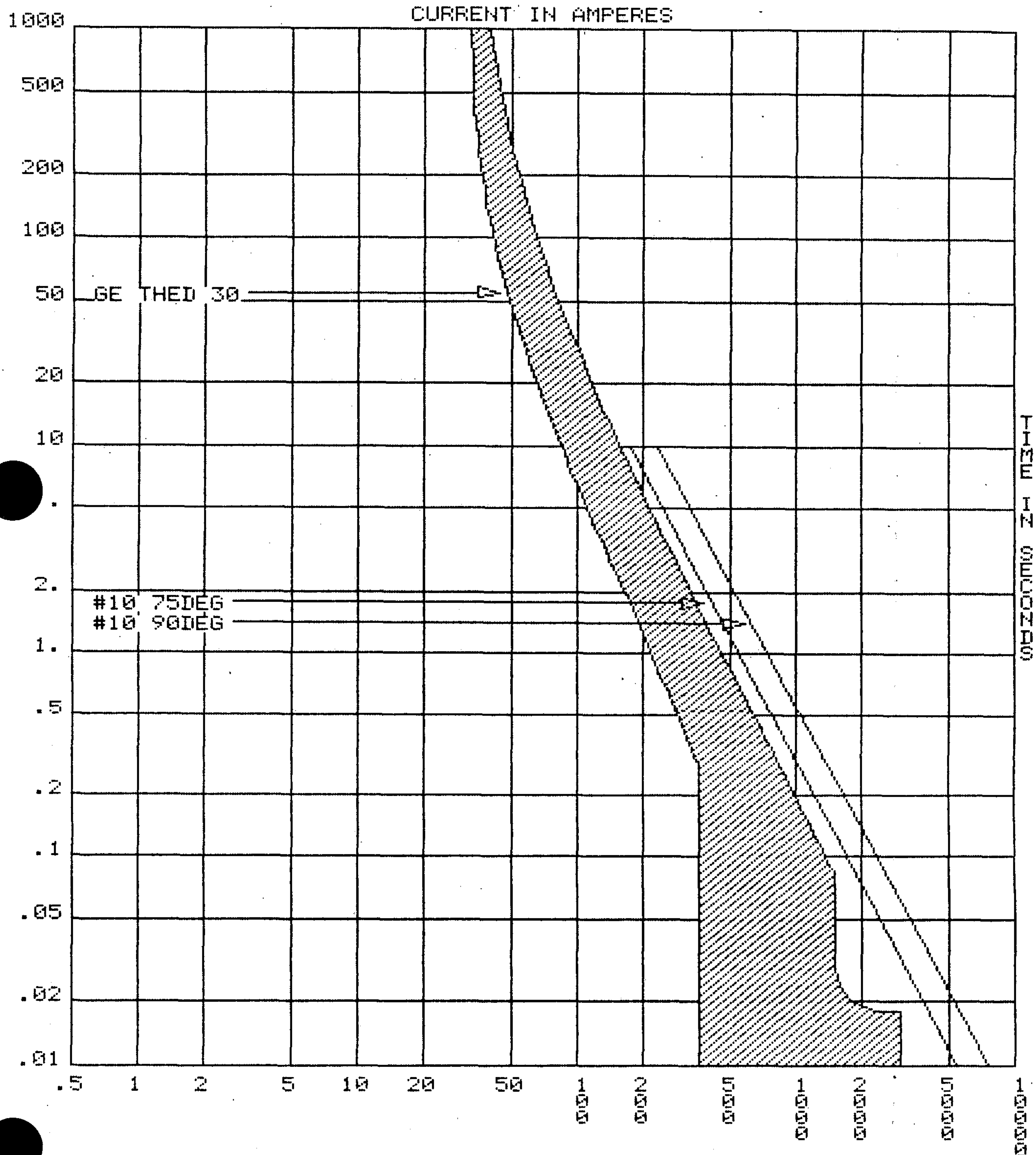
SHEET C39
PREPARED TLQ DATE 1-31-90
CHECKED GCP DATE 2-1-90



DRAWING CURVE36 PLOT ELL: 120 SCALE: 10^0

WBPEVAR 9001 006

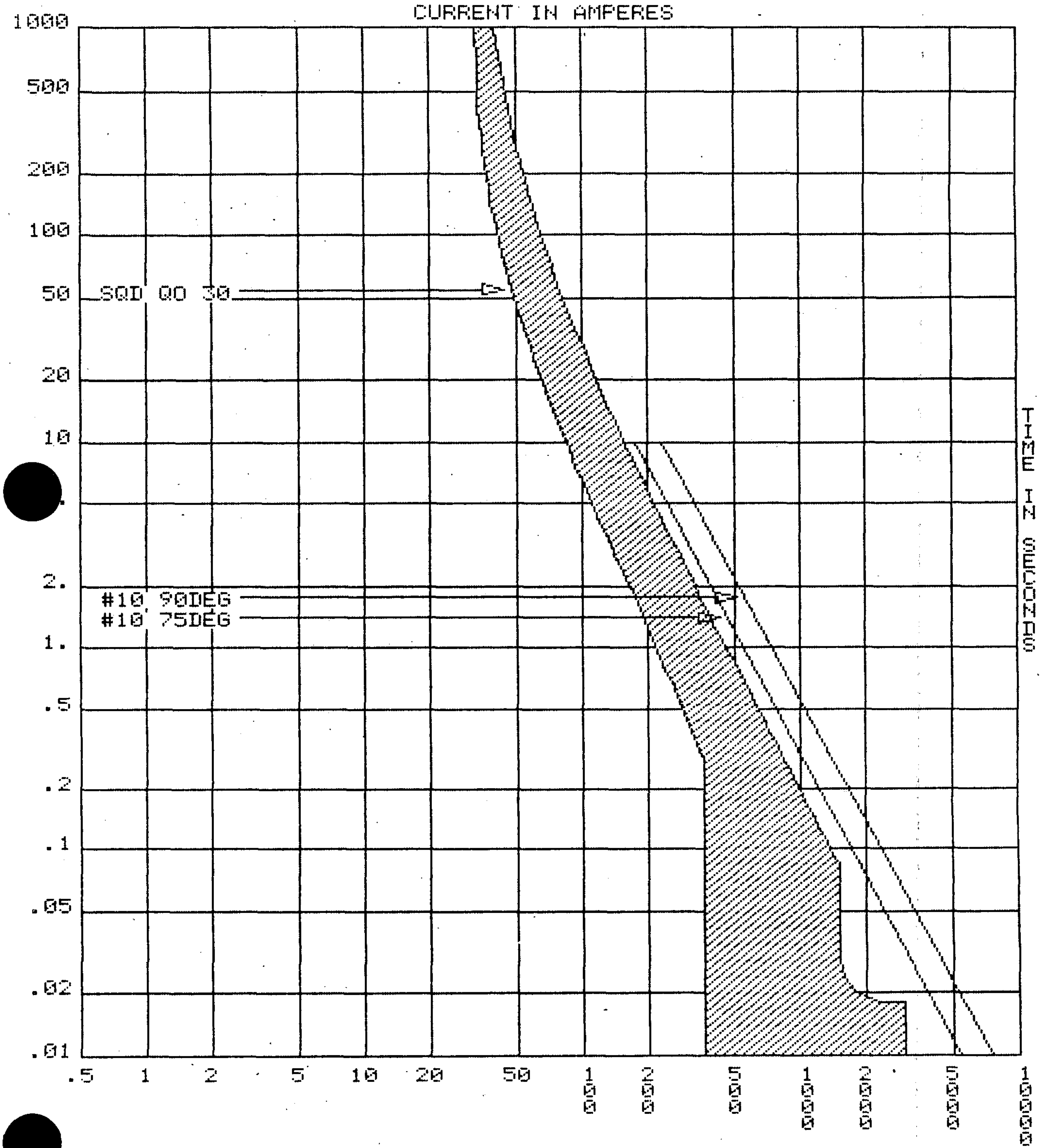
SHEET ~~C39~~ C40 TOD 1/31/90
PREPARED TOD DATE 1-31-90
CHECKED GCP DATE 2-1-90



DRAWING CURVE37 PLOT ELL: 120 SCALE: 10^0

WBPEVAR 9001006

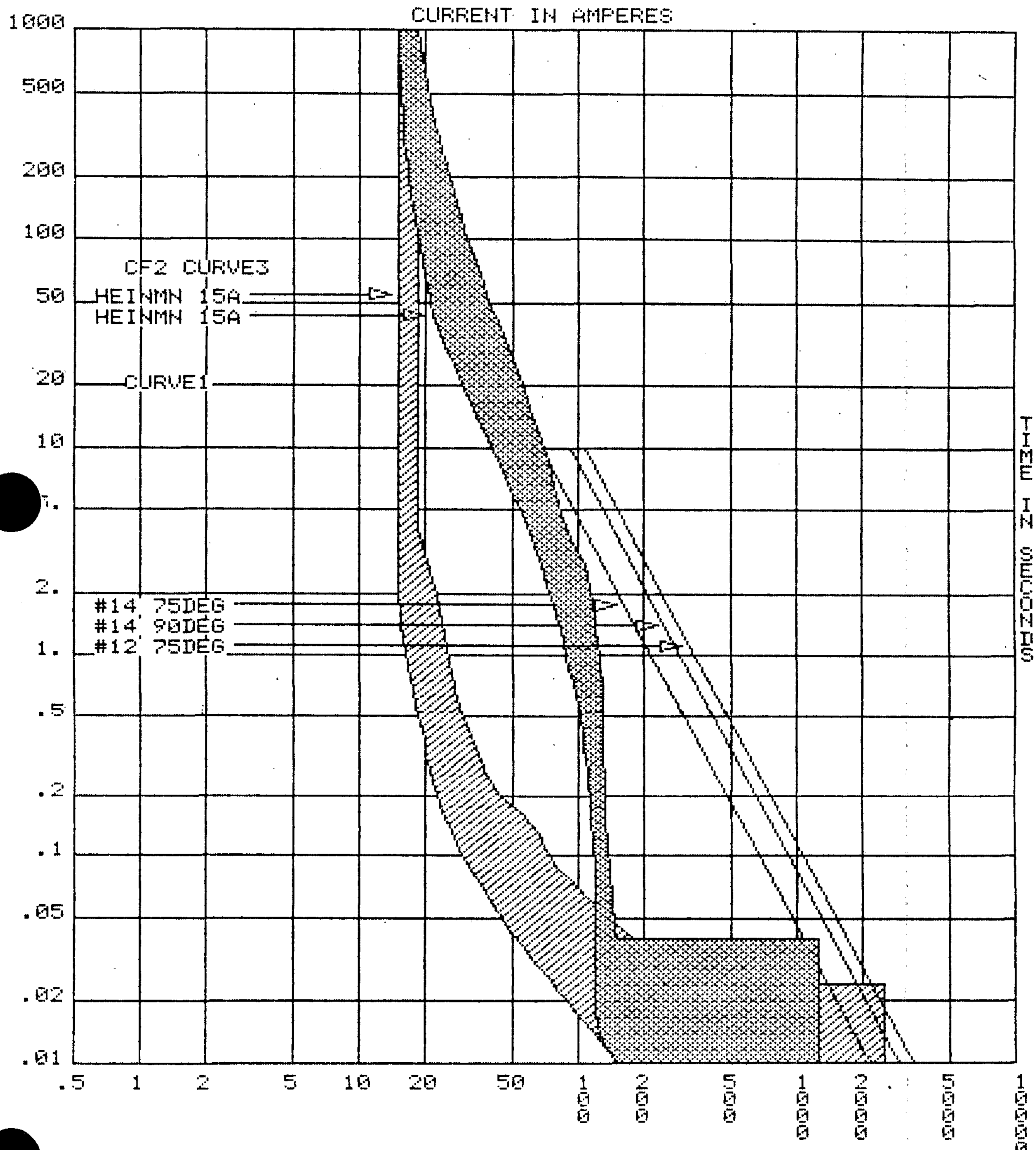
SHEET ~~C40~~ C41 ZAD 1/31/90
PREPARED ZAD DATE 1-31-90
CHECKED GCP DATE 2-1-90



DRAWING CURVE38 PLOT ELL: 120 SCALE: 10^0

WBPEVAR 90 01 006

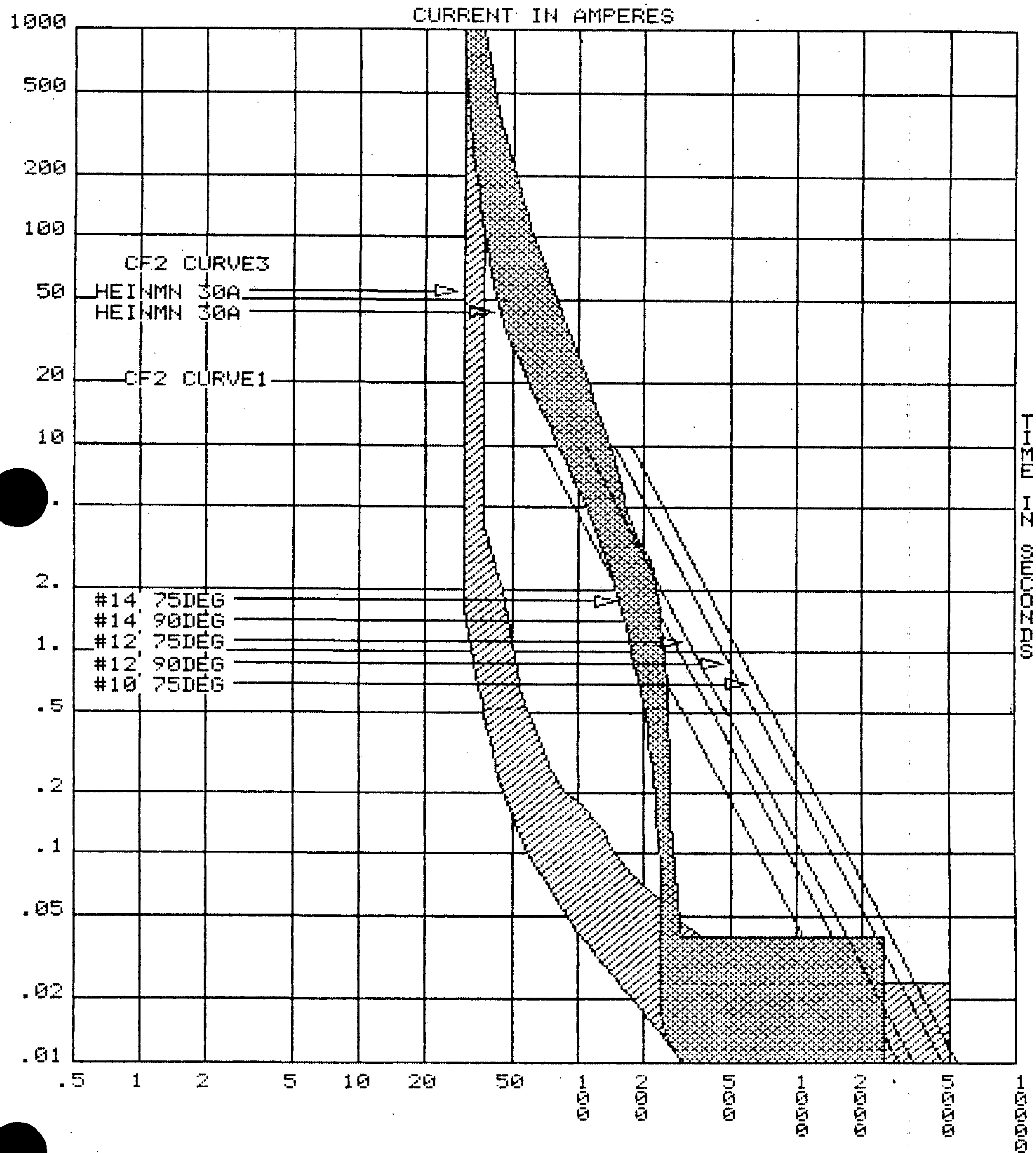
SHEET C42
PREPARED [illegible] DATE 1-31-90
CHECKED CRS DATE 2/1/90



DRAWING CURVE39 PLOT ELL: 120 SCALE: 10^0

WBPEVAR9001006

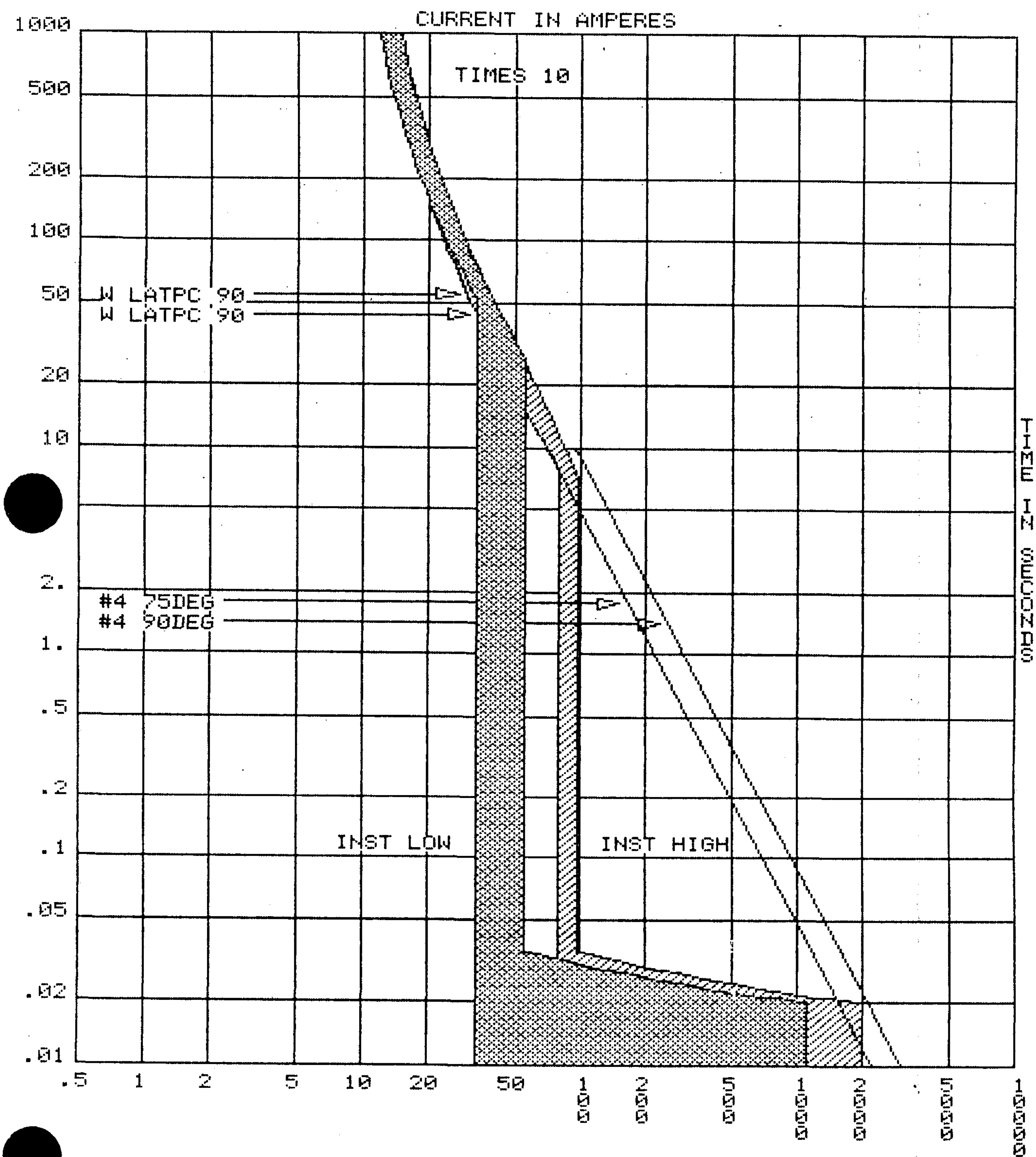
SHEET C43
PREPARED TWD DATE 1-31-90
CHECKED RS DATE 2/1/90



DRAWING CURVE40 PLOT ELL: 120 SCALE: 10^0

WBPEVAR 9001006

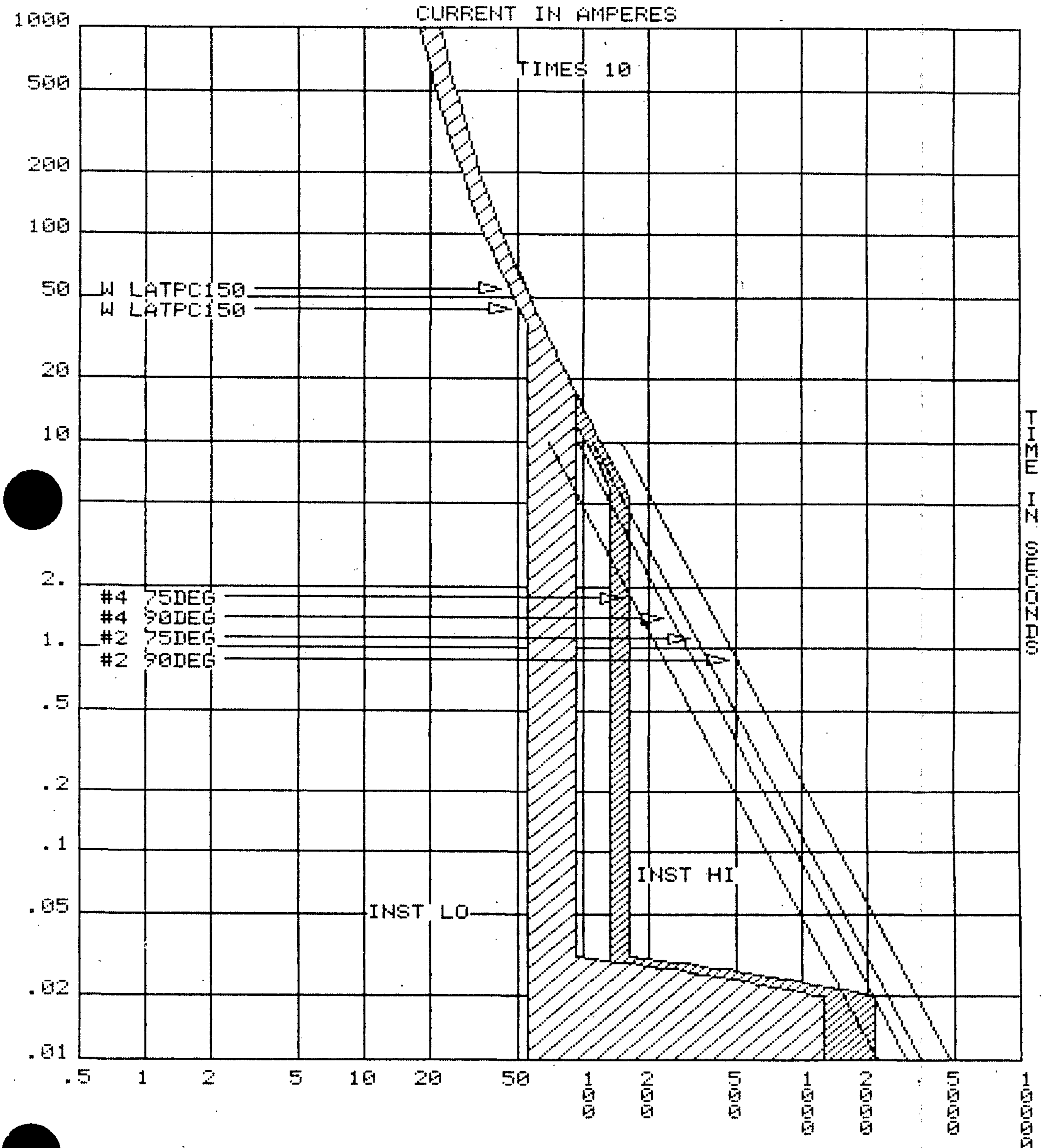
SHEET C44
PREPARED TAS DATE 1-31-90
CHECKED GCP DATE 2-1-90



DRAWING CURVE41 PLOT ELL: 250 SCALE: 10^1

WBPEVAR 9001006

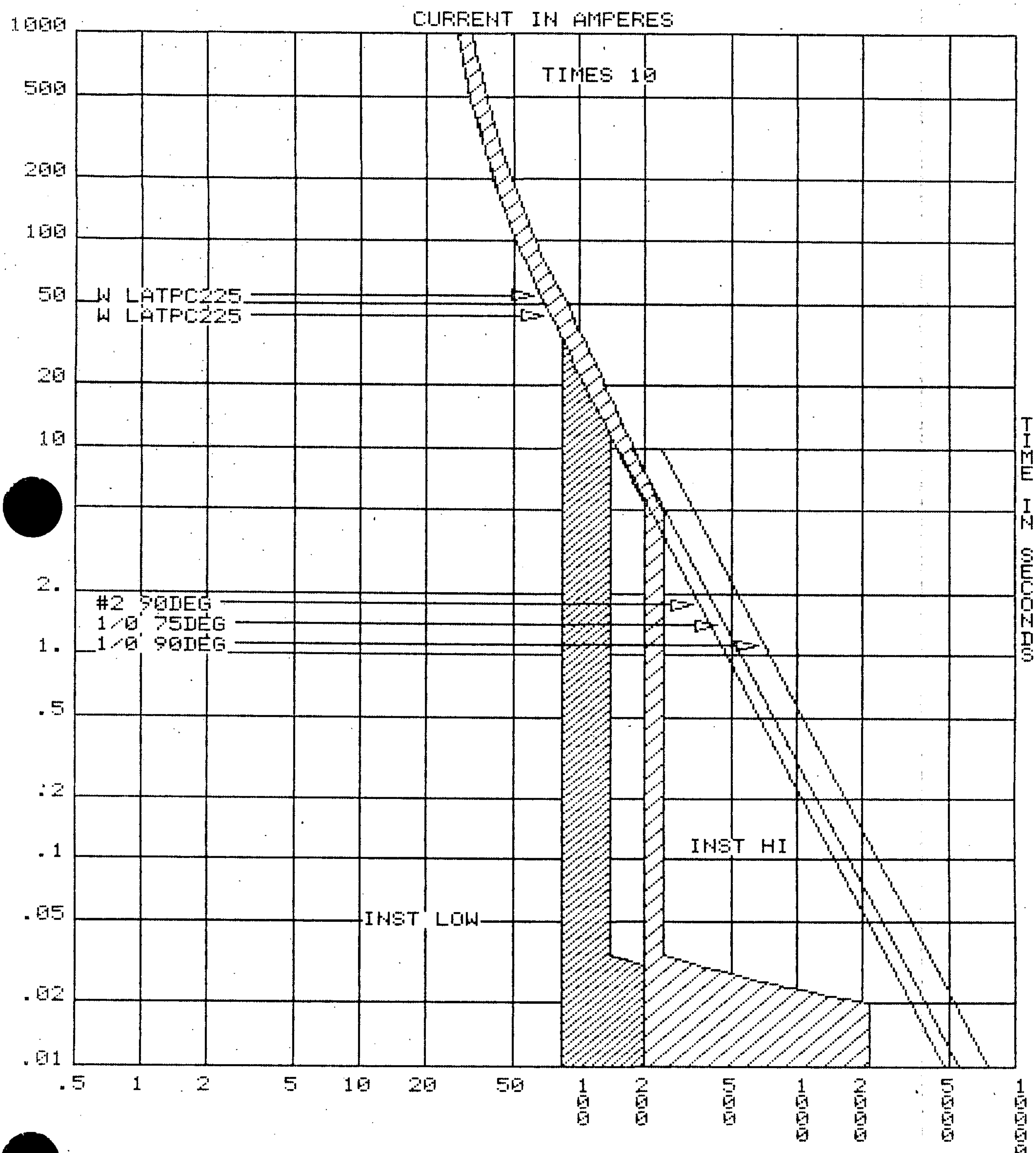
SHEET C45
PREPARED TAQ DATE 1-31-90
CHECKED GCP DATE 2-1-90



DRAWING CURVE42 PLOT ELL: 250 SCALE: 10^1

WBPEVAR 9001006

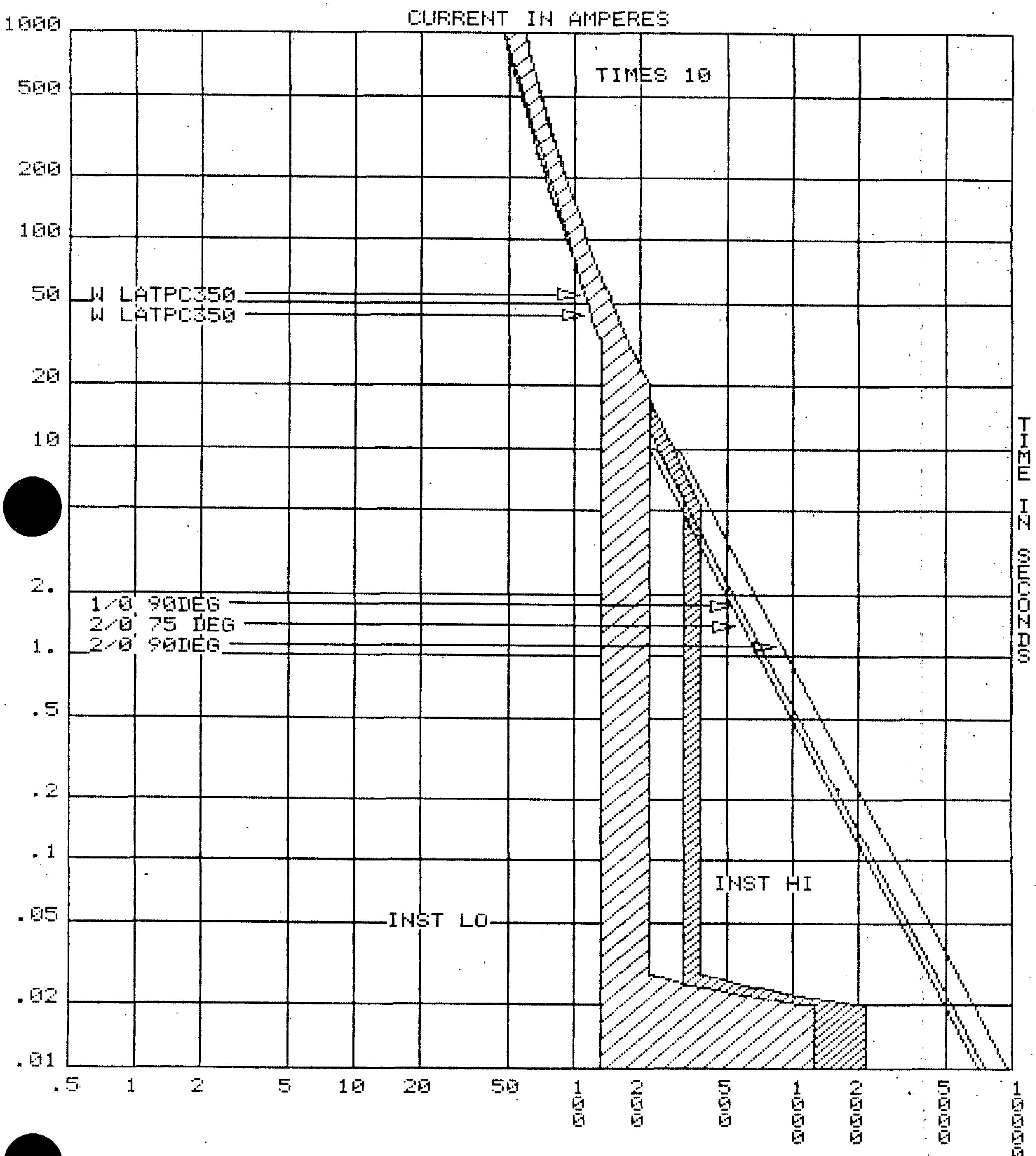
SHEET C46
PREPARED TAD DATE 1-31-90
CHECKED GCP DATE 2-1-90



DRAWING CURVE43 PLOT ELL: 250 SCALE: 10^1

WBPEVAR 9001006

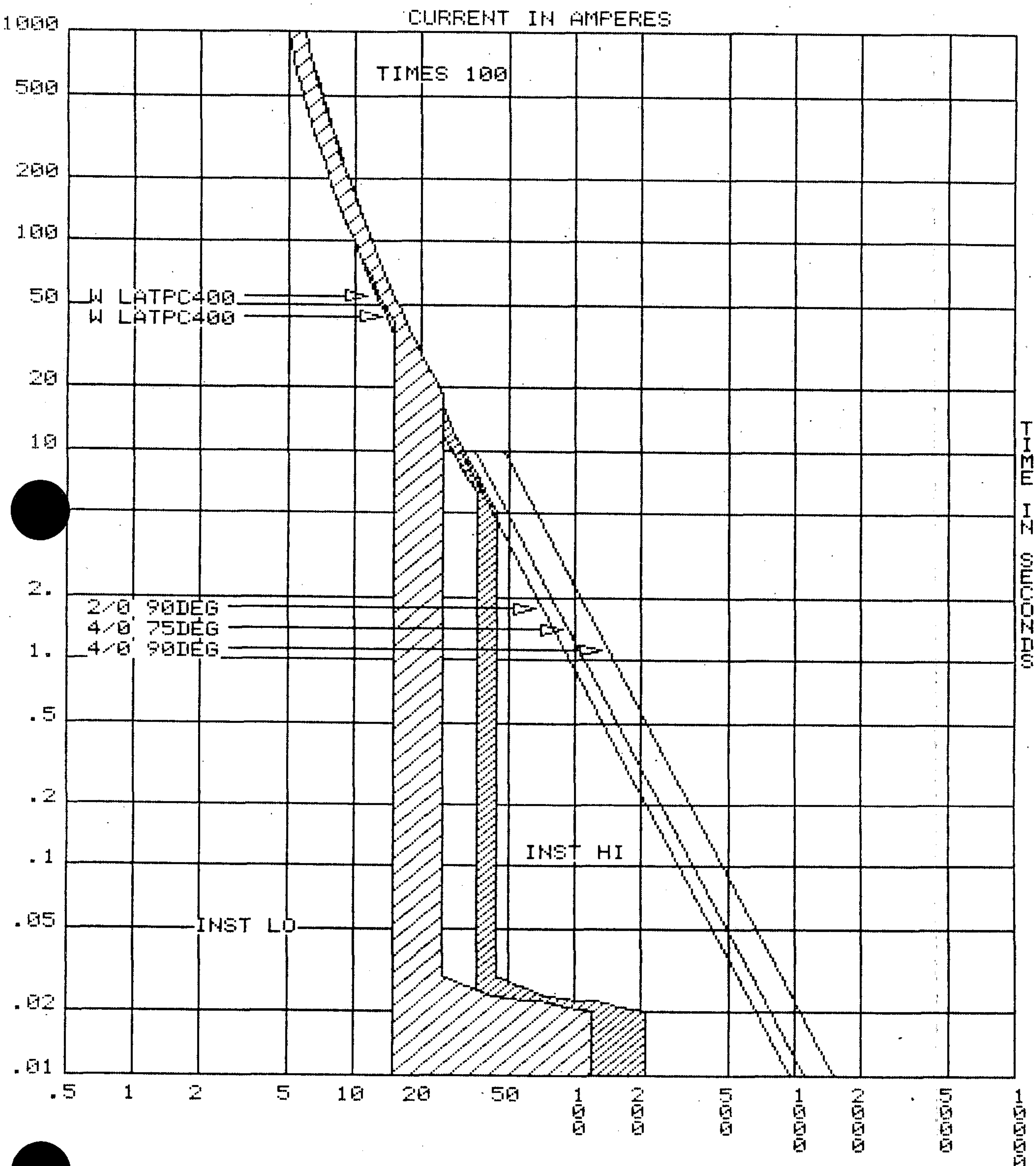
C47
PREPARED TAD DATE 1-31-90
CHECKED GCP DATE 2-1-90



DRAWING CURVE44 PLOT ELL: 250 SCALE: 10^1

WBPEVAR 90 01006

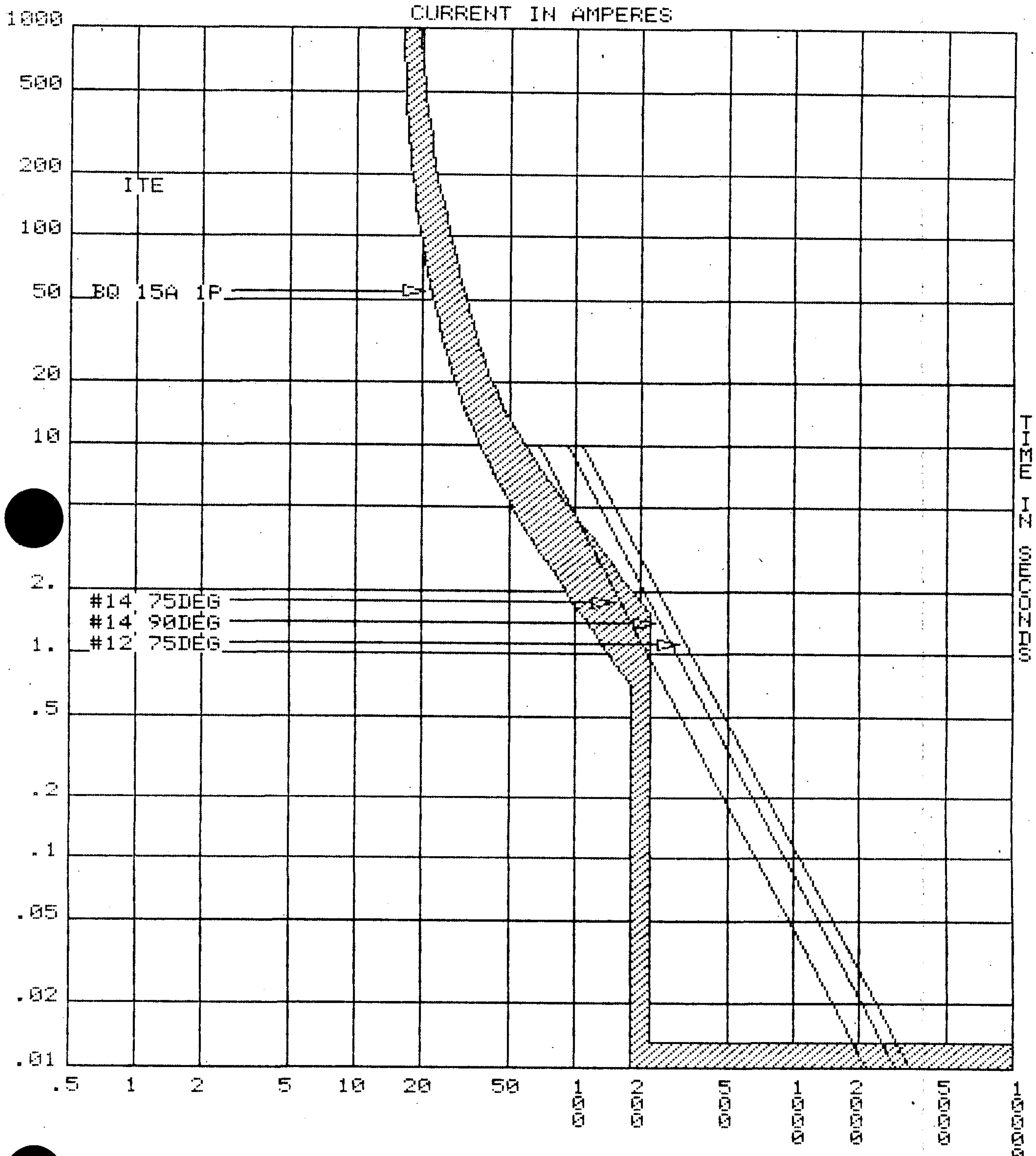
SHEET C48
PREPARED TAL DATE 1-31-90
CHECKED GCP DATE 2-1-90



DRAWING CURVE45 PLOT ELL: 250 SCALE: 10^2

WBPEVAR9001006

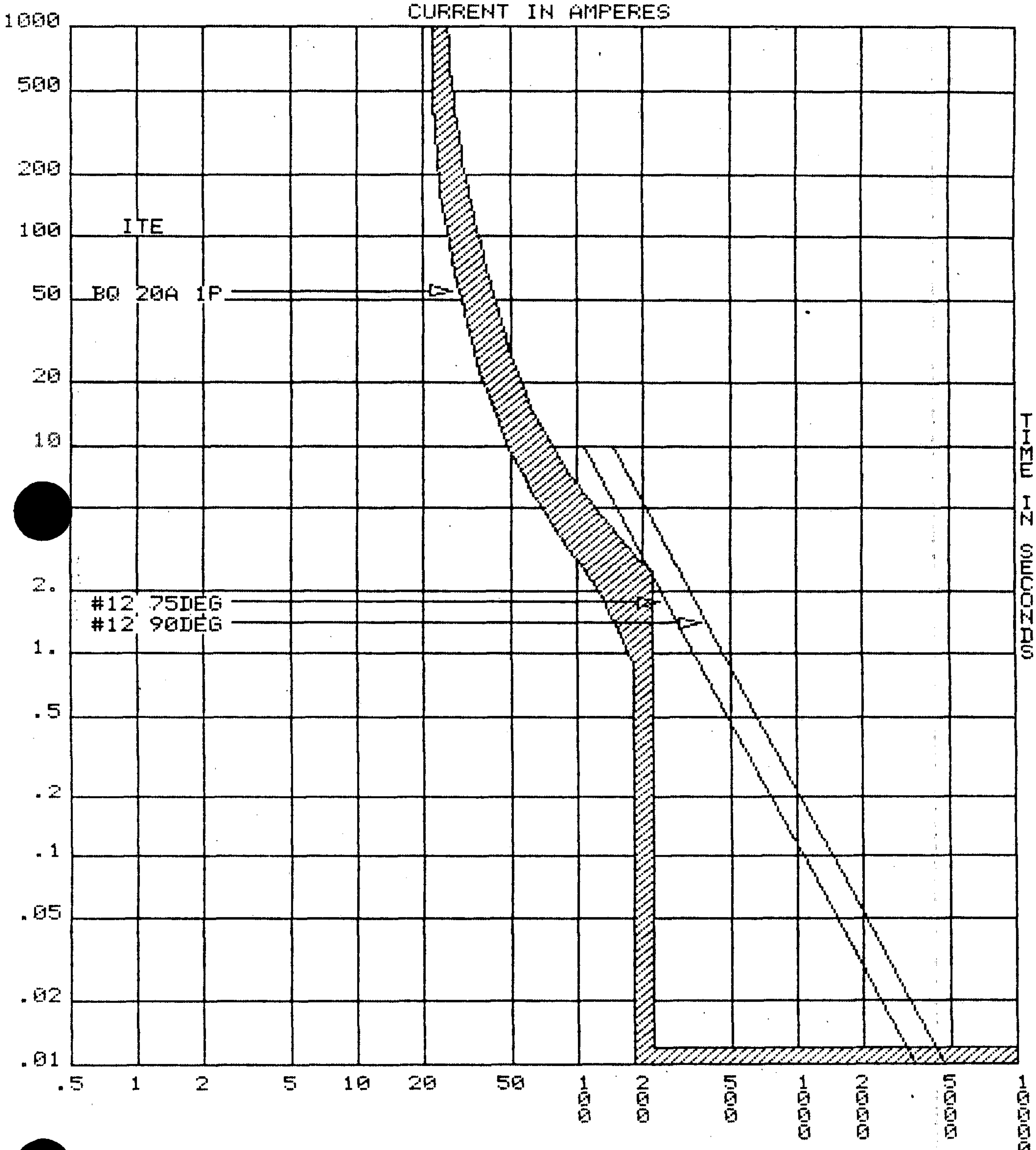
SHEET C49
PREPARED 7AD DATE 1-31-90
CHECKED GCP DATE 2-1-90



DRAWING CURVE46 PLOT ELL: 120 SCALE: 10^0

WBPEVAR9001006

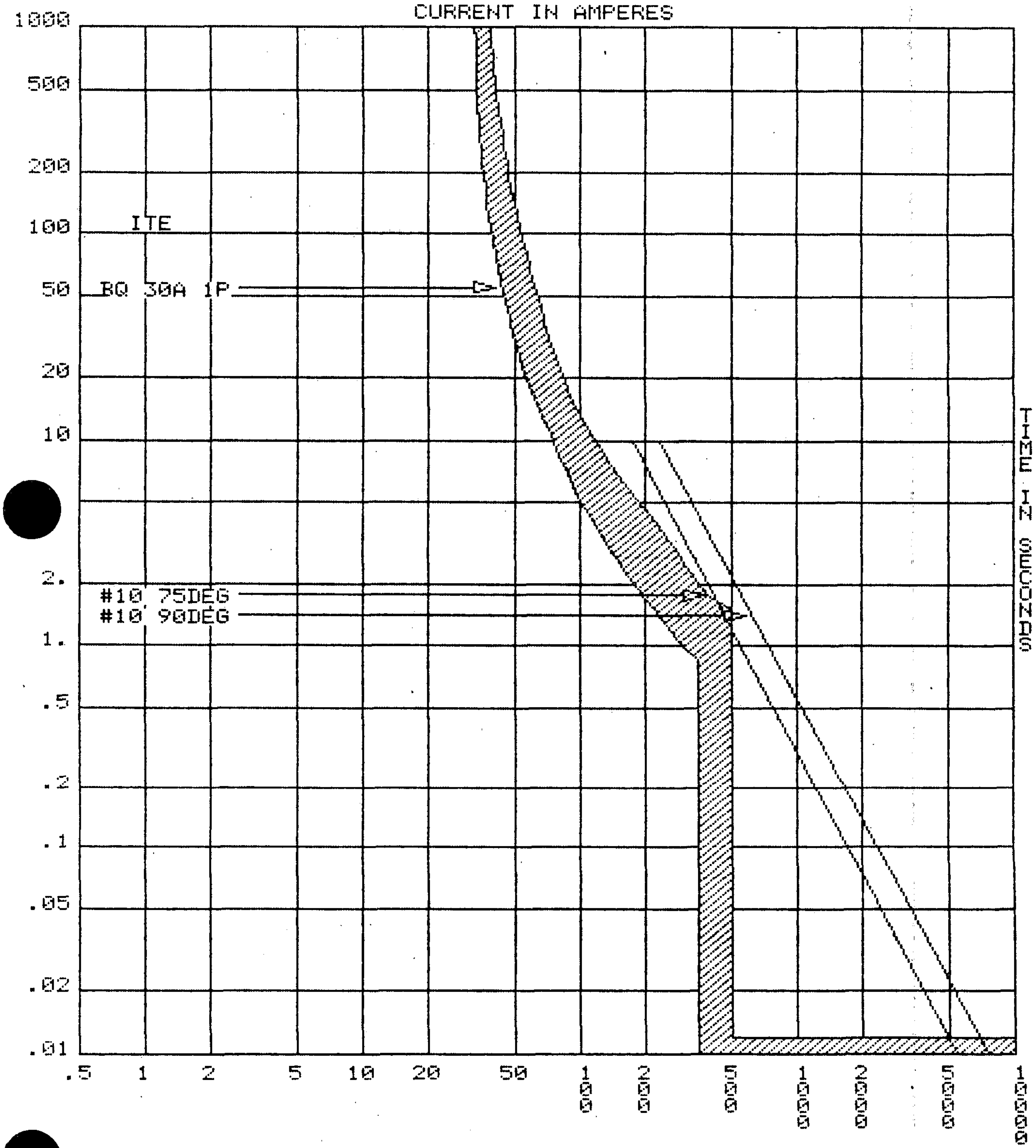
SHEET C50
PREPARED TAD DATE 1-31-90
CHECKED GCP DATE 2-1-90



DRAWING CURVE47 PLOT ELL: 120 SCALE: 10^0

WBPEVAR 9001006

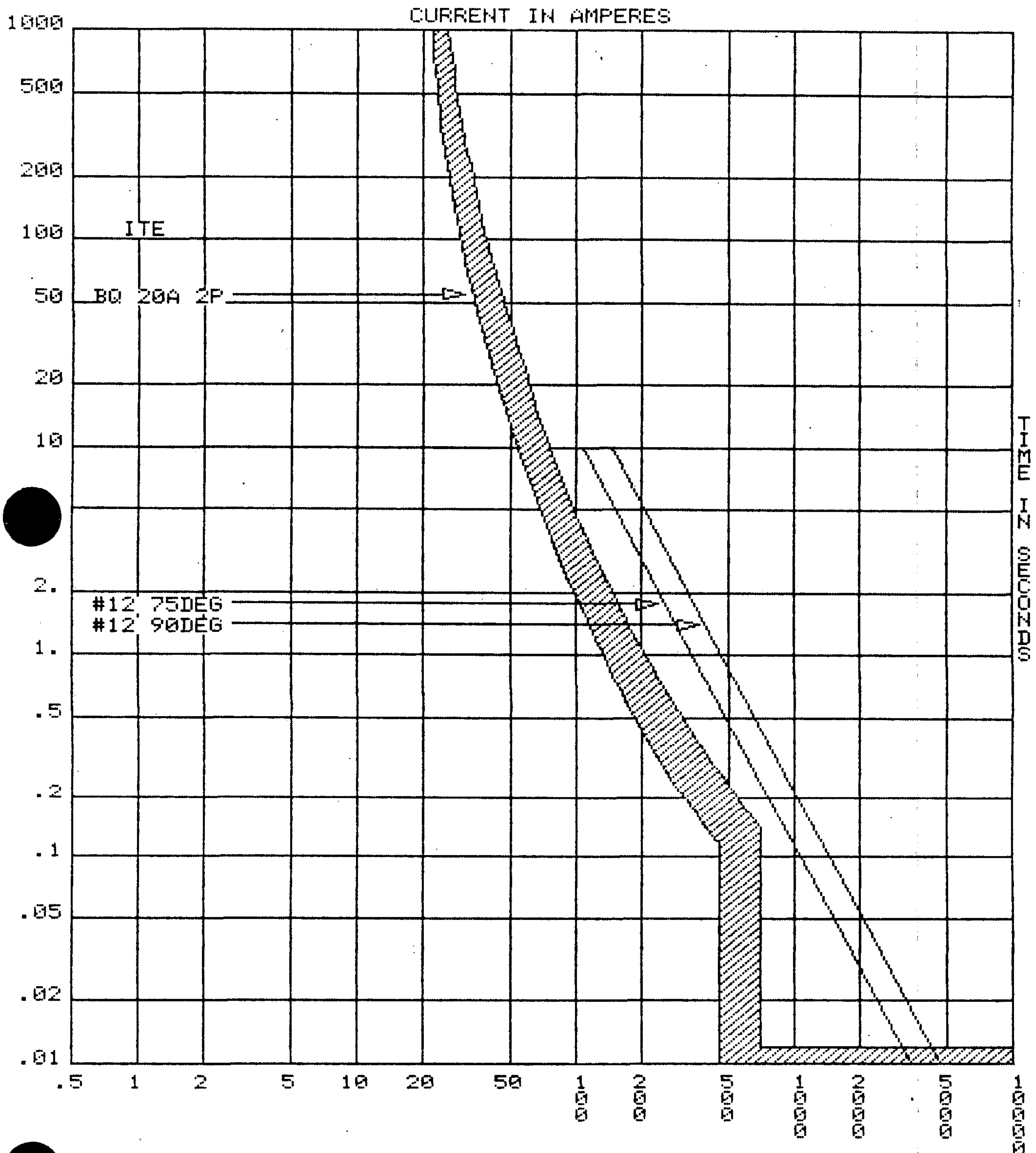
SHEET C51
PREPARED TQO DATE 1-31-90
CHECKED GCP DATE 2-1-90



DRAWING CURVE48 PLOT ELL: 120 SCALE: 10^0

WBPEVAR 9001006

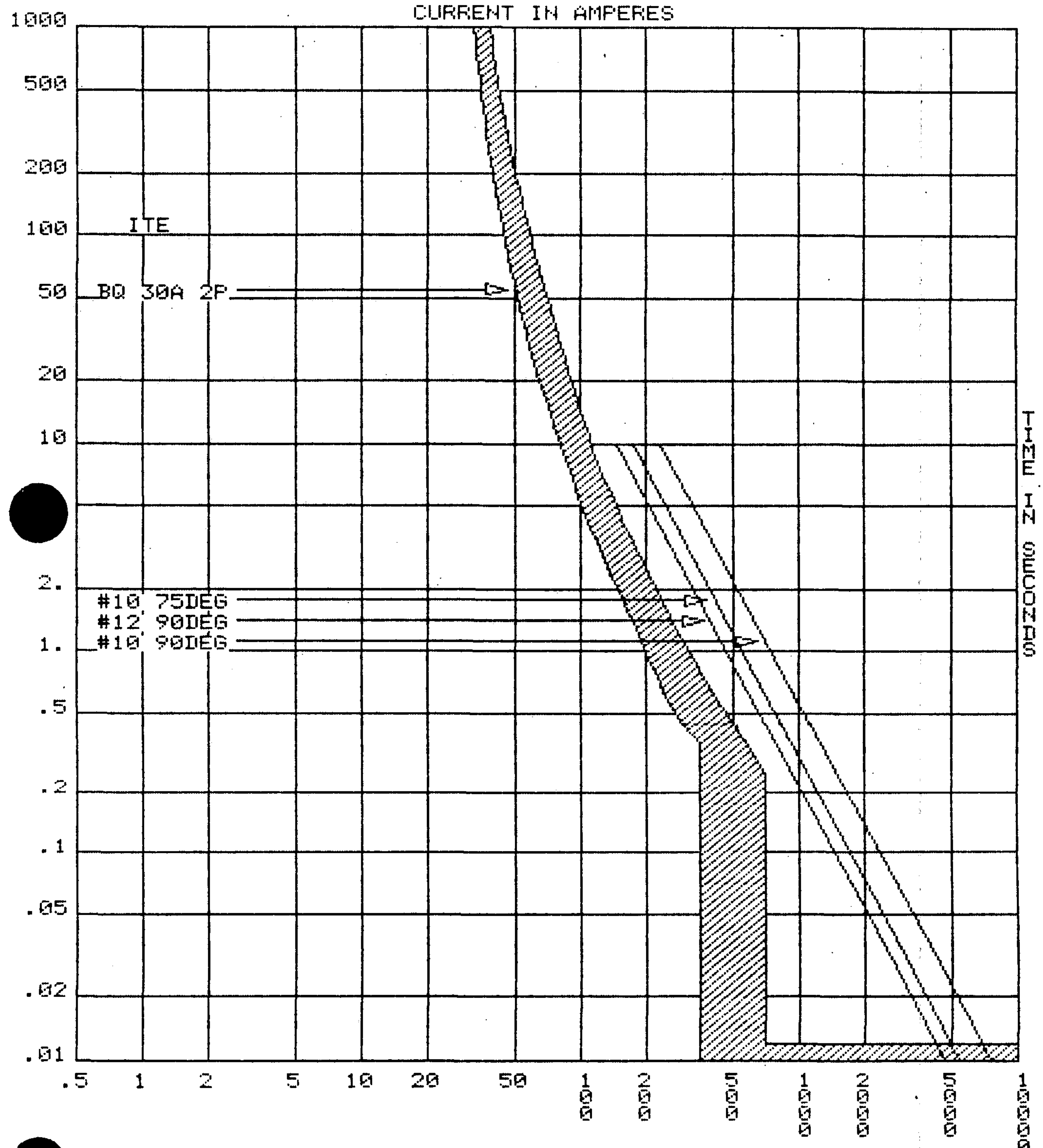
SHEET C52
PREPARED TAW DATE 1-31-90
CHECKED GCP DATE 2-1-90



DRAWING CURVE49 PLOT ELL: 120 SCALE: 10^0

WBPEVAR9001006

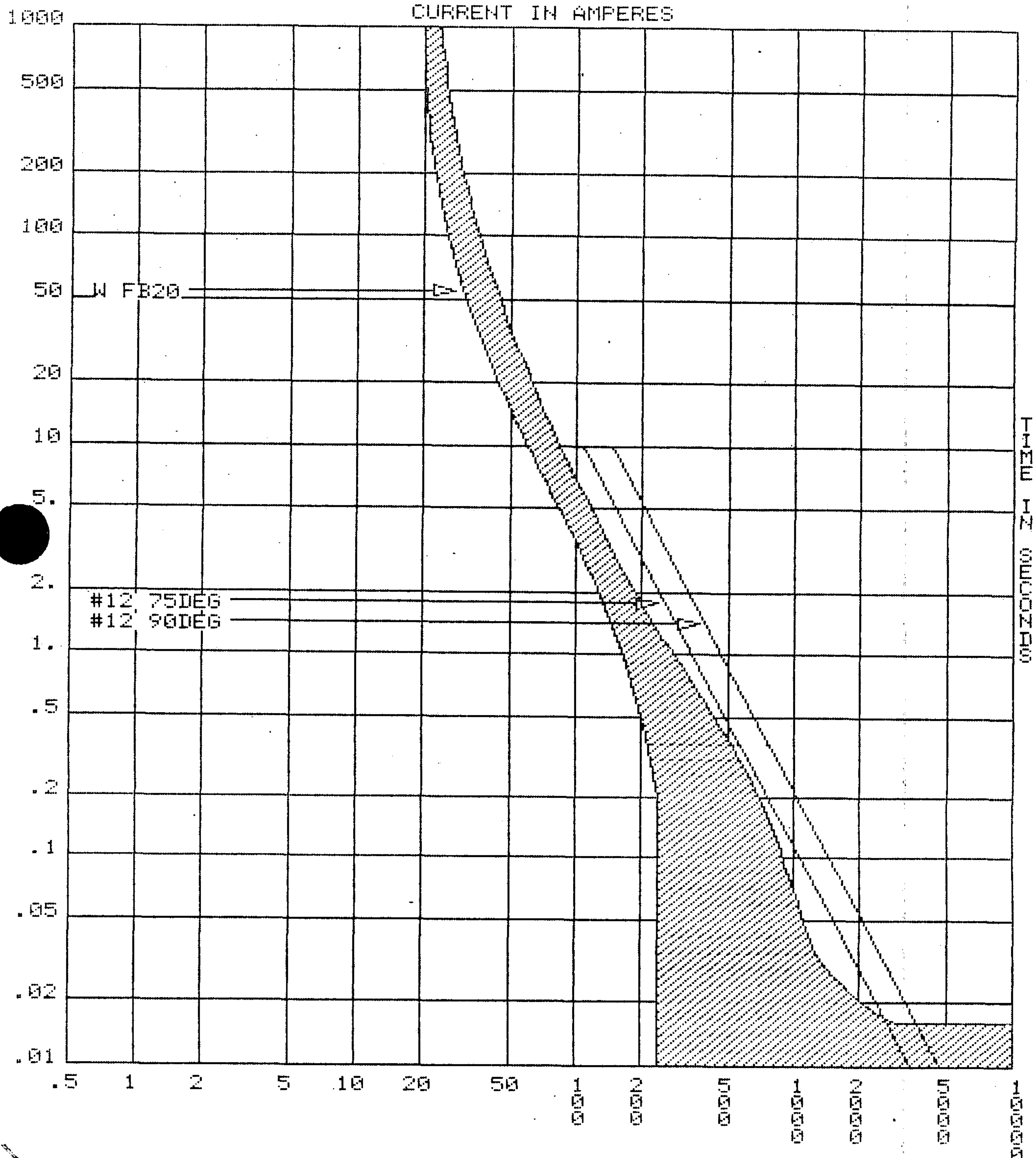
SHEET C53
PREPARED 7ld DATE 1-31-90
CHECKED GCP DATE 2-1-90



DRAWING CURVE50 PLOT ELL: 120 SCALE: 10^0

WBPEVAR9001006

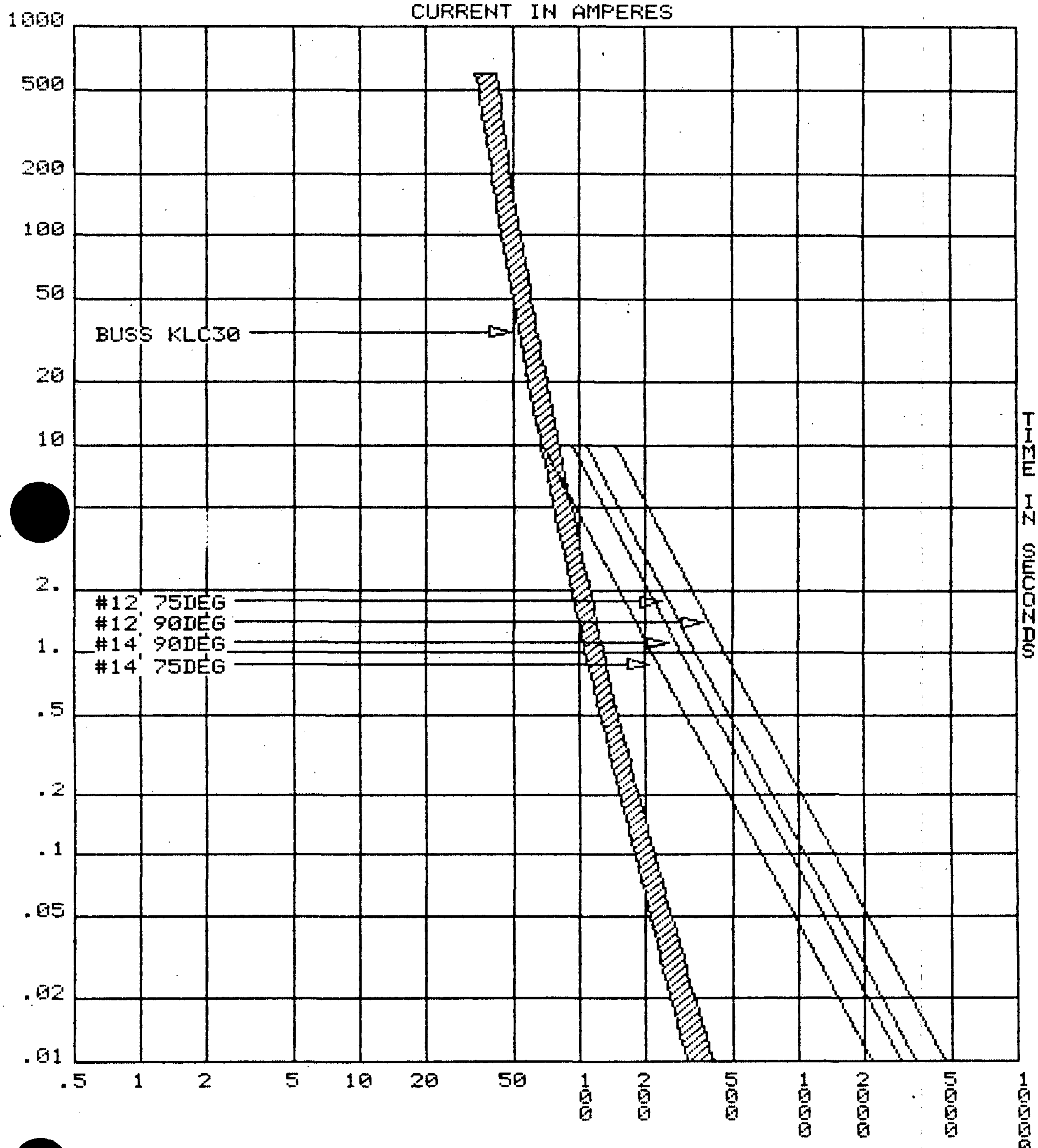
SHEET C54
PREPARED TWL DATE 1-31-90
CHECKED GCP DATE 2-1-90



DRAWING CURVE51 PLOT ELL: 250 SCALE: 10^0

WBPEVAR 9001006

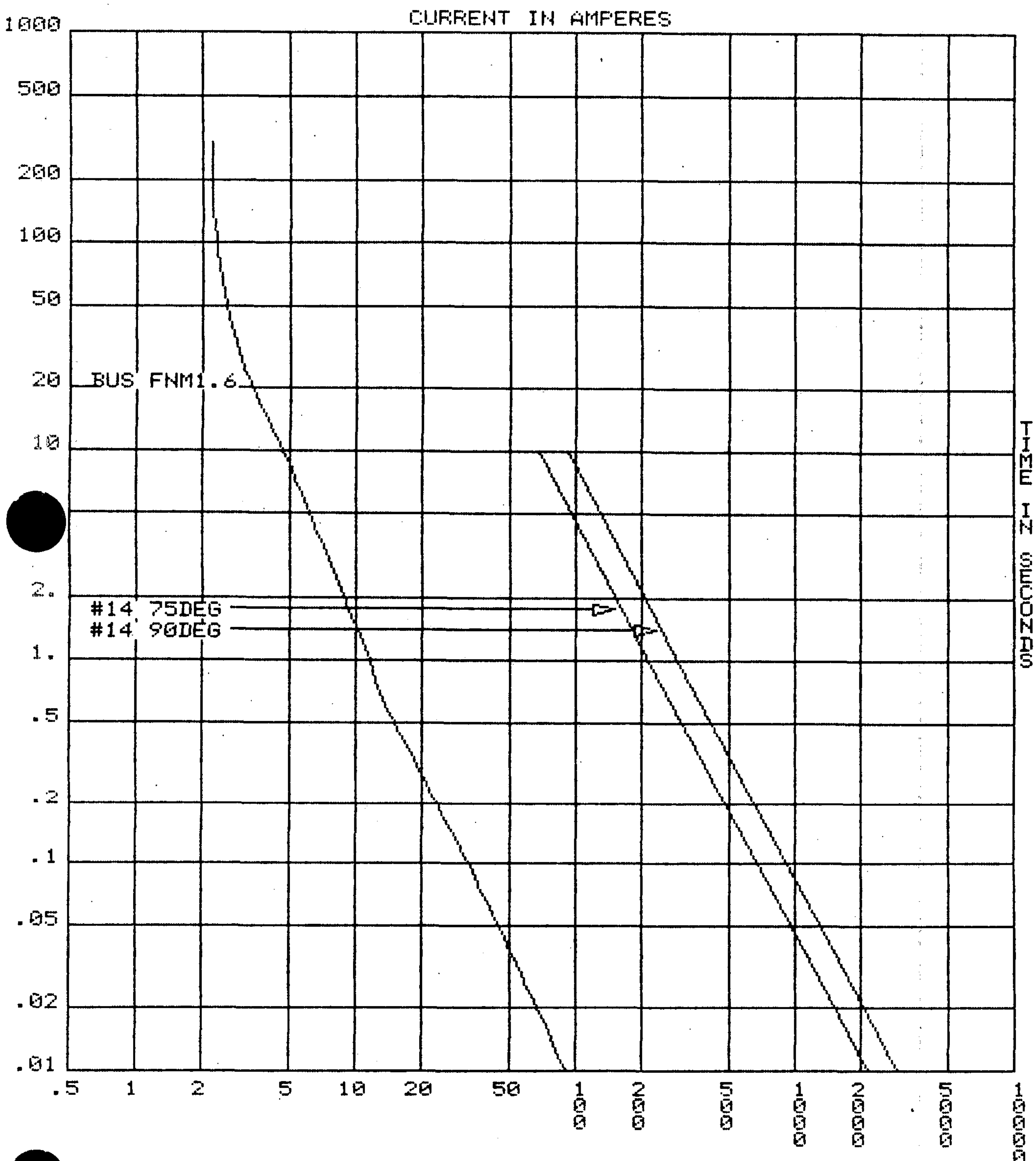
SHEET C55
PREPARED [illegible] DATE 1-31-90
CHECKED GCP DATE 2-1-90



DRAWING CURVE52 PLOT ELL: 120 SCALE: 10^0

WBPEVAR9001006

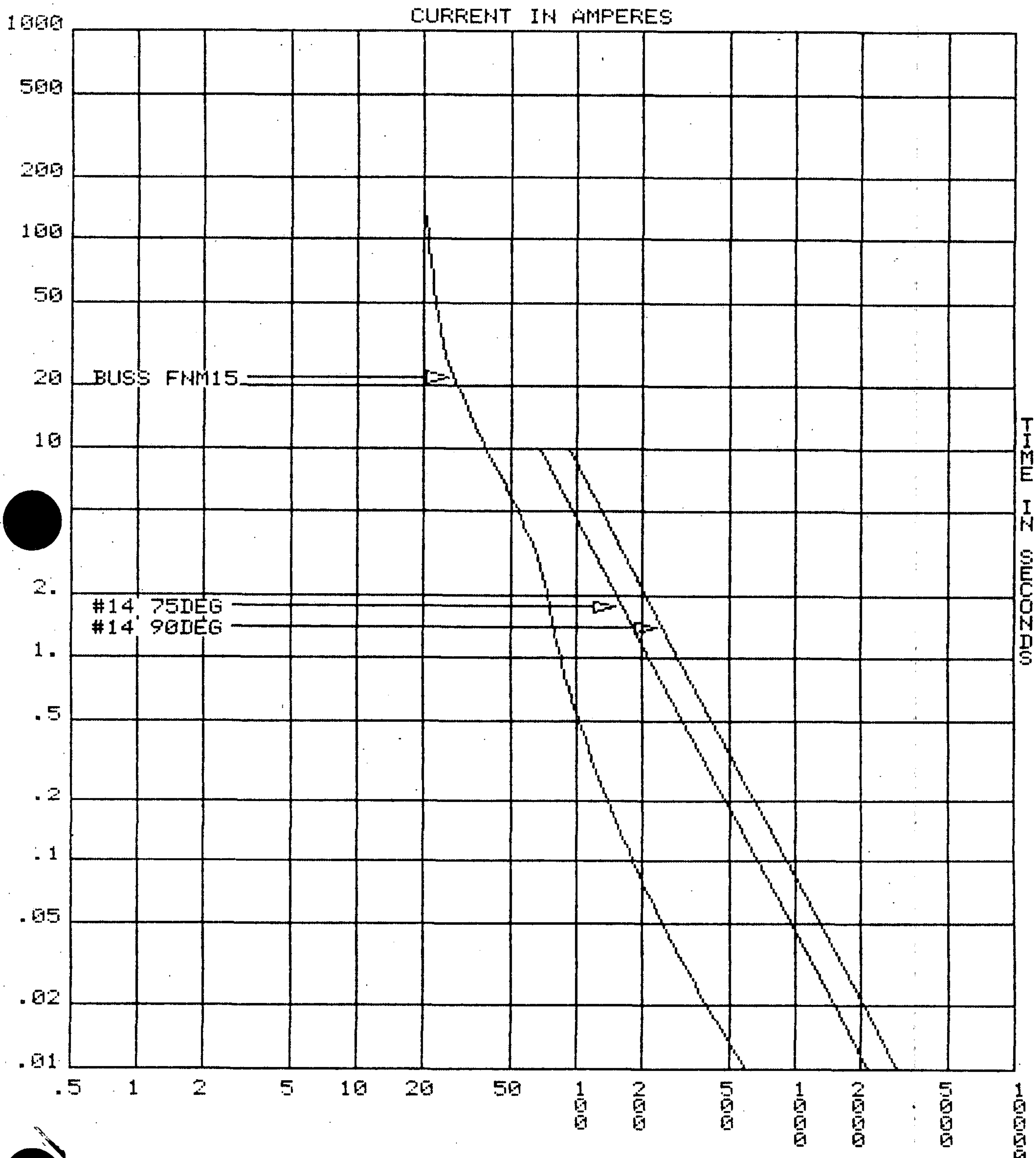
SHEET C56
PREPARED TAD DATE 1-31-90
CHECKED GCP DATE 2-1-90



DRAWING CURVE53 PLOT ELL: 120 SCALE: 10^0

WBPEVAR 9001.006

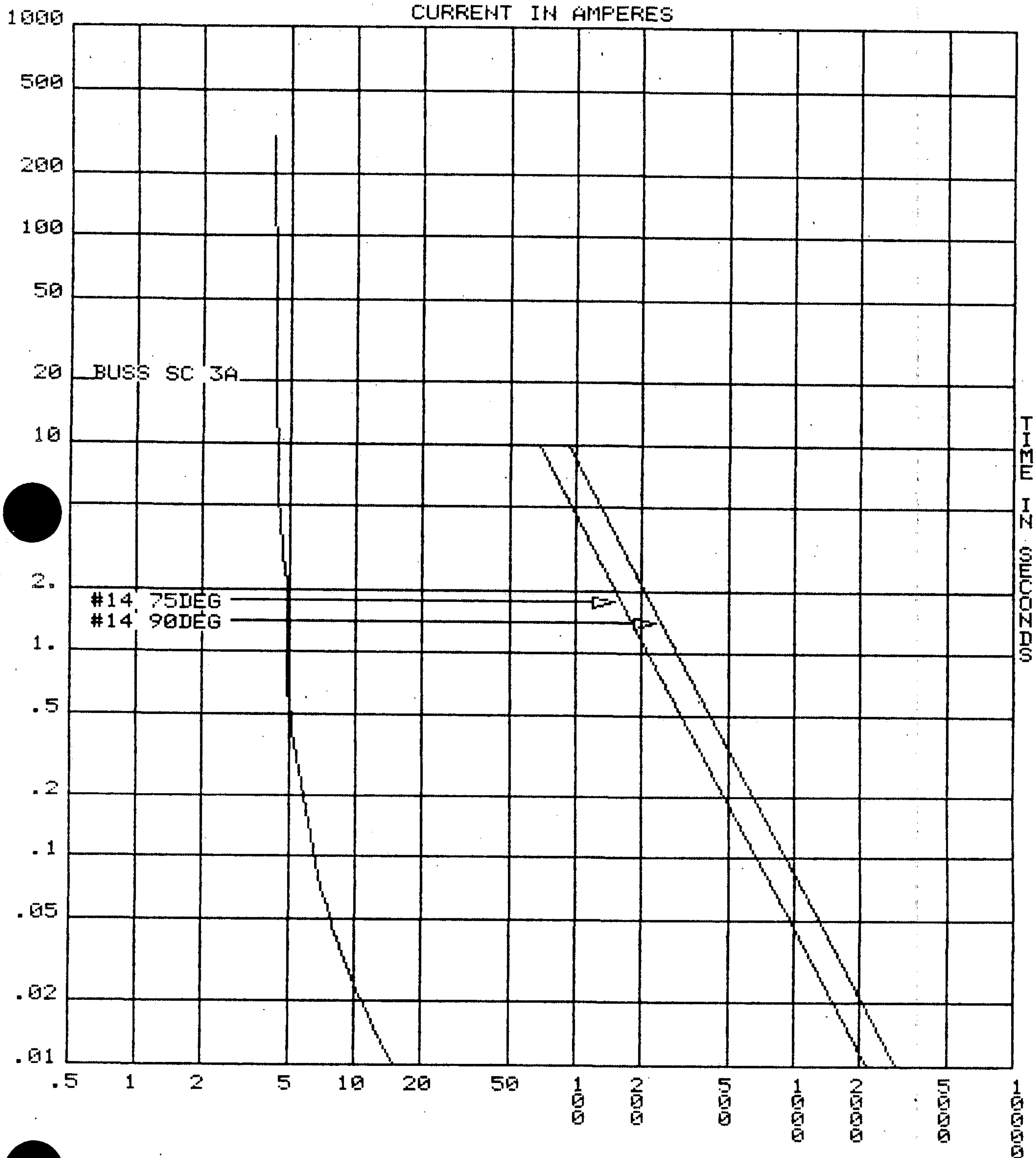
SHEET C57
PREPARED *[illegible]* DATE *1-31-90*
CHECKED *GCP* DATE *2-1-90*



DRAWING CURVE54 PLOT ELL: 120 SCALE: 10^0

WBPEVAR9001006

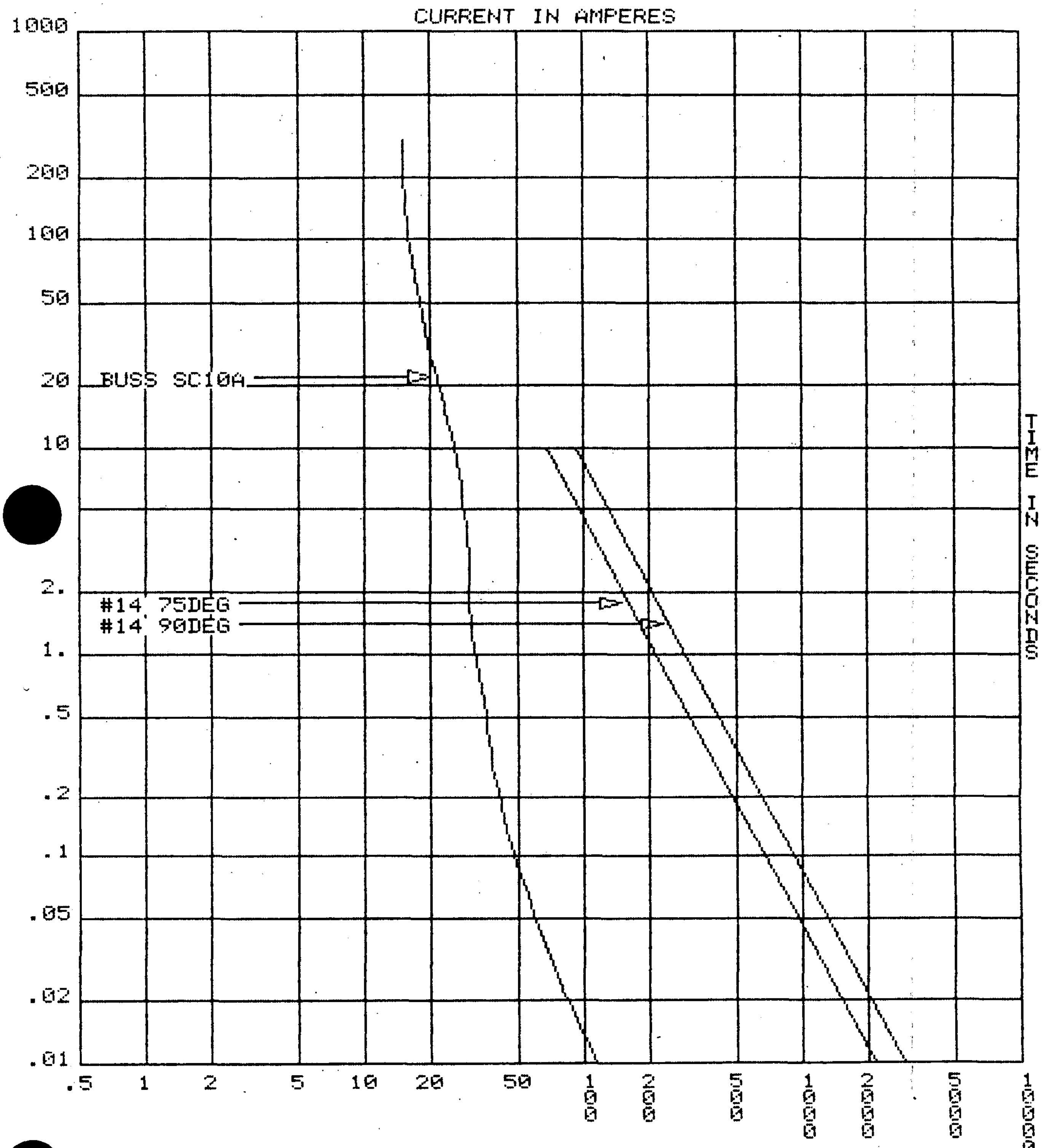
SHEET C58
PREPARED TAD DATE 1-31-90
CHECKED GCP DATE 2-1-90



DRAWING CURVE55 PLOT ELL: 120 SCALE: 10^0

WBPEVAR9001006

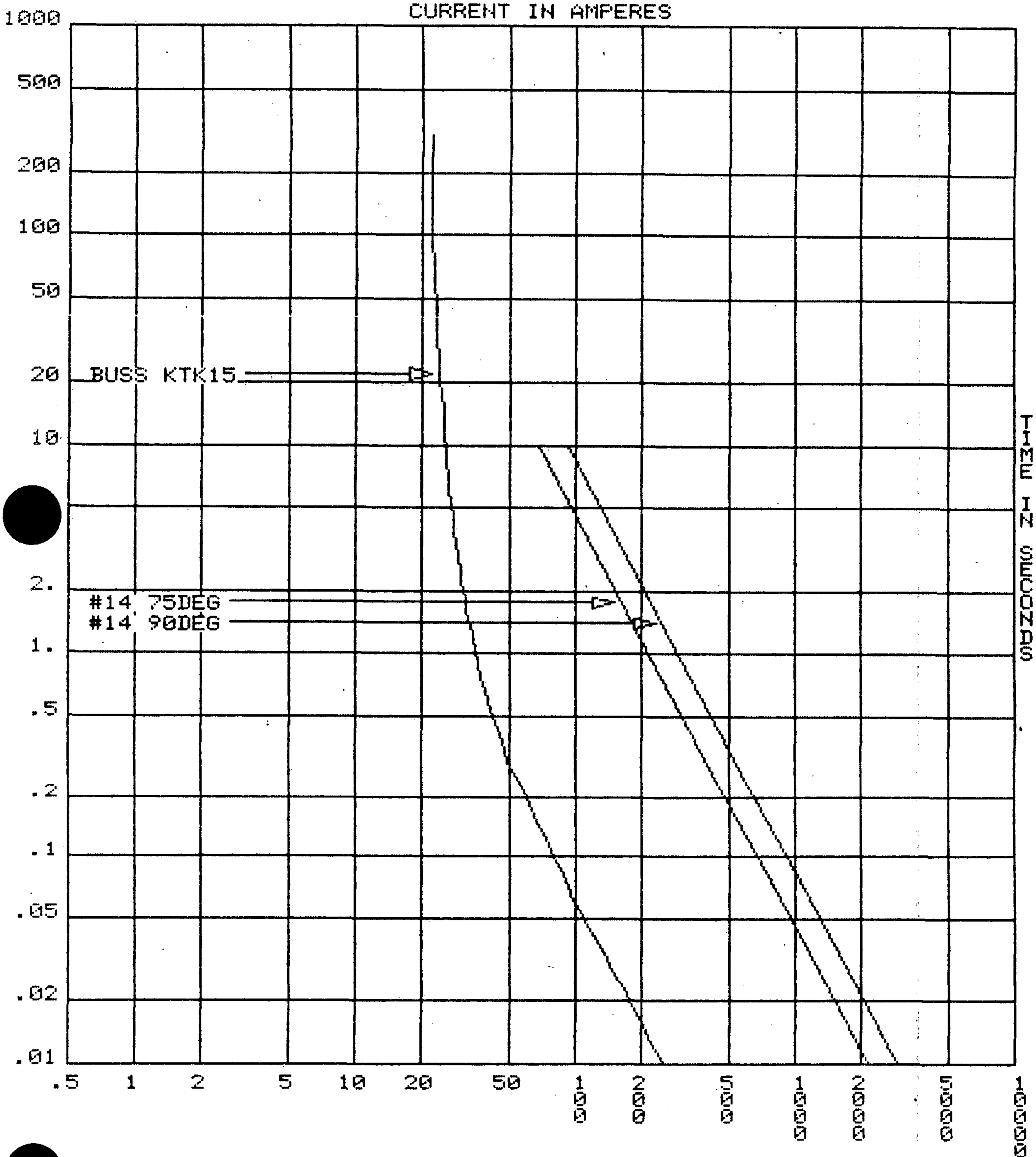
SHEET C59
PREPARED [illegible] DATE 1-31-90
CHECKED [illegible] DATE 1/31/90



DRAWING CURVE56 PLOT ELL: 120 SCALE: 10^0

WBPEVAR 9001006

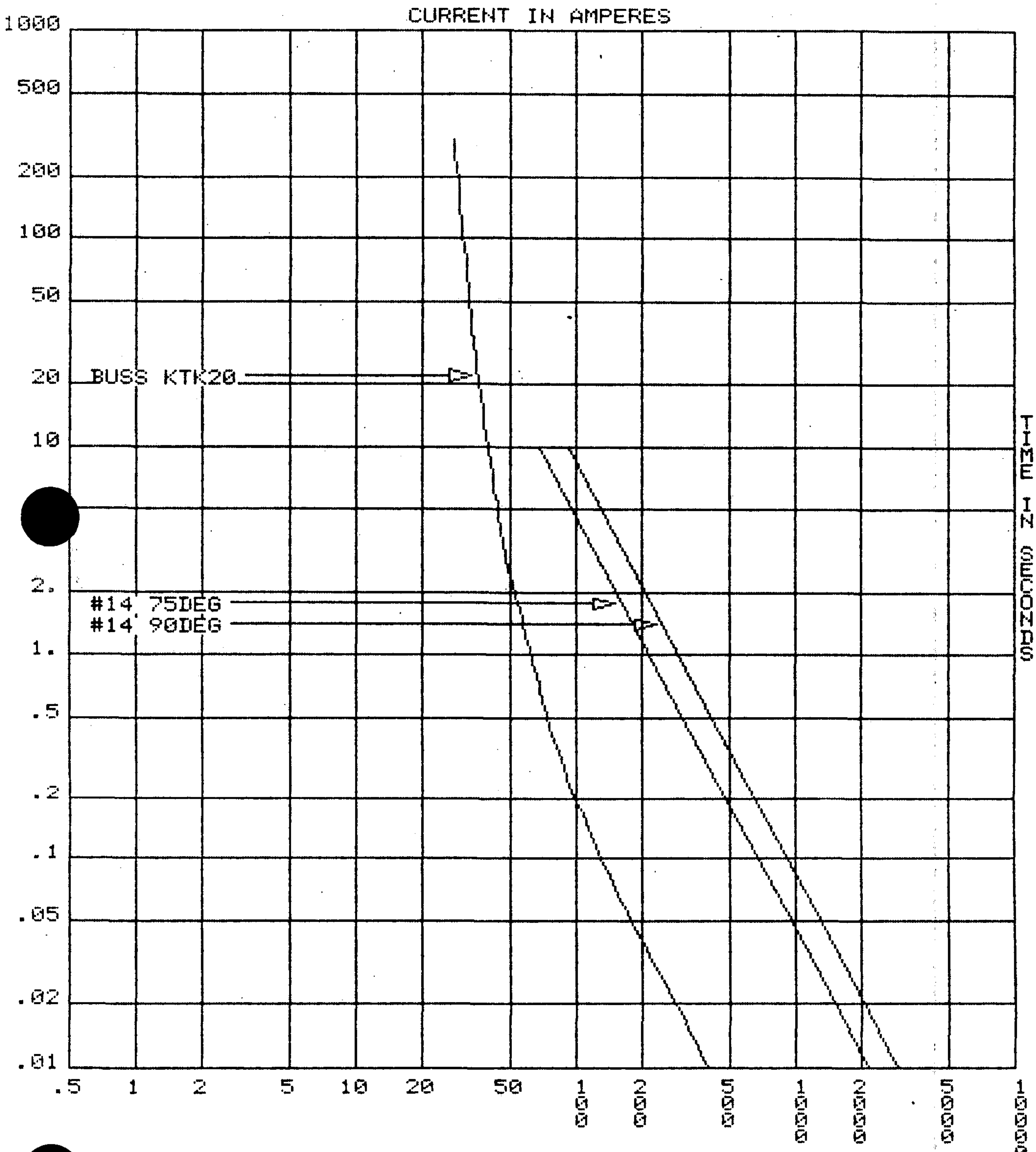
SHEET C60
PREPARED [illegible] DATE 1-31-90
CHECKED RS DATE 1/31/90



DRAWING CURVE57 PLOT ELL: 120 SCALE: 10^0

WBPEVAR 9001006

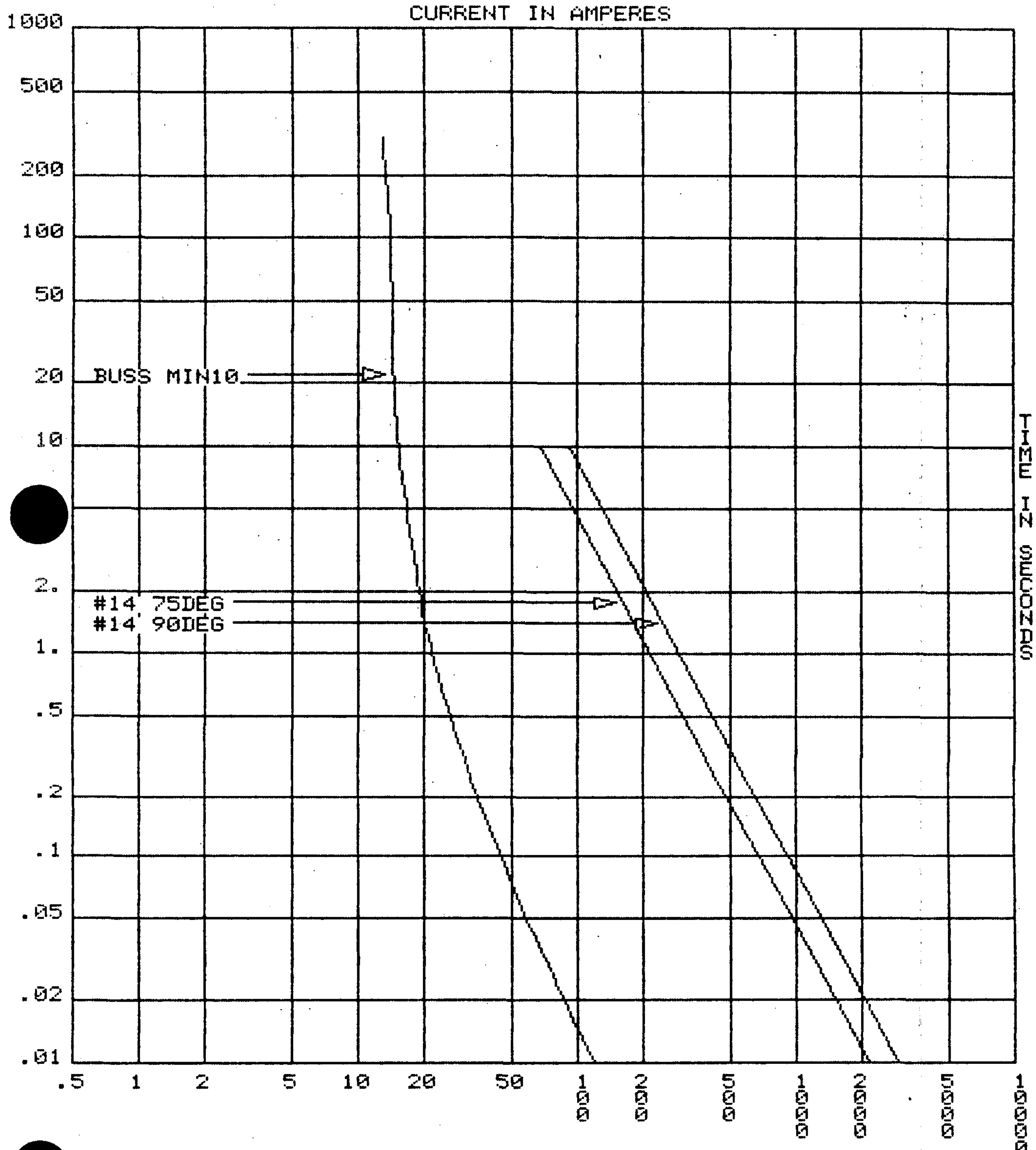
SHEET C61
PREPARED 7AD DATE 1-31-90
CHECKED RS DATE 1/31/90



RAWING CURVE58 PLOT ELL: 120 SCALE: 10^0

WBPEVAR 9001006

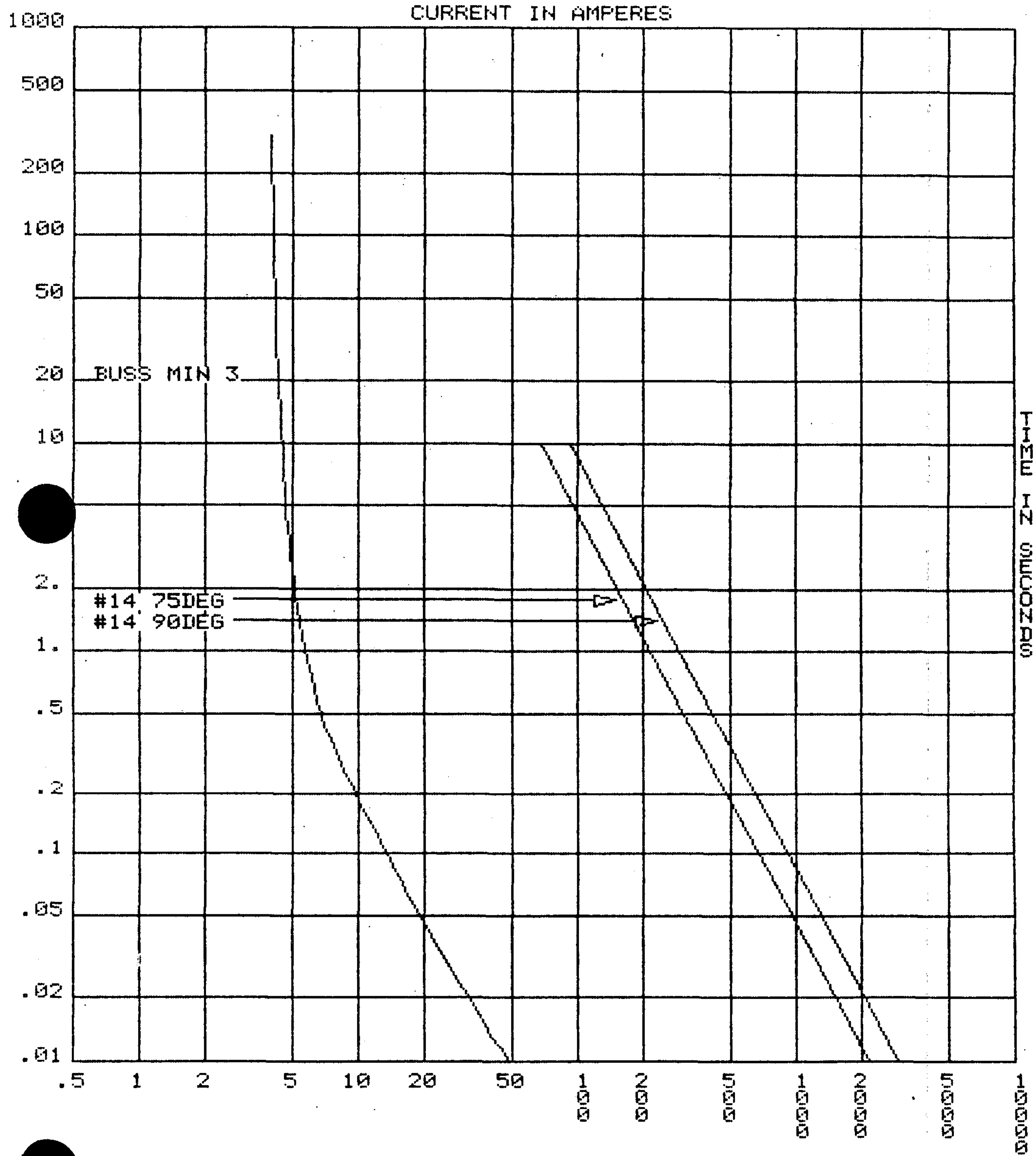
SHEET C62
PREPARED TLD DATE 1-31-90
CHECKED RS DATE 1/31/90



DRAWING CURVE59 PLOT ELL: 120 SCALE: 10^0

WBPEVAR9001006

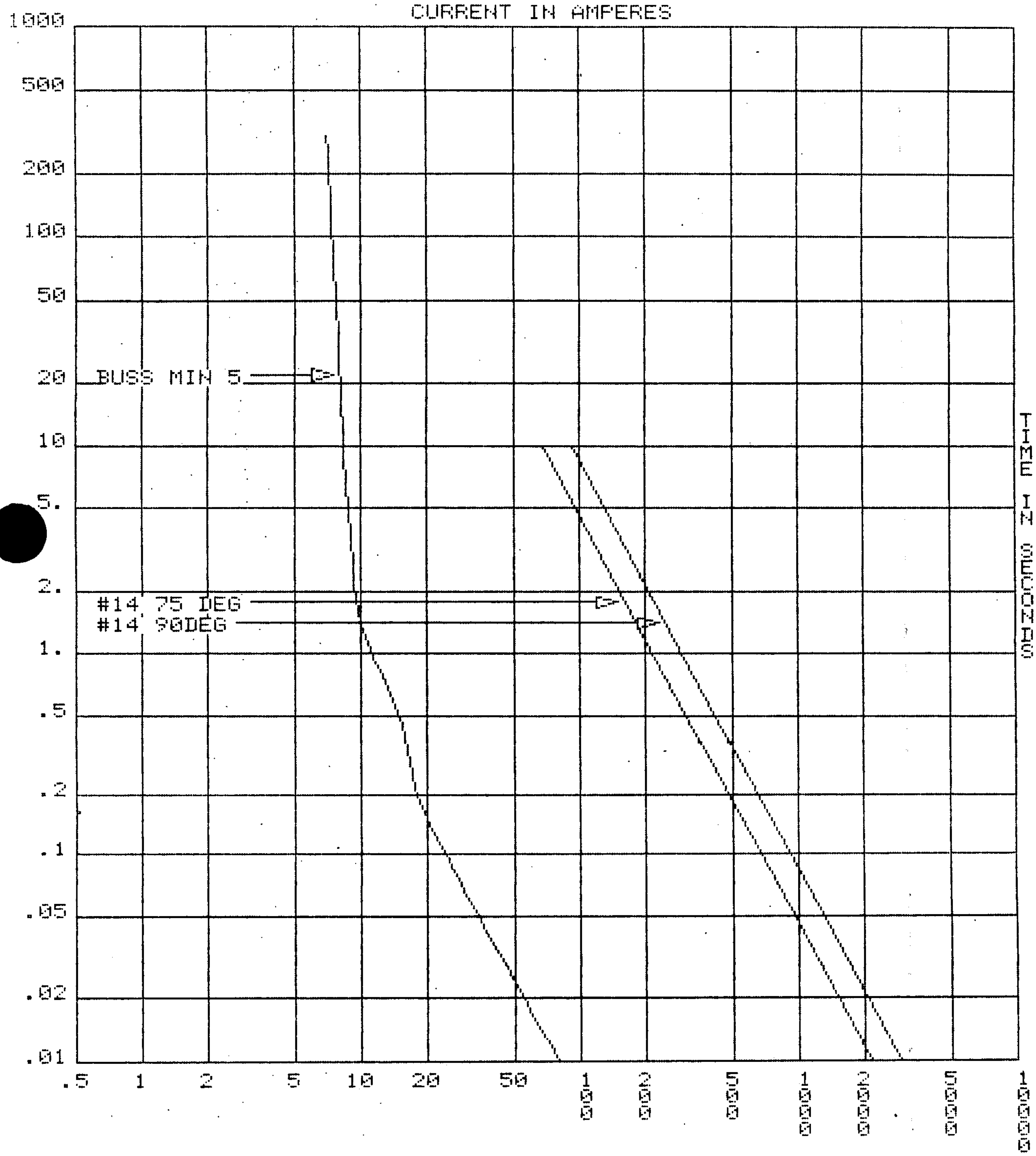
SHEET C63
PREPARED TAD DATE 1-31-90
CHECKED RS DATE 1/31/90



DRAWING CURVE60 PLOT ELL: 120 SCALE: 10^0

WBPEVAR 9001006

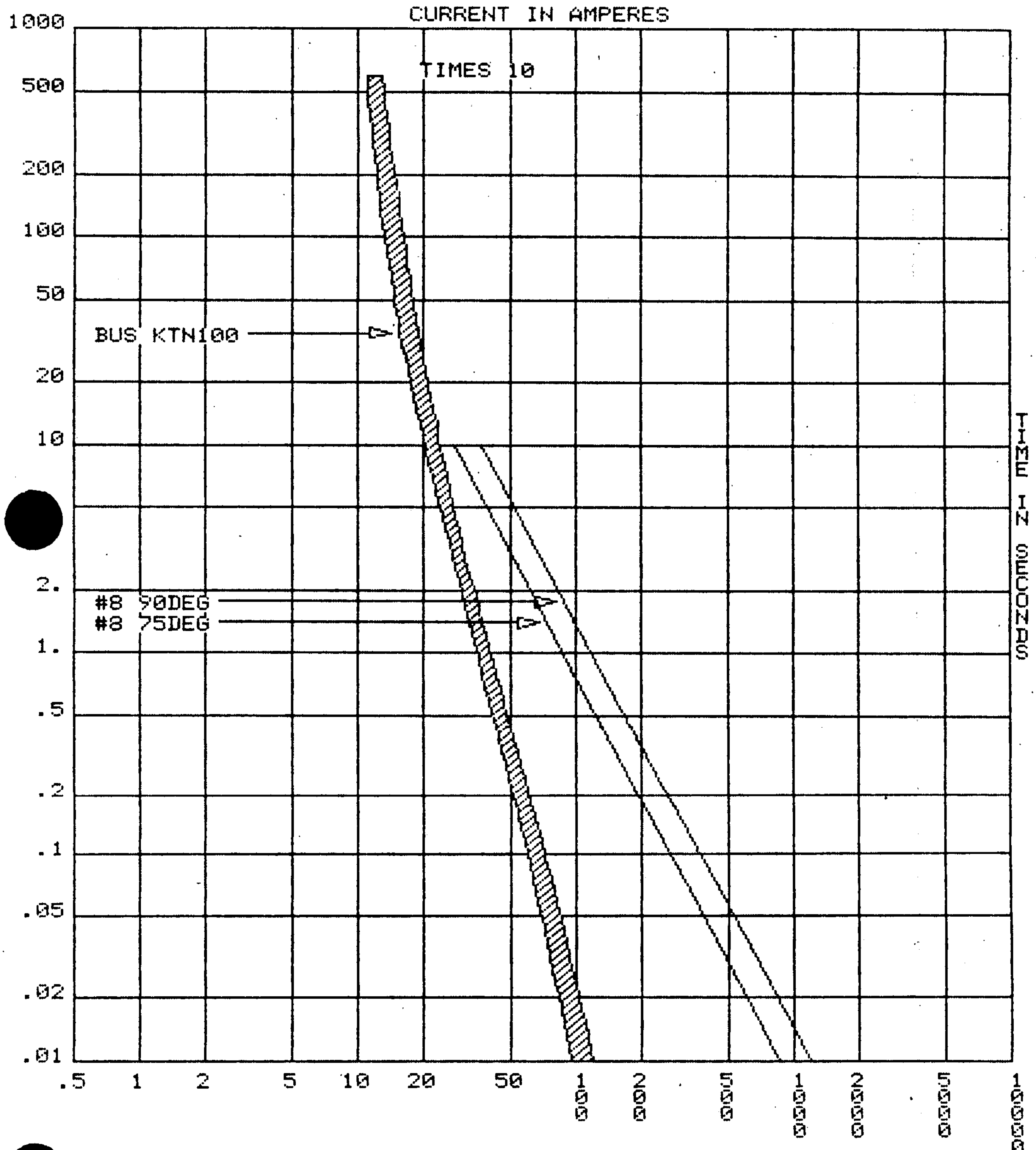
SHEET C64
PREPARED [illegible] DATE 1-31-90
CHECKED [illegible] DATE 1/31/90



DRAWING CURVE61 PLOT ELL: 120 SCALE: 10^0

WBPEVAR9001006

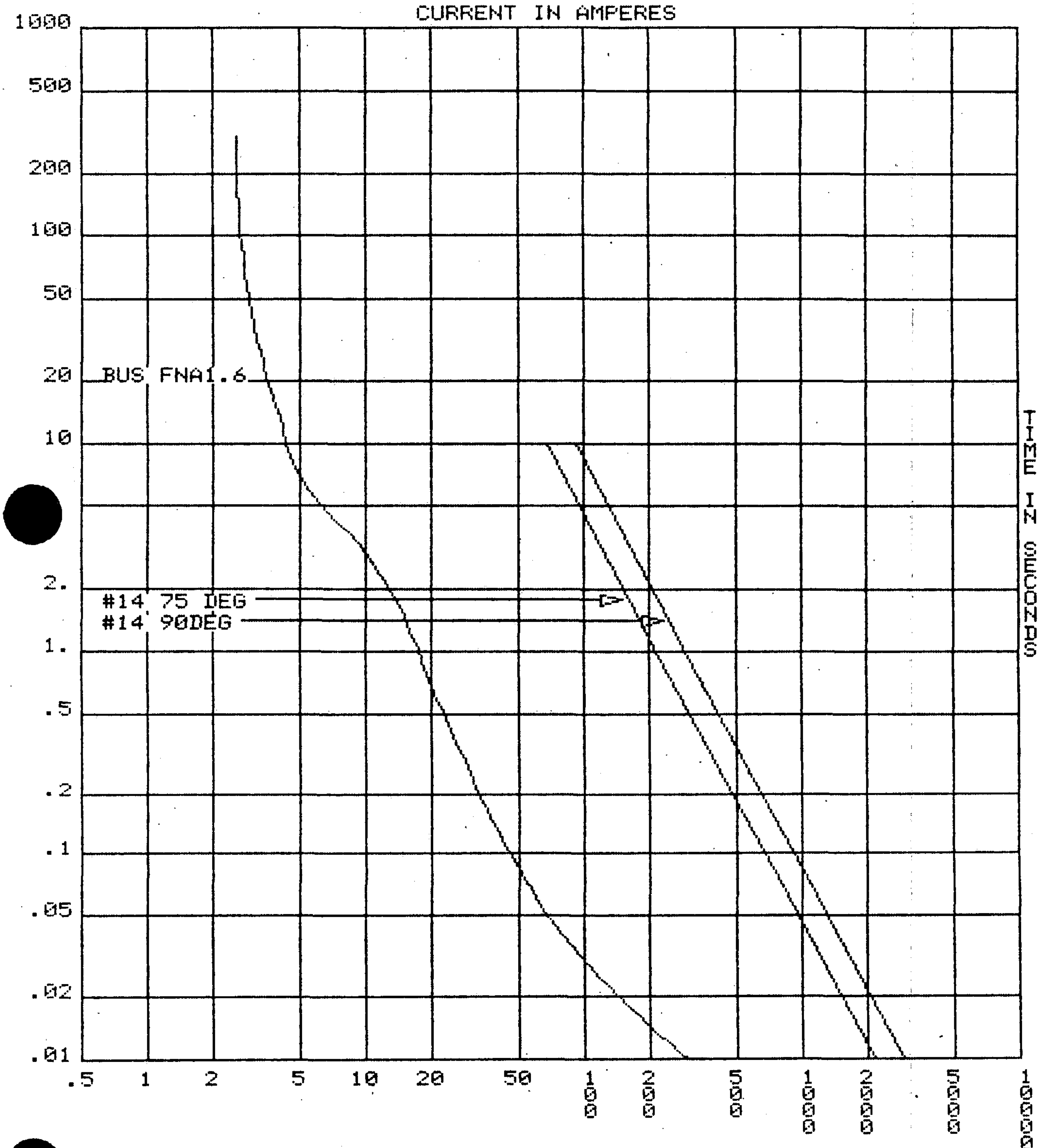
SHEET C63
PREPARED TWD DATE 1-31-90
CHECKED DRS DATE 1/31/90



DRAWING CURVE62 PLOT ELL: 120 SCALE: 10^1

WBPEVAR 9001006

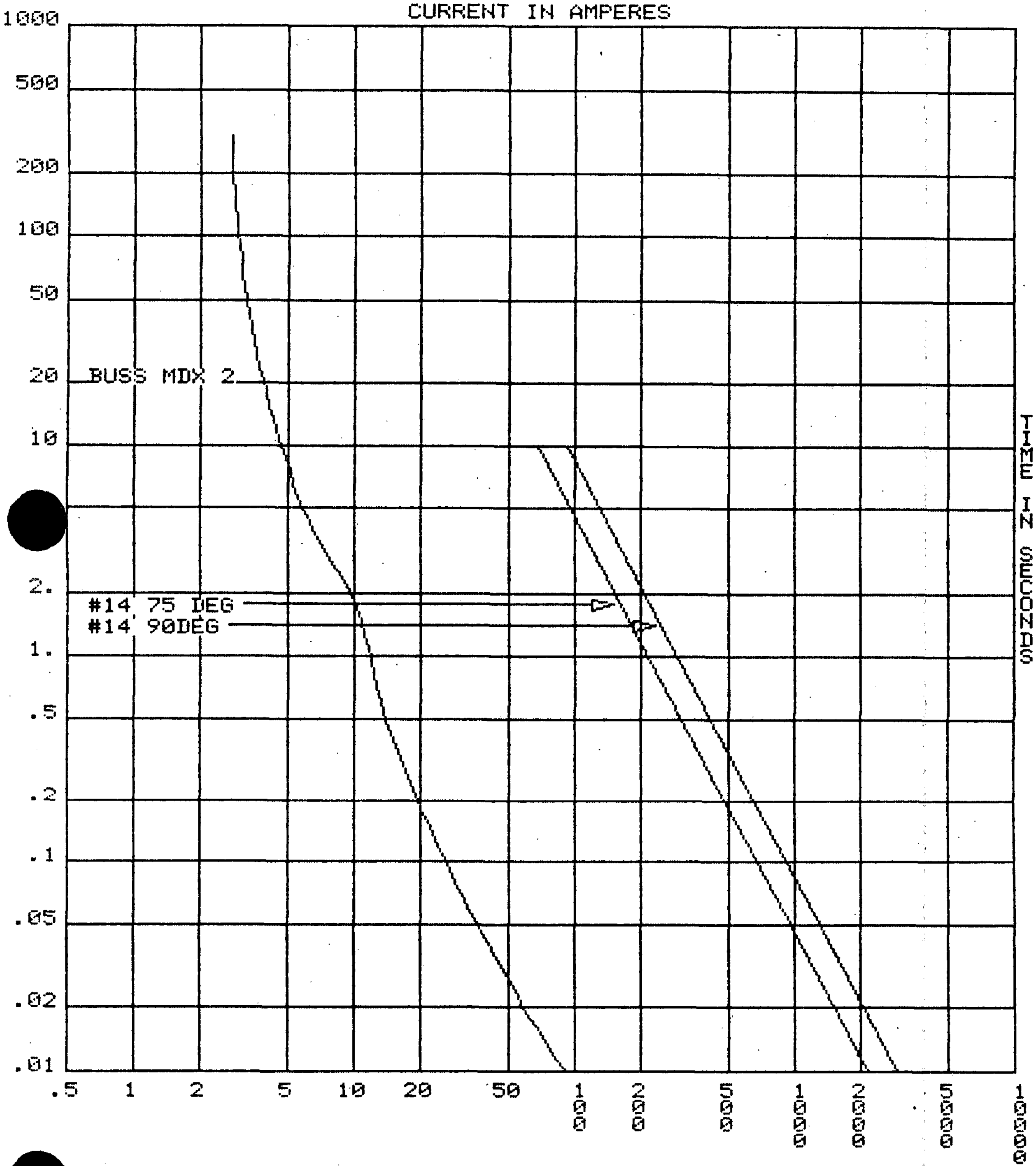
SHEET C66
PREPARED 70D DATE 1-31-90
CHECKED CRS DATE 1/31/90



DRAWING CURVE63 PLOT ELL: 120 SCALE: 10^0

WBPEVAR9001006

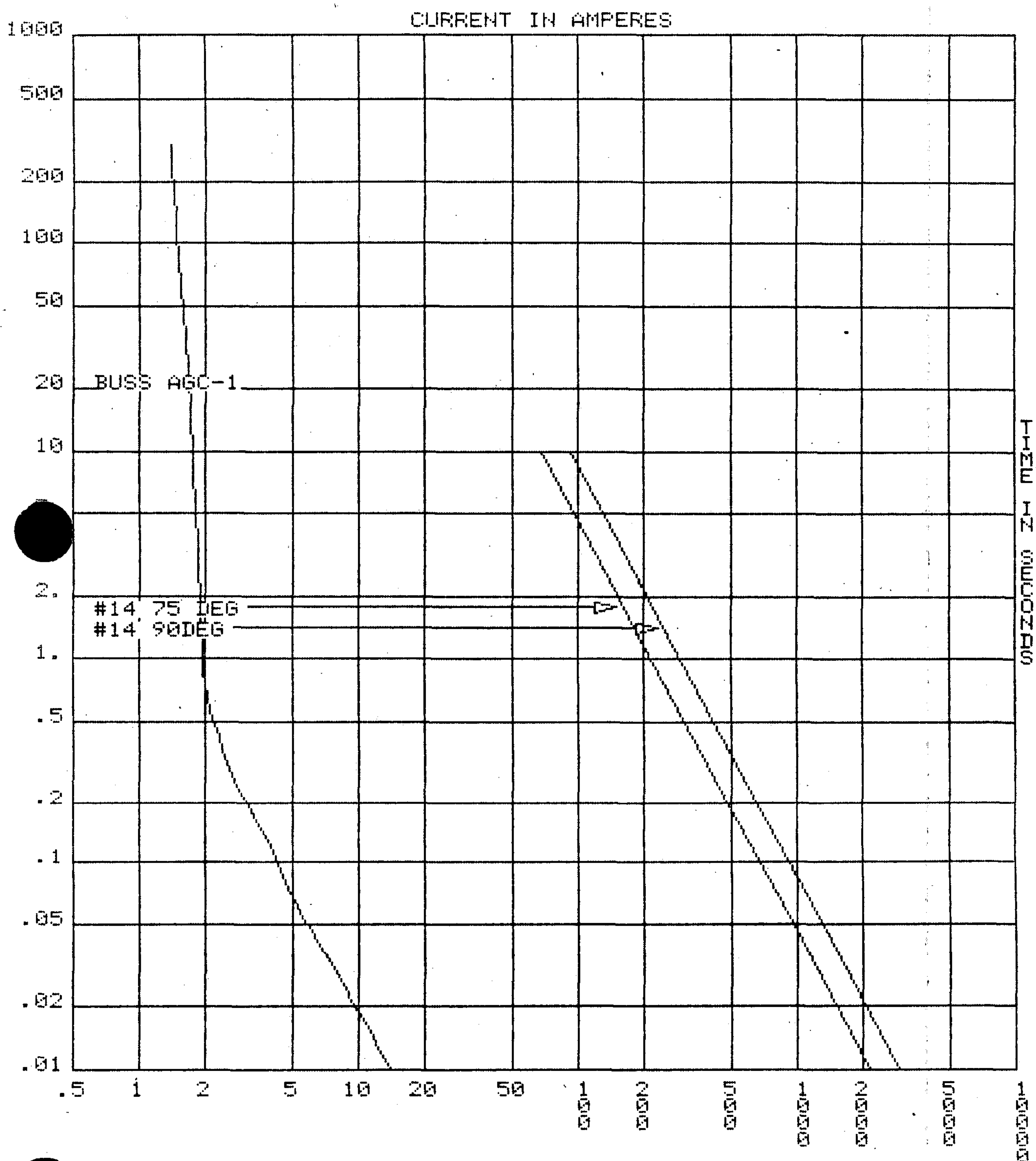
SHEET C67
PREPARED 70W DATE 1-31-90
CHECKED OBS DATE 1/31/90



DRAWING CURVE64 PLOT ELL: 120 SCALE: 10^0

WBPEVAR9001006

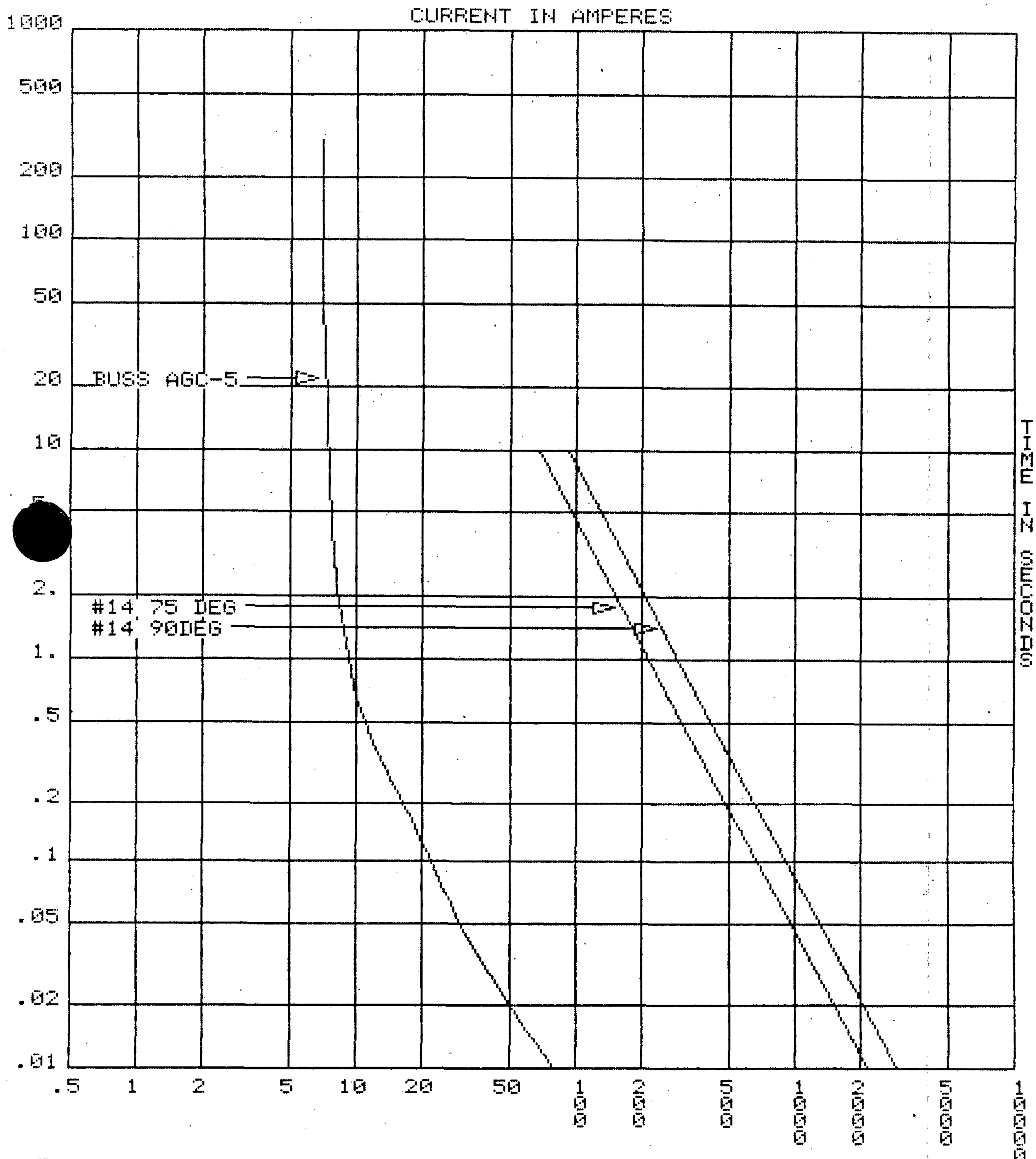
SHEET C68
PREPARED TDD DATE 1-31-90
CHECKED RS DATE 1/31/90



DRAWING CURVE65 PLOT ELL: 120 SCALE: 10^0

WBPEVAR9001006

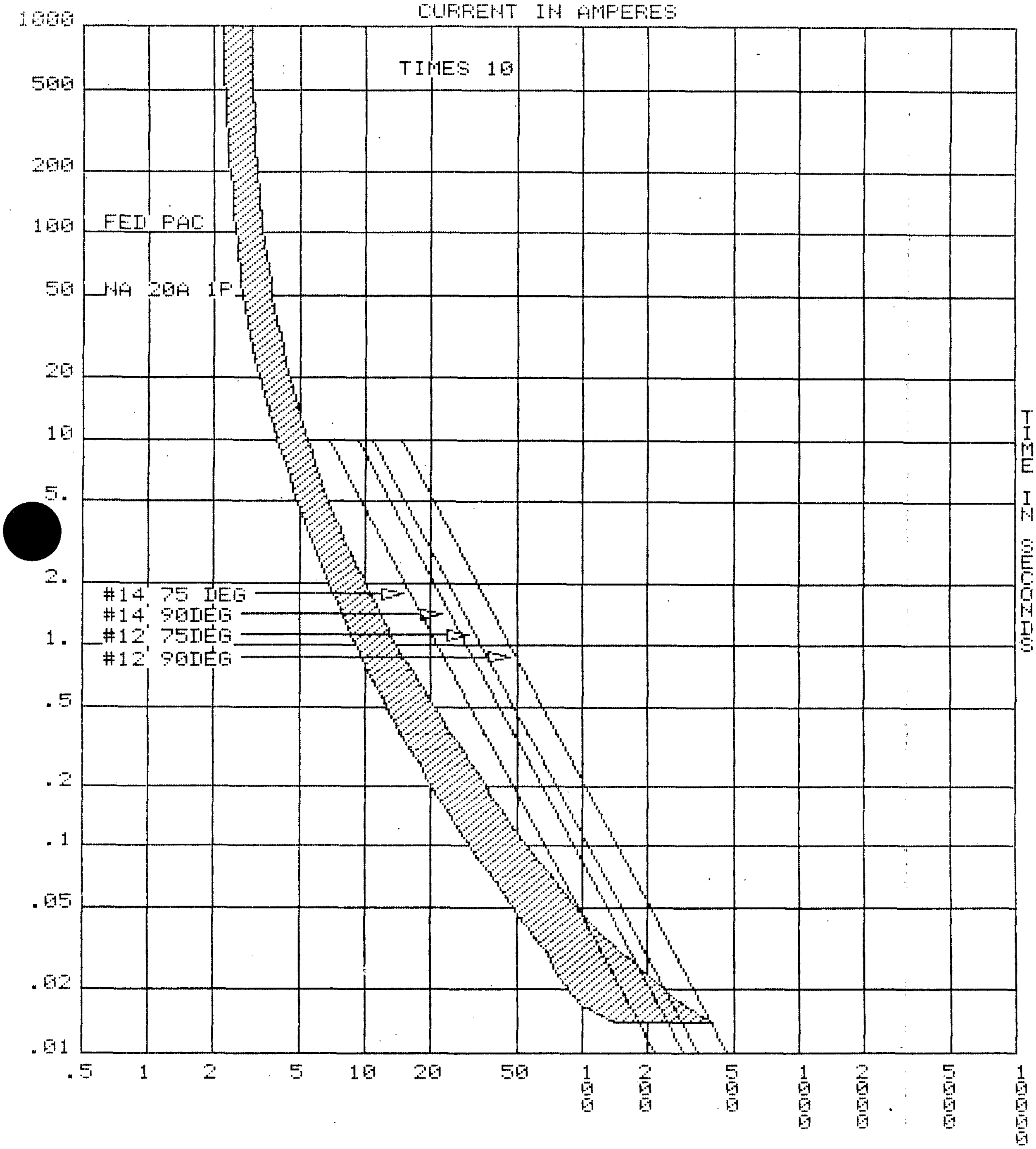
SHEET C69
PREPARED TAD DATE 1-31-90
CHECKED [illegible] DATE 1/31/90



DRAWING CURVE66 PLOT ELL: 120 SCALE: 10^0

WBPEVAR9001006

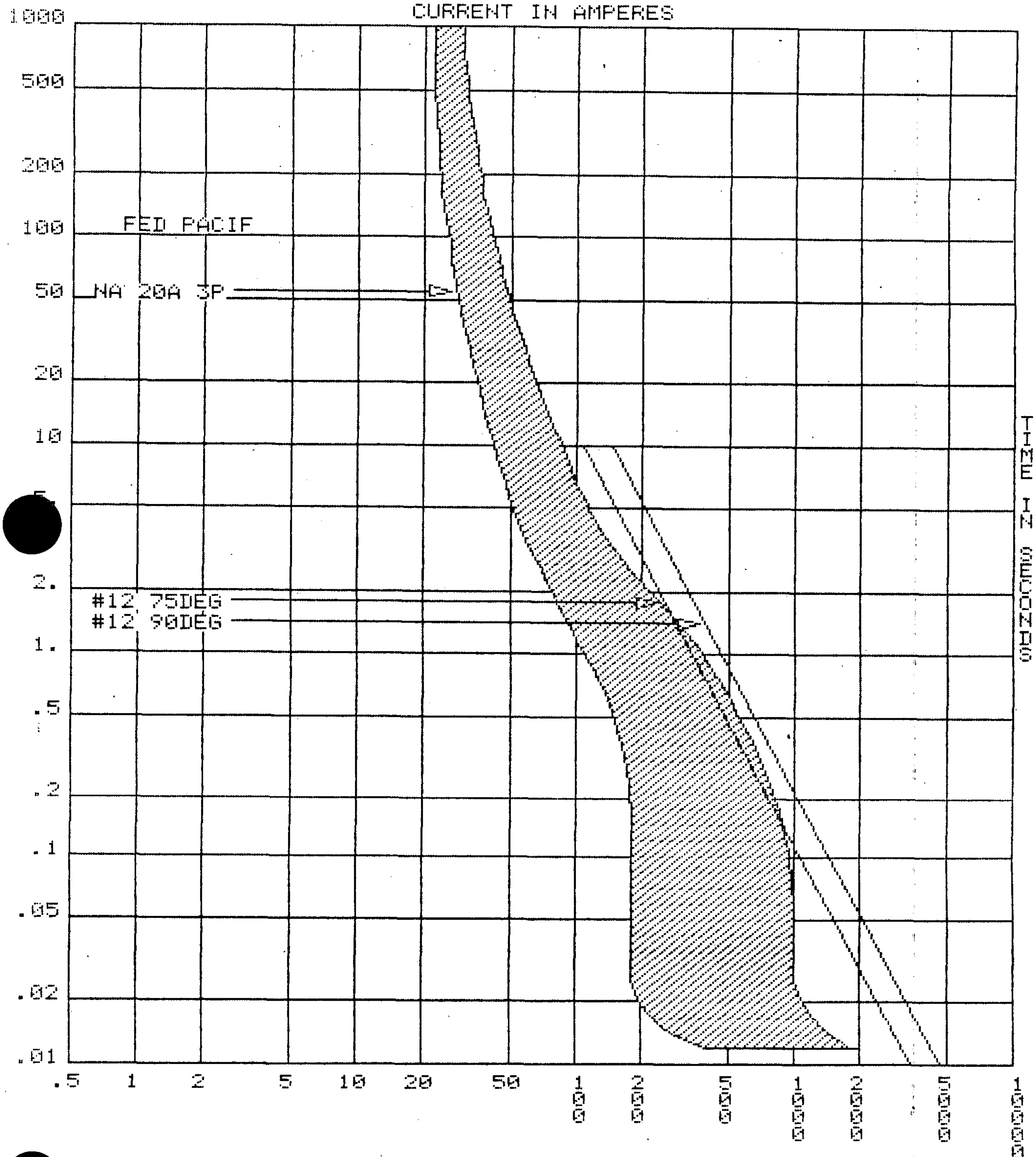
SHEET C70
PREPARED 7QD DATE 1-31-90
CHECKED RS DATE 1/31/90



DRAWING CURVE67 PLOT ELL: 120 SCALE: 10^1

WBPEVAR9001006

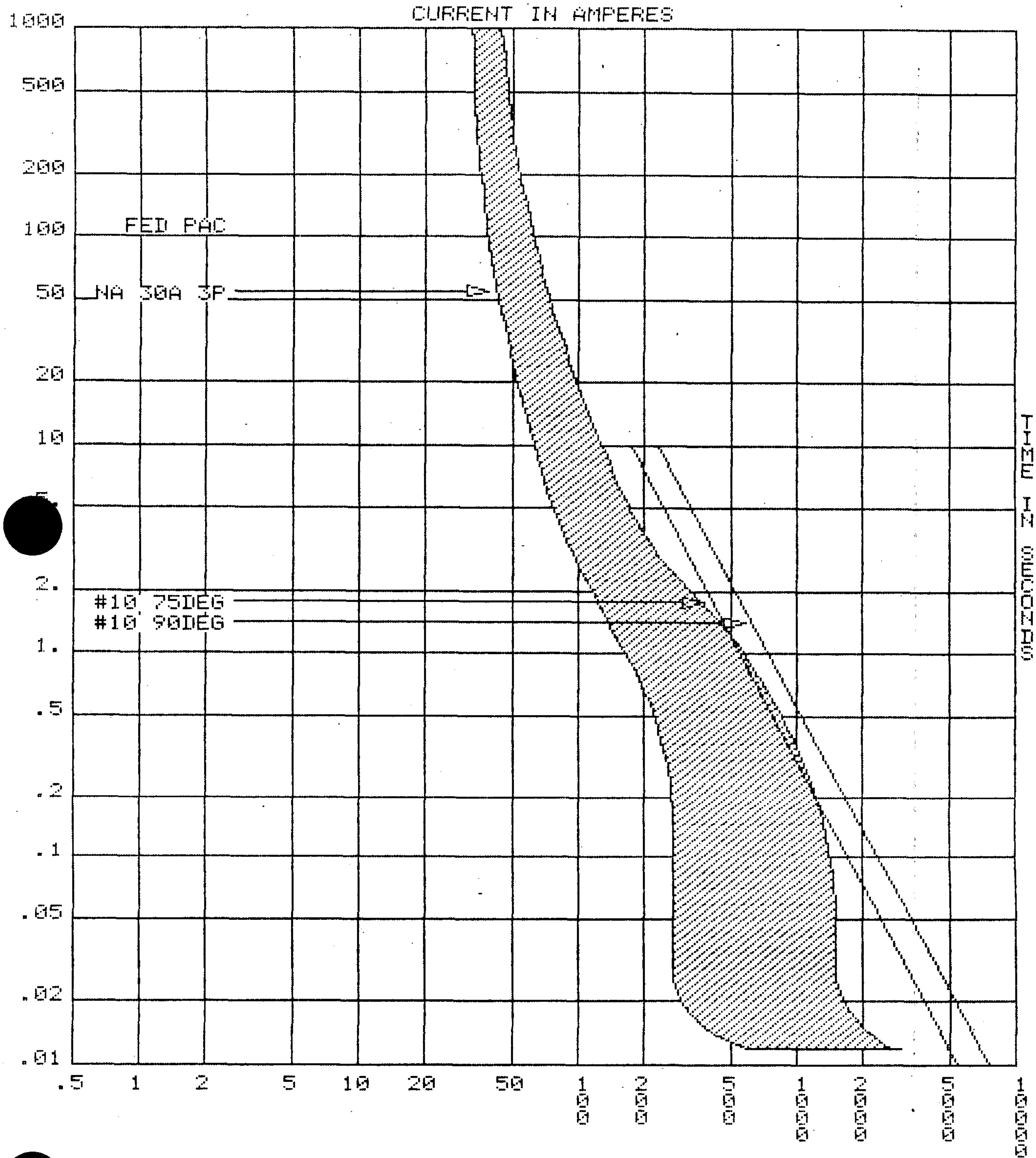
SHEET C71
PREPARED TWD DATE 1-31-90
CHECKED RS DATE 1/31/90



DRAWING CURVE68 PLOT ELL: 120 SCALE: 10^0

WBPEVAR9001006

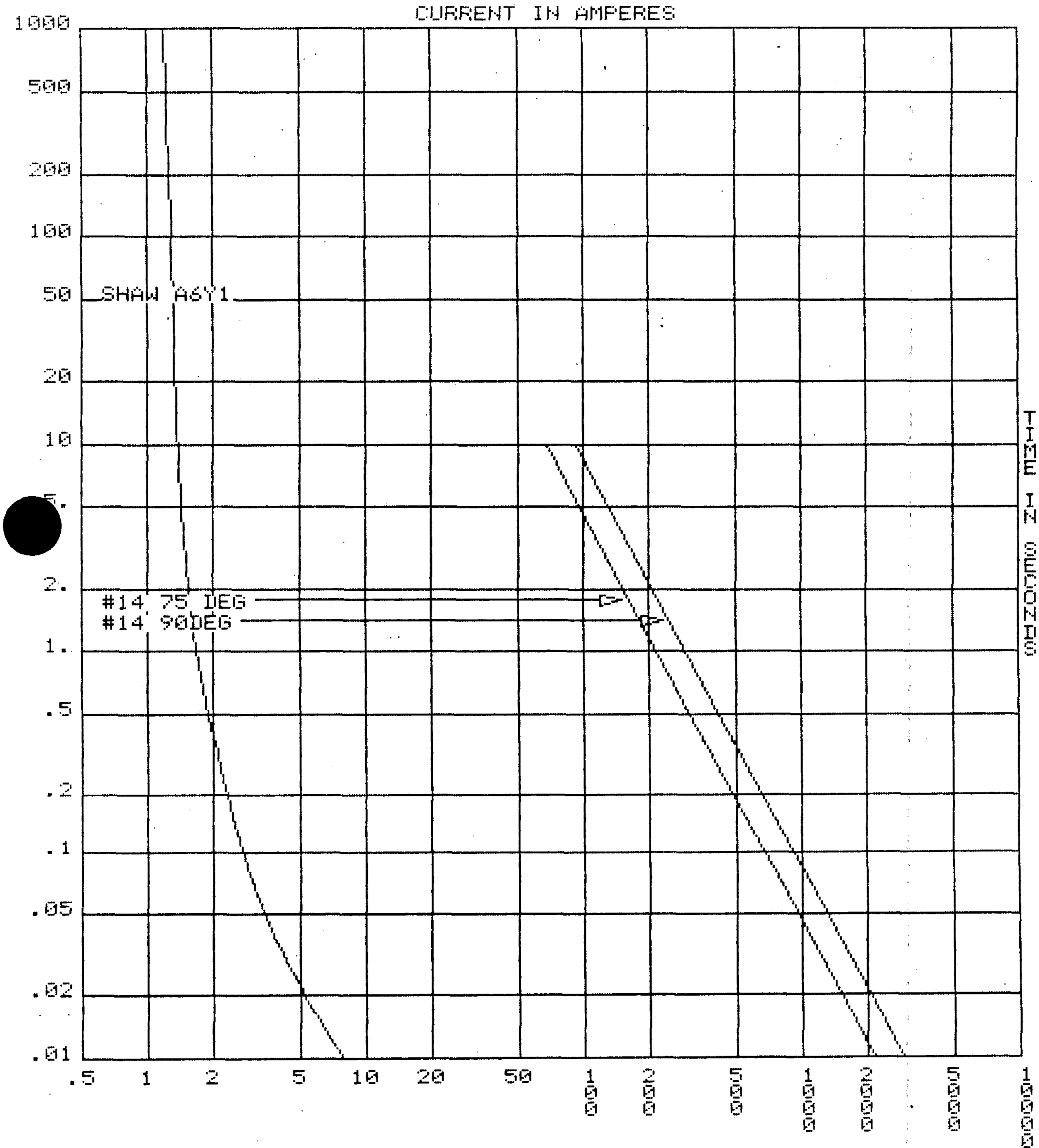
SHEET C72
PREPARED TAD DATE 1-31-90
CHECKED RS DATE 1/31/90



DRAWING CURVE69 PLOT ELL: 120 SCALE: 10^0

WBPEVAR9001006

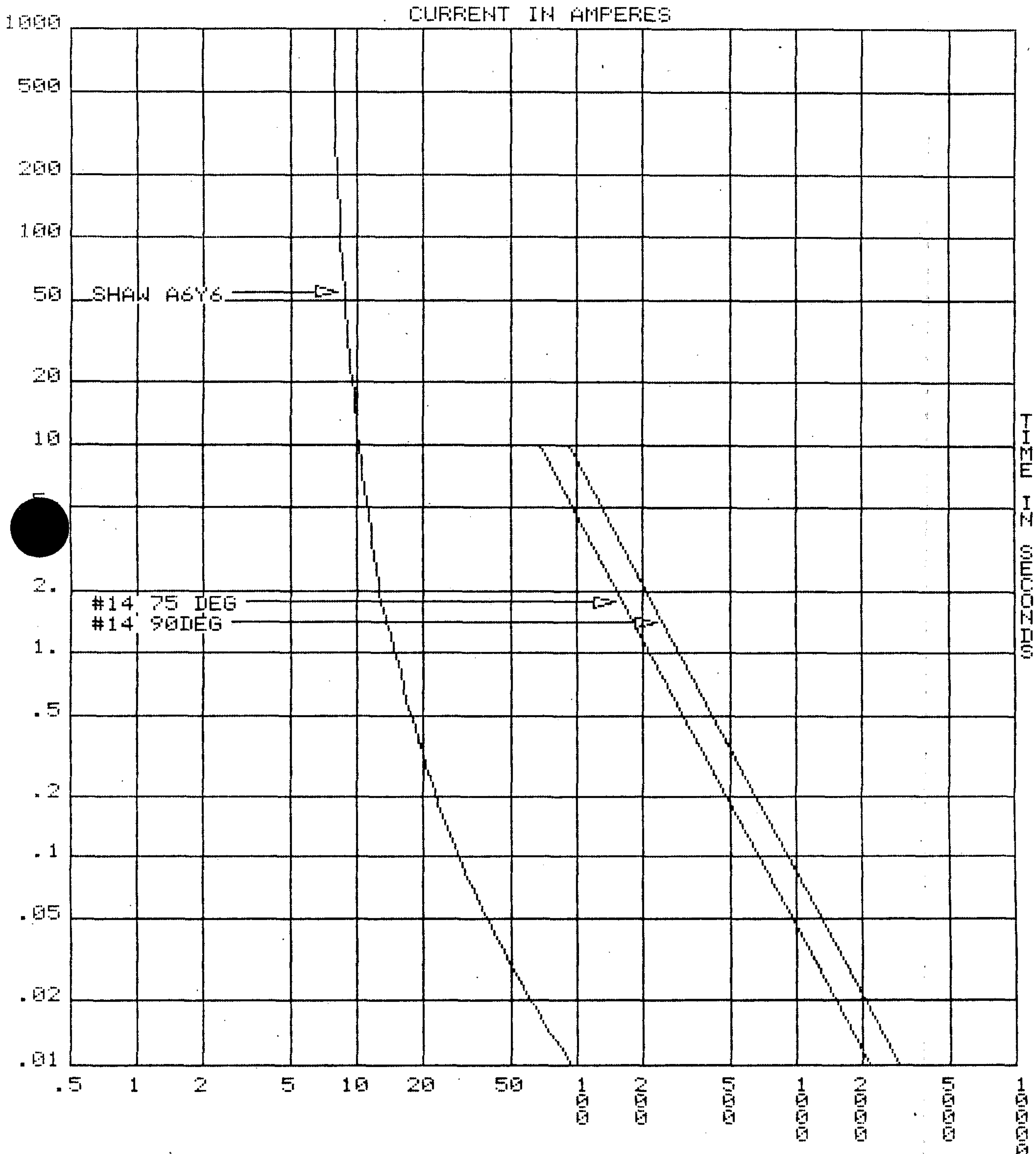
SHEET C73
PREPARED TOL DATE 1-31-90
CHECKED CRS DATE 1/31/90



DRAWING CURVE70 PLOT ELL: 120 SCALE: 10^0

WBPEVAR 9001006

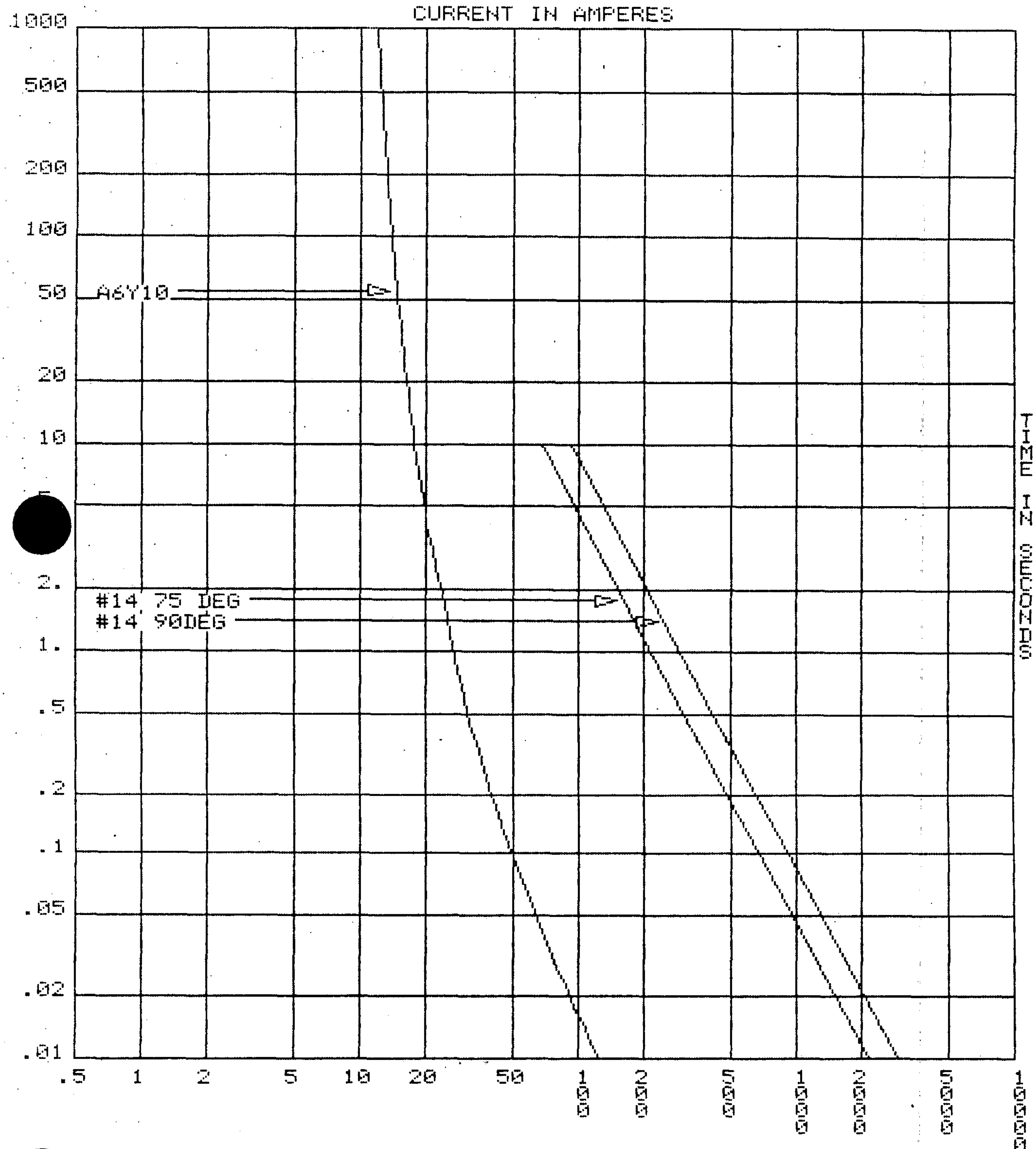
SHEET C74
PREPARED TDD DATE 1-31-90
CHECKED RS DATE 1/31/90



DRAWING CURVE71 PLOT ELL: 120 SCALE: 10^0

WBPEVAR9001006

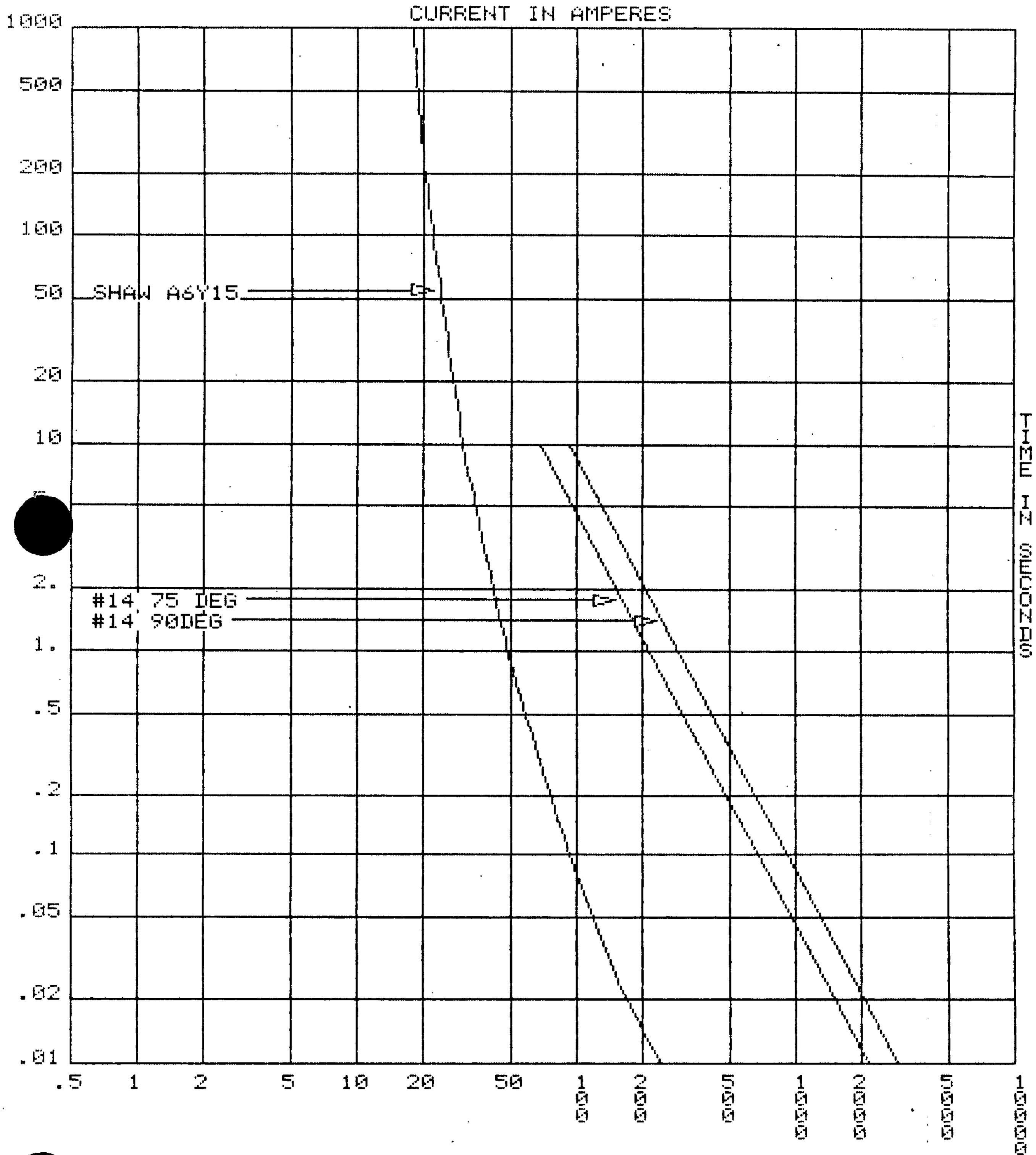
SHEET C75
PREPARED 70A DATE 1-31-90
CHECKED OS DATE 1/31/90



DRAWING CURVE72 PLOT ELL: 120 SCALE: 10^0

WBPEVAR9001006

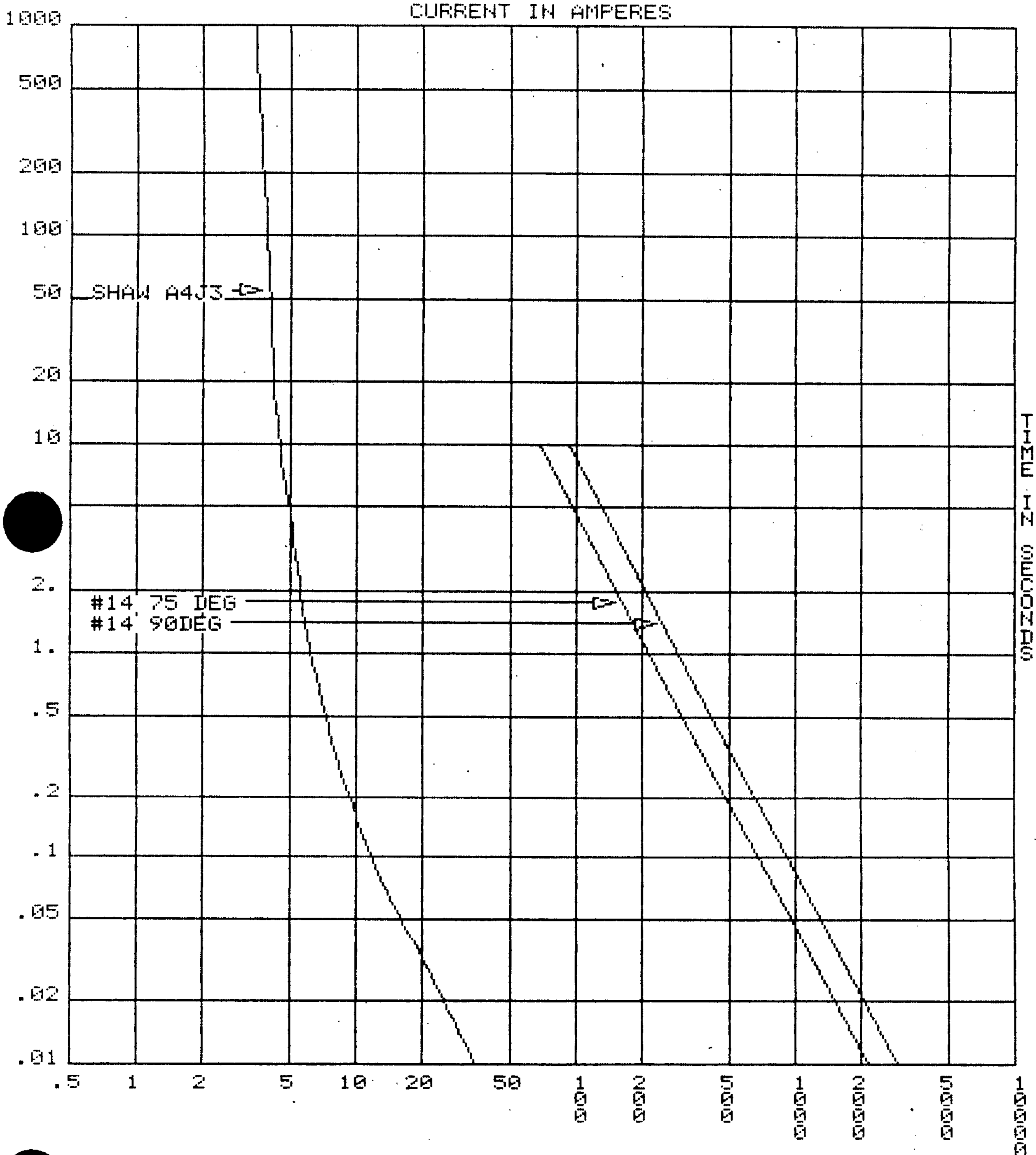
SHEET C76
PREPARED 7QD DATE 1-31-90
CHECKED RS DATE 1/31/90



DRAWING CURVE73 PLOT ELL: 120 SCALE: 10^0

WBPEVAR 9001006

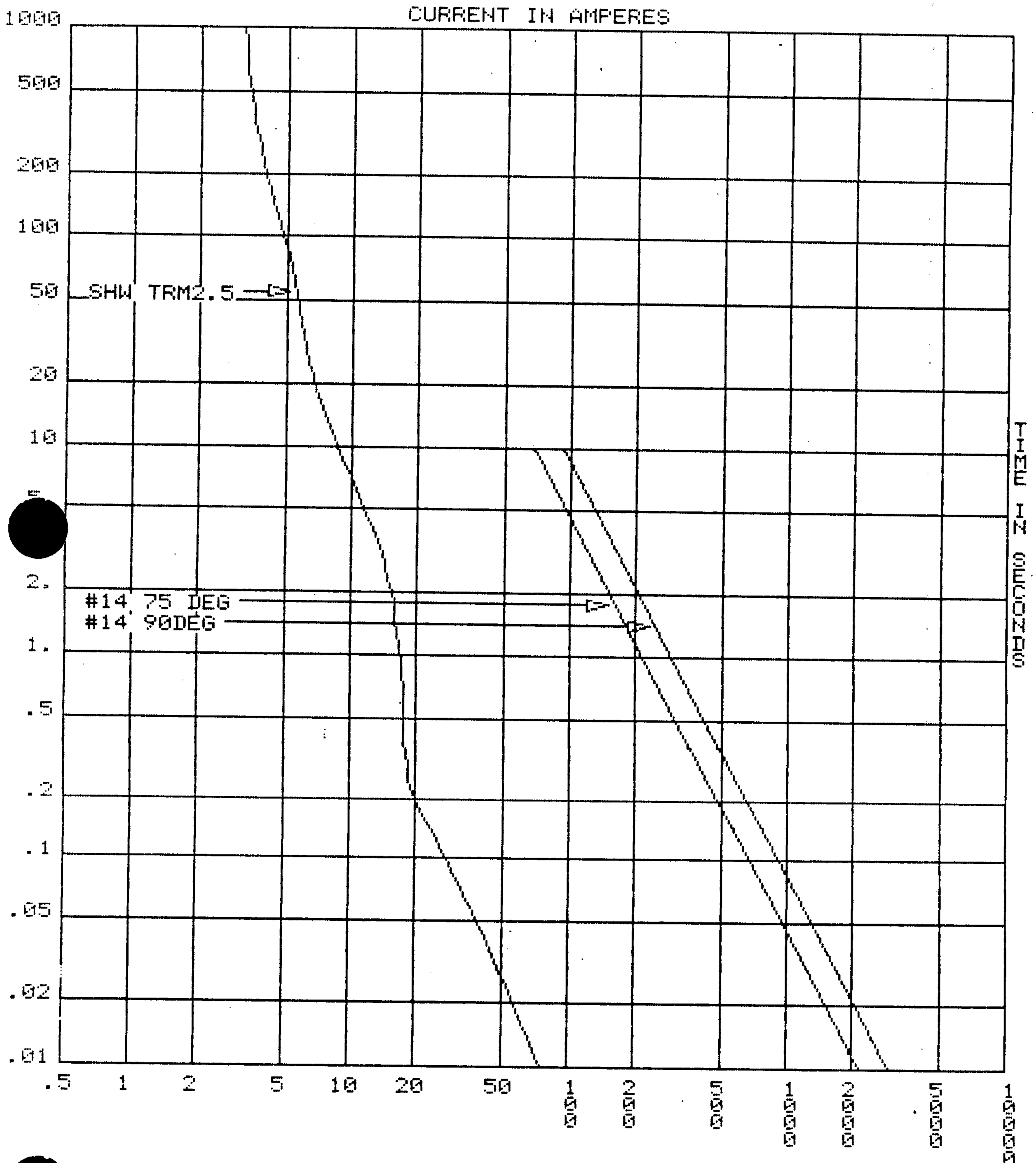
SHEET C77
PREPARED TAD DATE 1-31-90
CHECKED RS DATE 1/31/90



DRAWING CURVE74 PLOT ELL: 120 SCALE: 10^0

WBPEVAR9001006

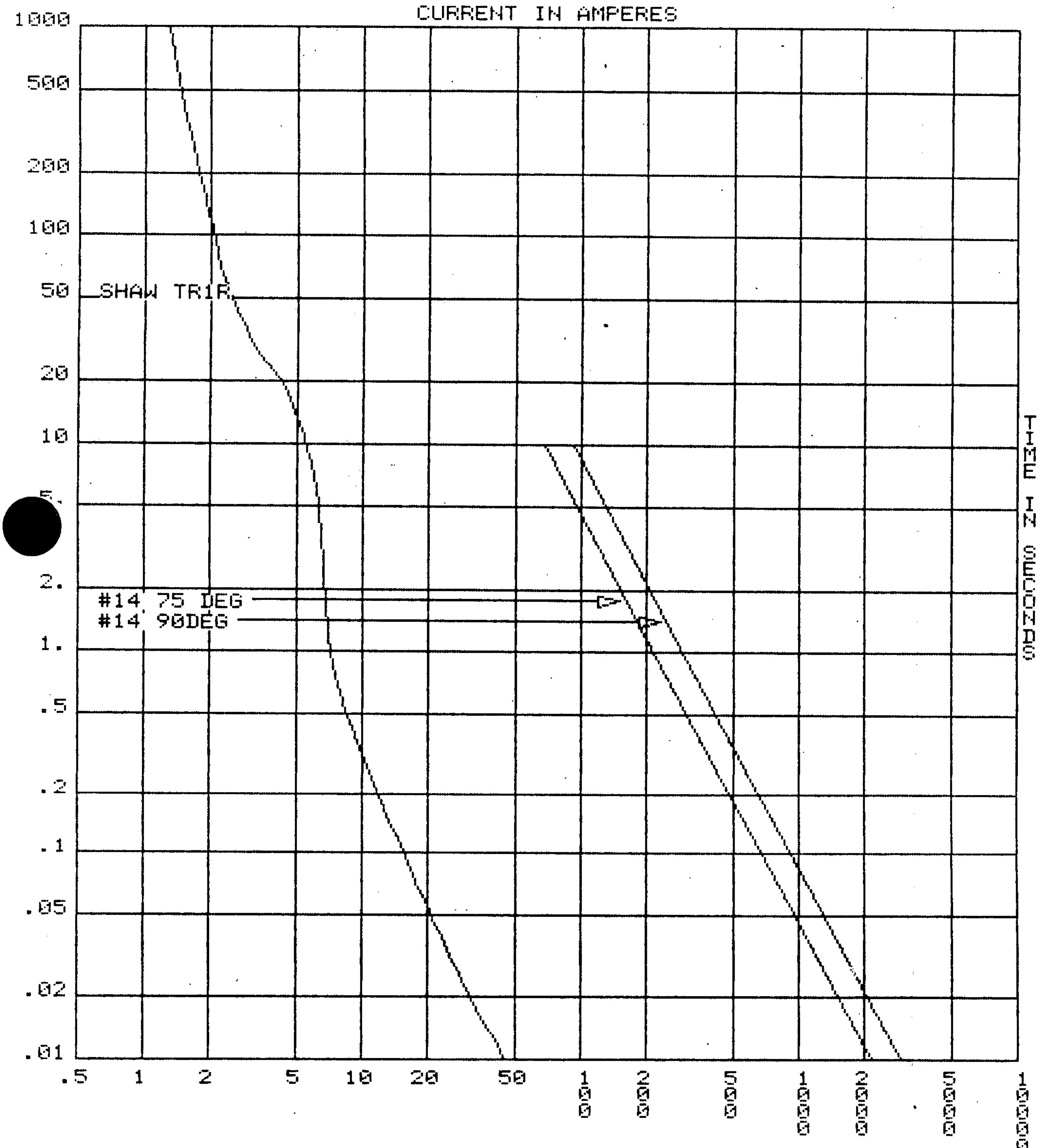
SHEET C78
PREPARED TAD DATE 1-31-90
CHECKED RS DATE 1/31/90



DRAWING CURVE75 PLOT ELL: 120 SCALE: 10^0

WBPEVAR9001006

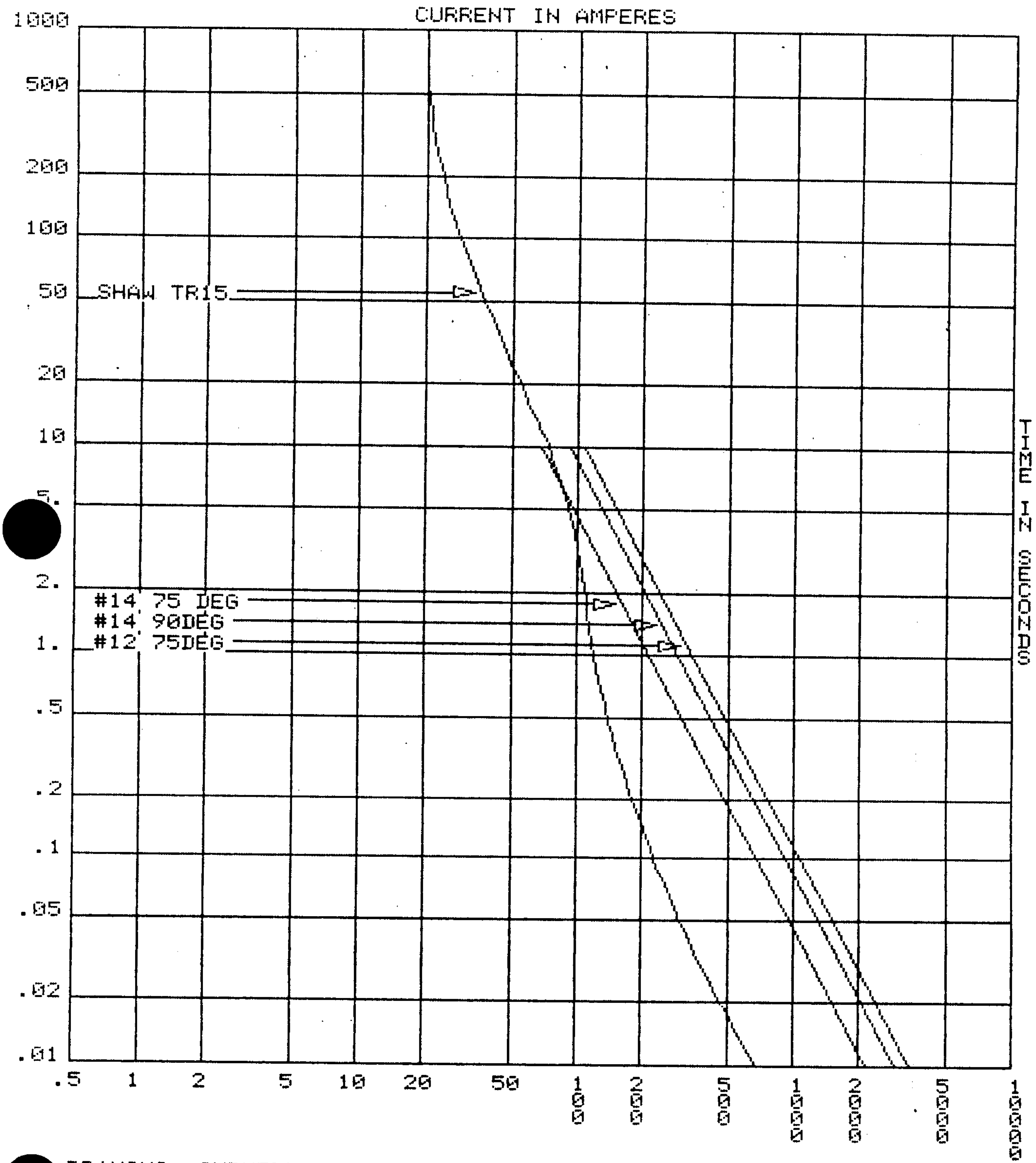
SHEET C79
PREPARED 792 DATE 1-31-90
CHECKED RS DATE 1/31/90



DRAWING CURVE76 PLOT ELL: 120 SCALE: 10^0

WBPEVAR 9001006

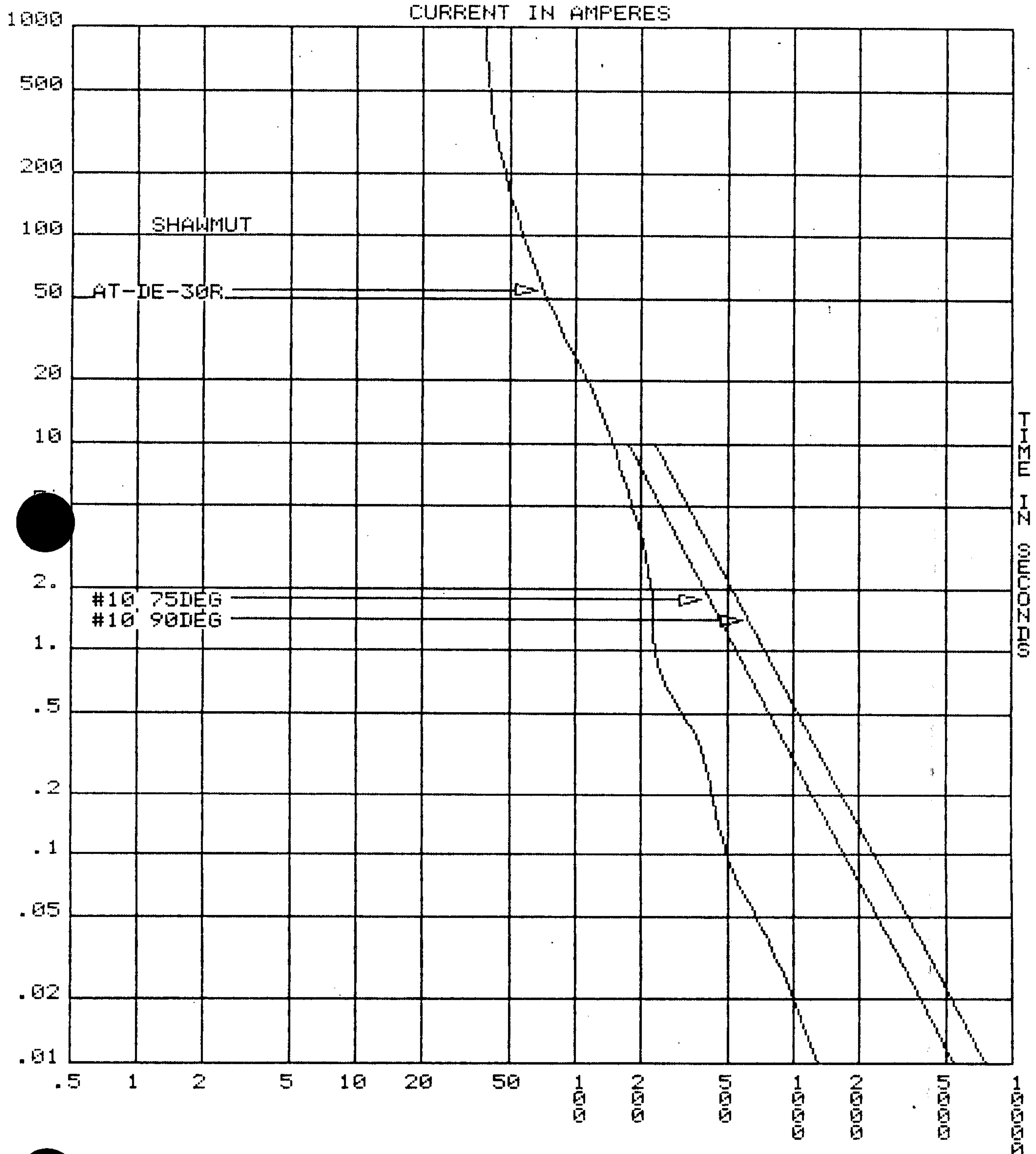
SHEET C80
PREPARED TAD DATE 1-31-90
CHECKED RS DATE 1/31/90



DRAWING CURVE77 PLOT ELL: 120 SCALE: 10^0

WBPEVAR9001006

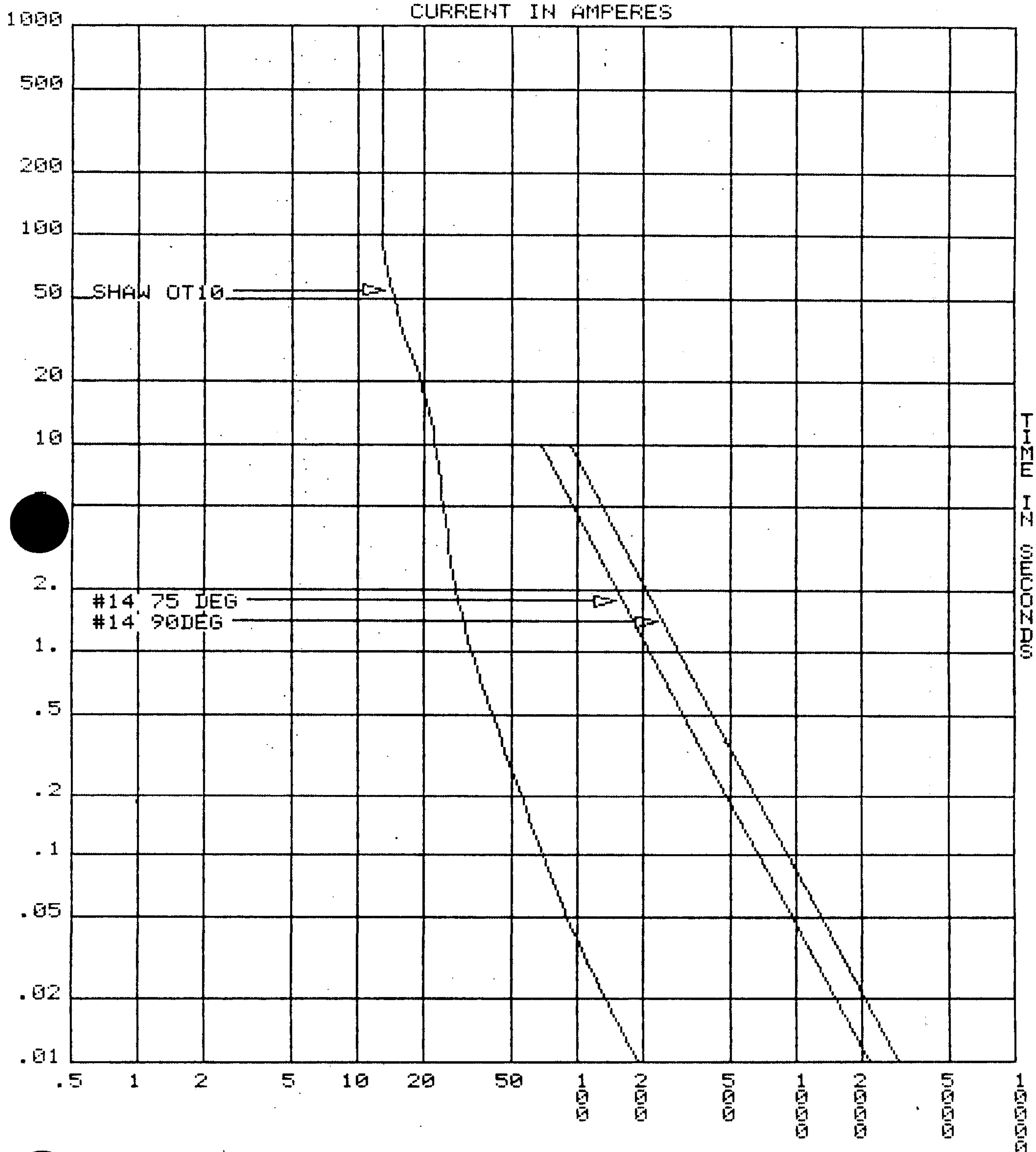
SHEET C81
PREPARED TLD DATE 1-31-90
CHECKED RS DATE 1/31/90



DRAWING CURVE78 PLOT ELL: 120 SCALE: 10^0

WBPEVAR9001006

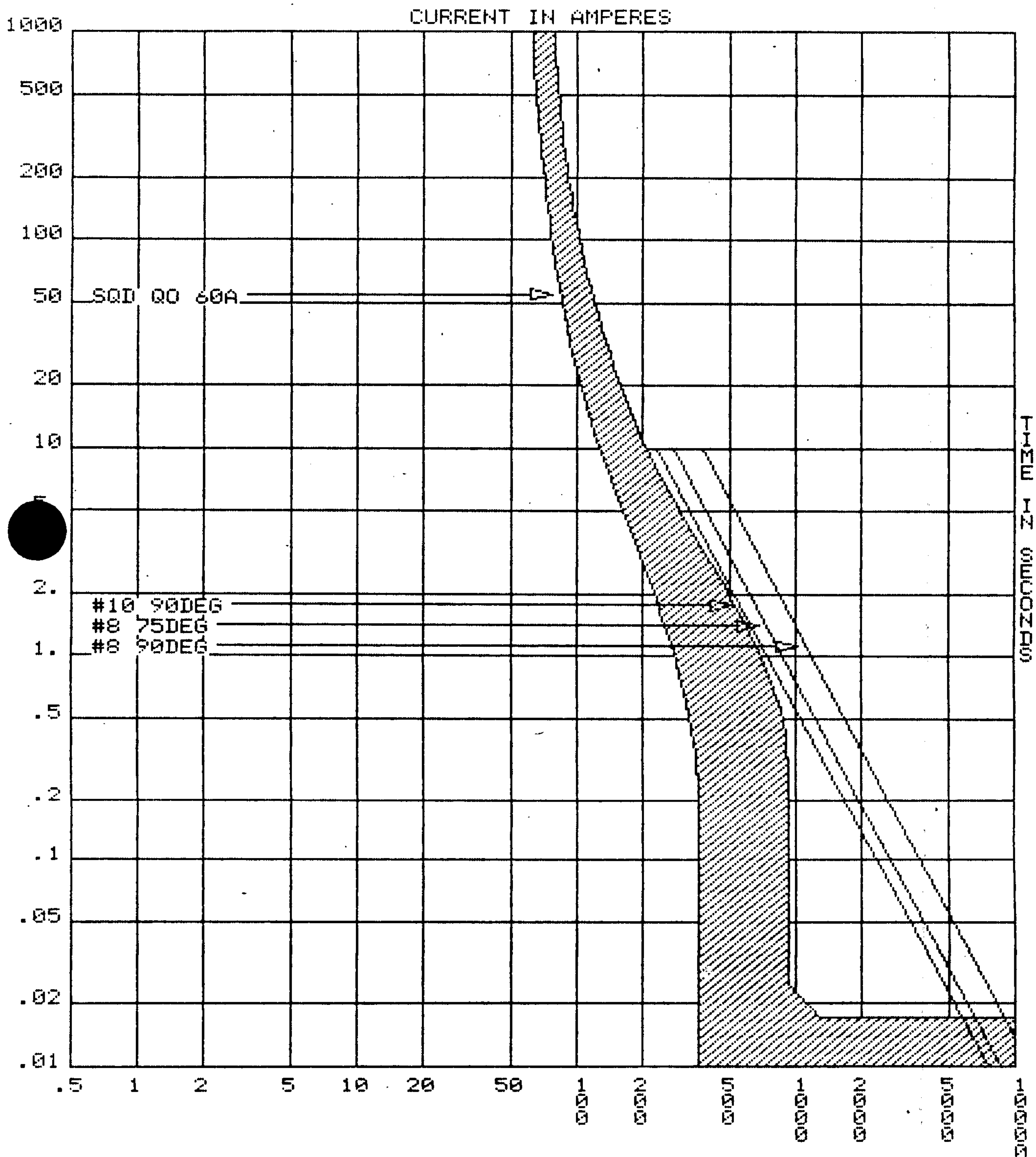
SHEET C82
PREPARED ZAD DATE 1-31-90
CHECKED CRS DATE 1/31/90



DRAWING CURVE79 PLOT ELL: 120 SCALE: 10^0

WBPEVAR 9001006

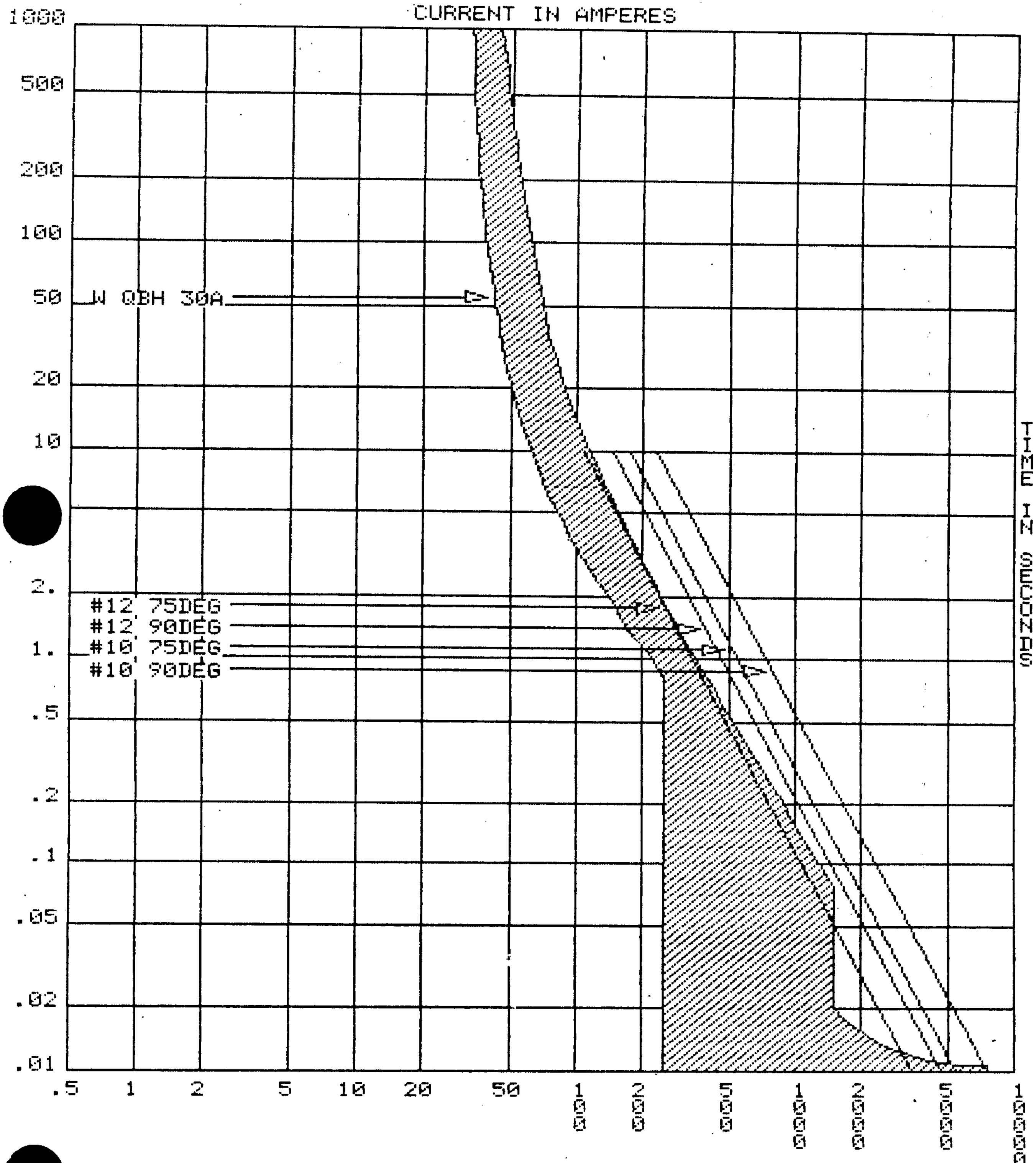
SHEET C83
PREPARED TAD DATE 1-31-90
CHECKED OS DATE 2/1/90



DRAWING CURVE80 PLOT ELL: 120 SCALE: 10^0

WBPEVAR 9001006

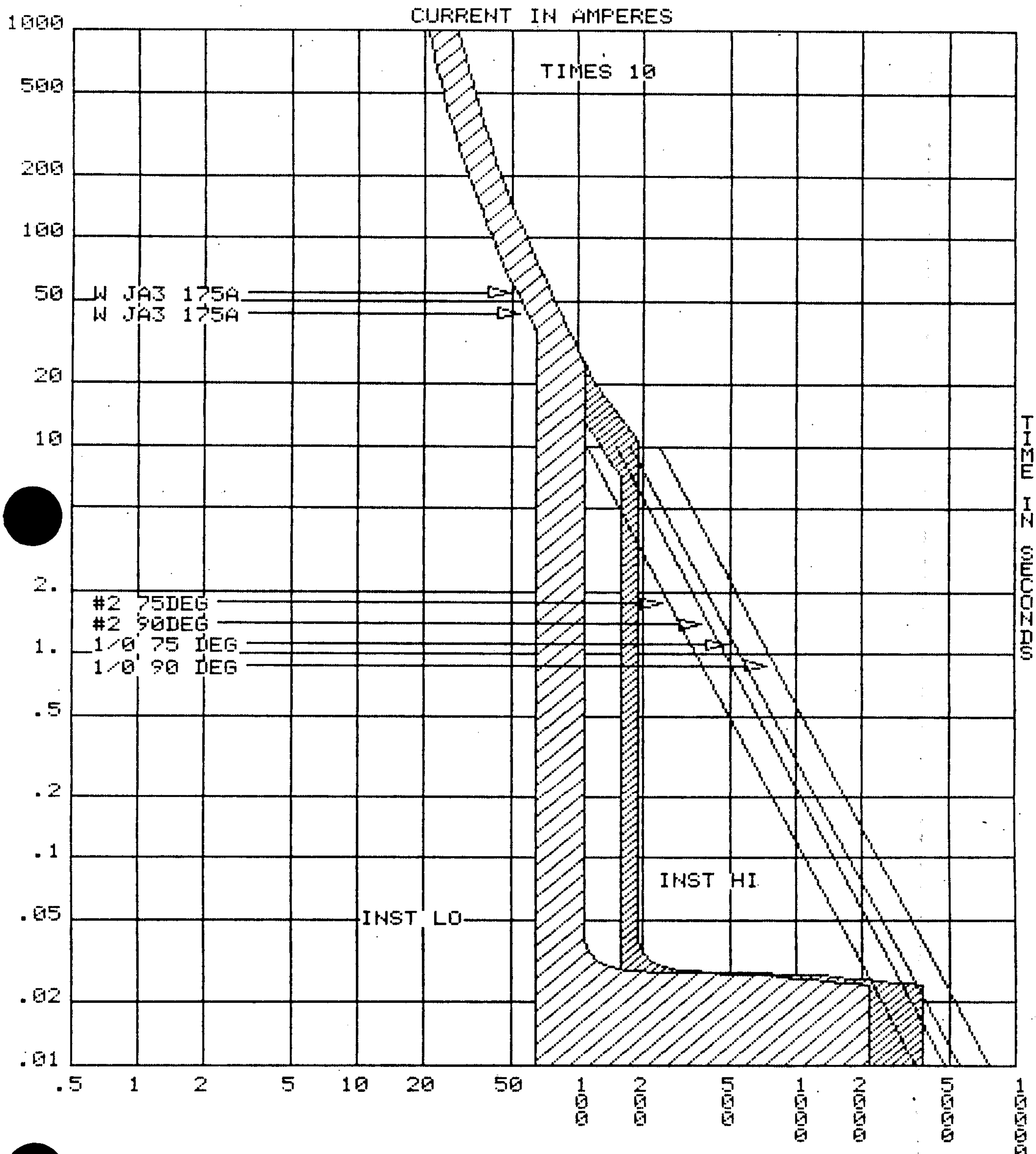
SHEET C84
PREPARED TAD DATE 1-31-90
CHECKED CS DATE 1/31/90



DRAWING CURVE81 PLOT ELL: 120 SCALE: 10^0

WBPEVAR 9001006

SHEET C85
PREPARED 7??D DATE 1-31-90
CHECKED RS DATE 1/31/90

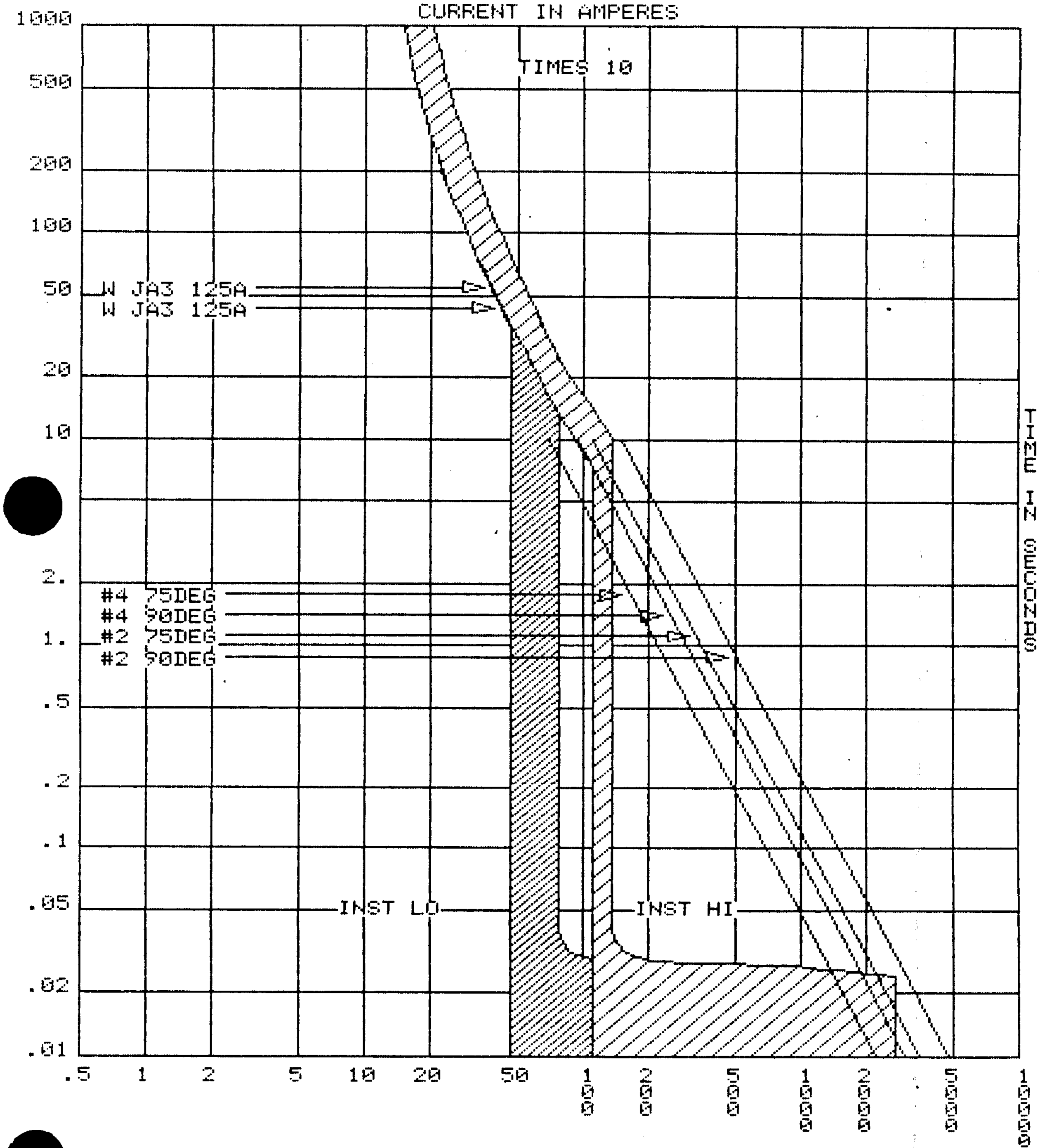


DRAWING CURVE82 PLOT ELL: 120 SCALE: 10^1

WBPEVAR9001006

C86

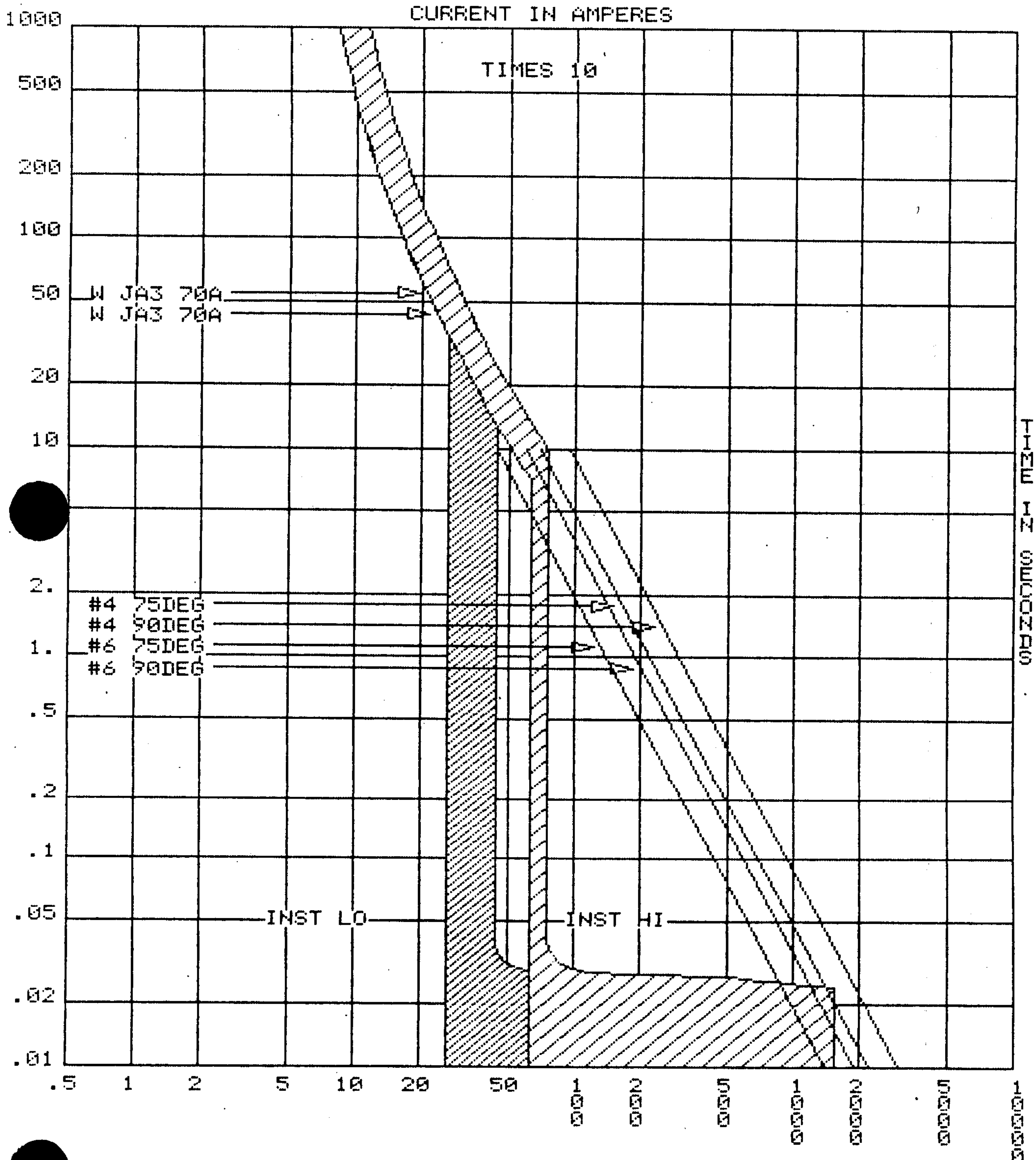
PREPARED 7QD DATE 1-31-90
CHECKED RS DATE 1/31/90



DRAWING CURVE83 PLOT ELL: 120 SCALE: 10^1

WBPEVAR9001006

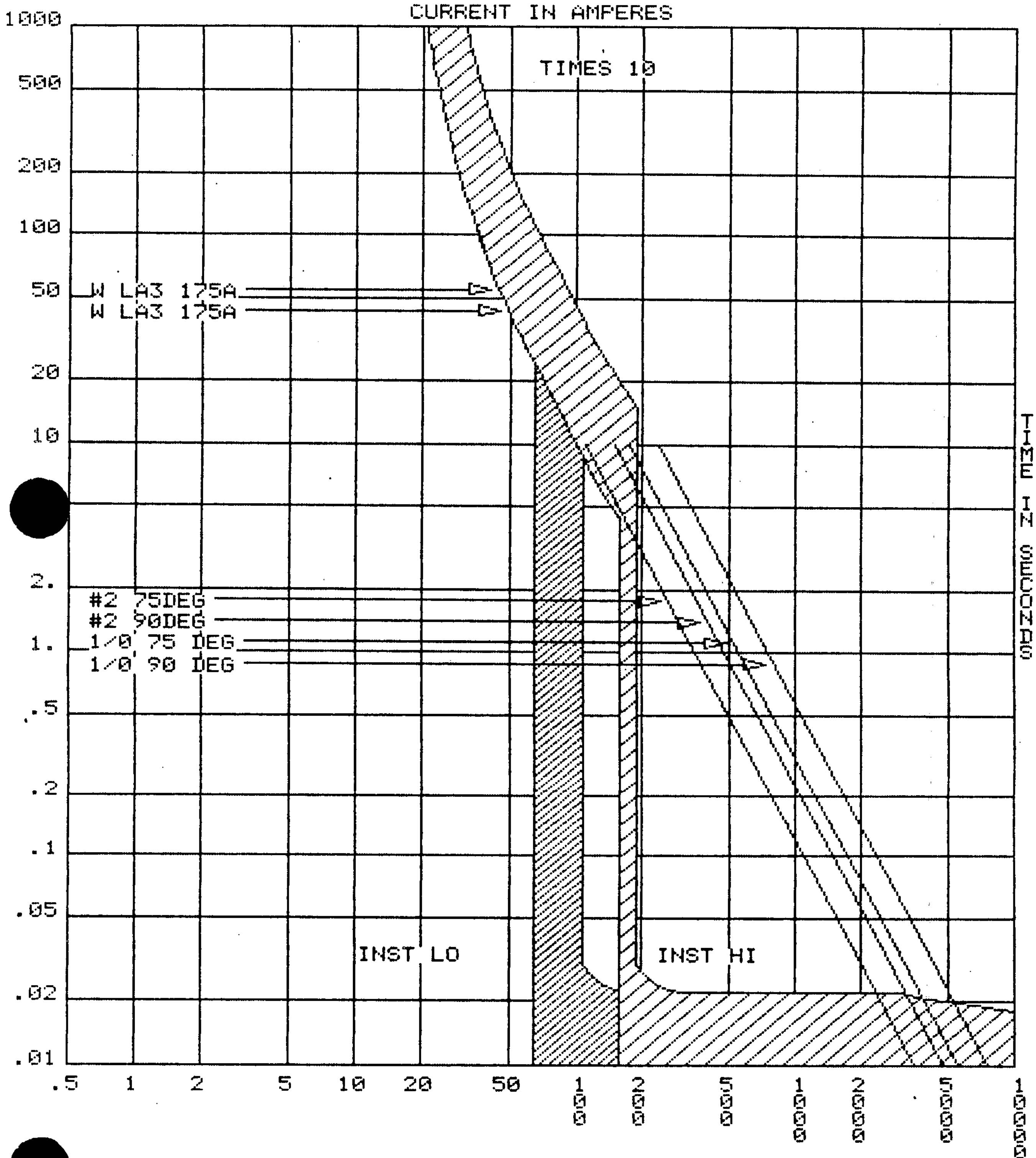
SHEET C87
PREPARED TAD DATE 1-31-90
CHECKED QS DATE 1/31/90



DRAWING CURVE84 PLOT ELL: 120 SCALE: 10^1

WBPEVAR 9001006

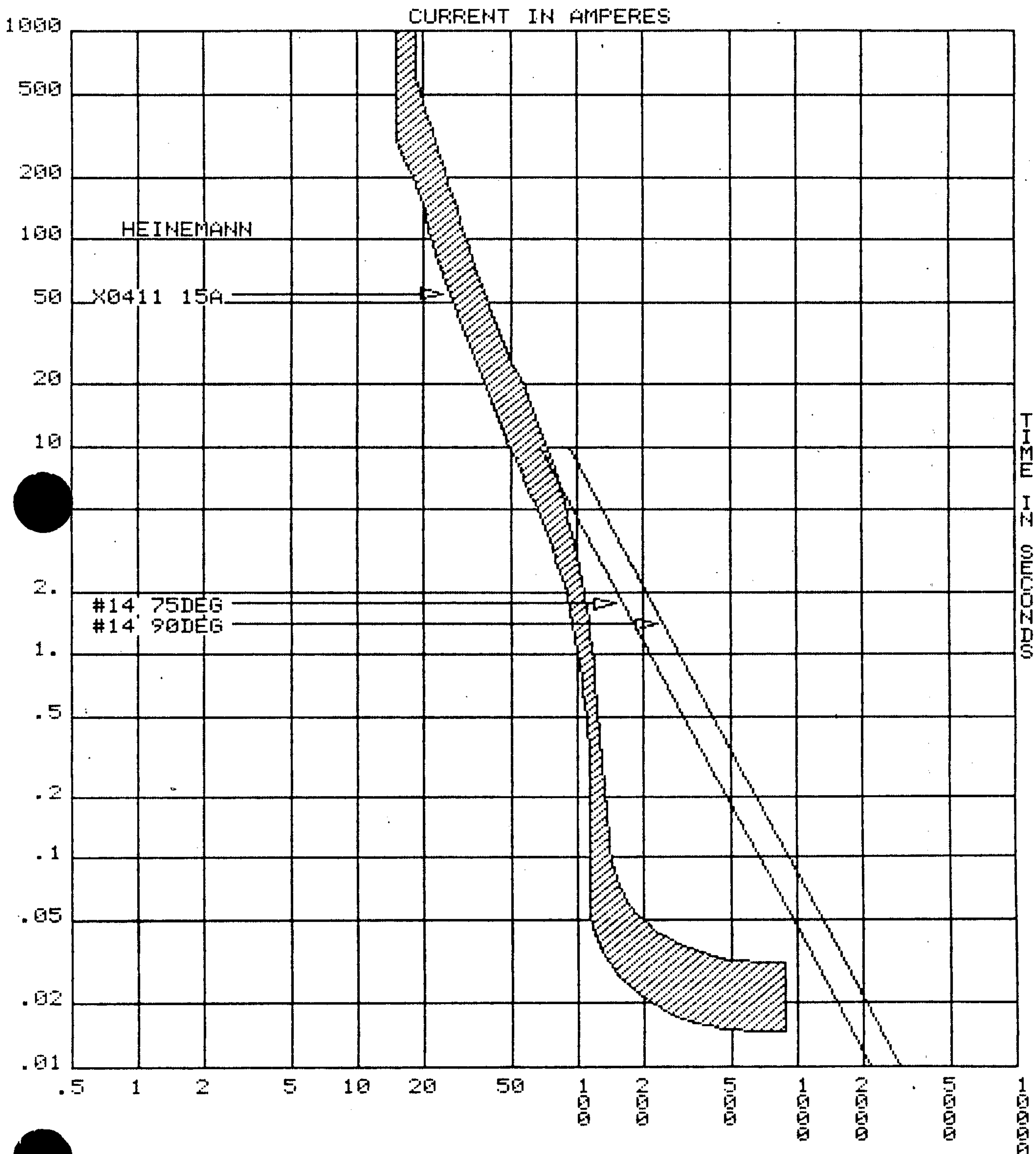
SHEET C88
PREPARED TAD DATE 1-31-90
CHECKED CRS DATE 1/31/90



DRAWING CURVE85 PLOT ELL: 120 SCALE: 10^1

WBPEVAR9001006

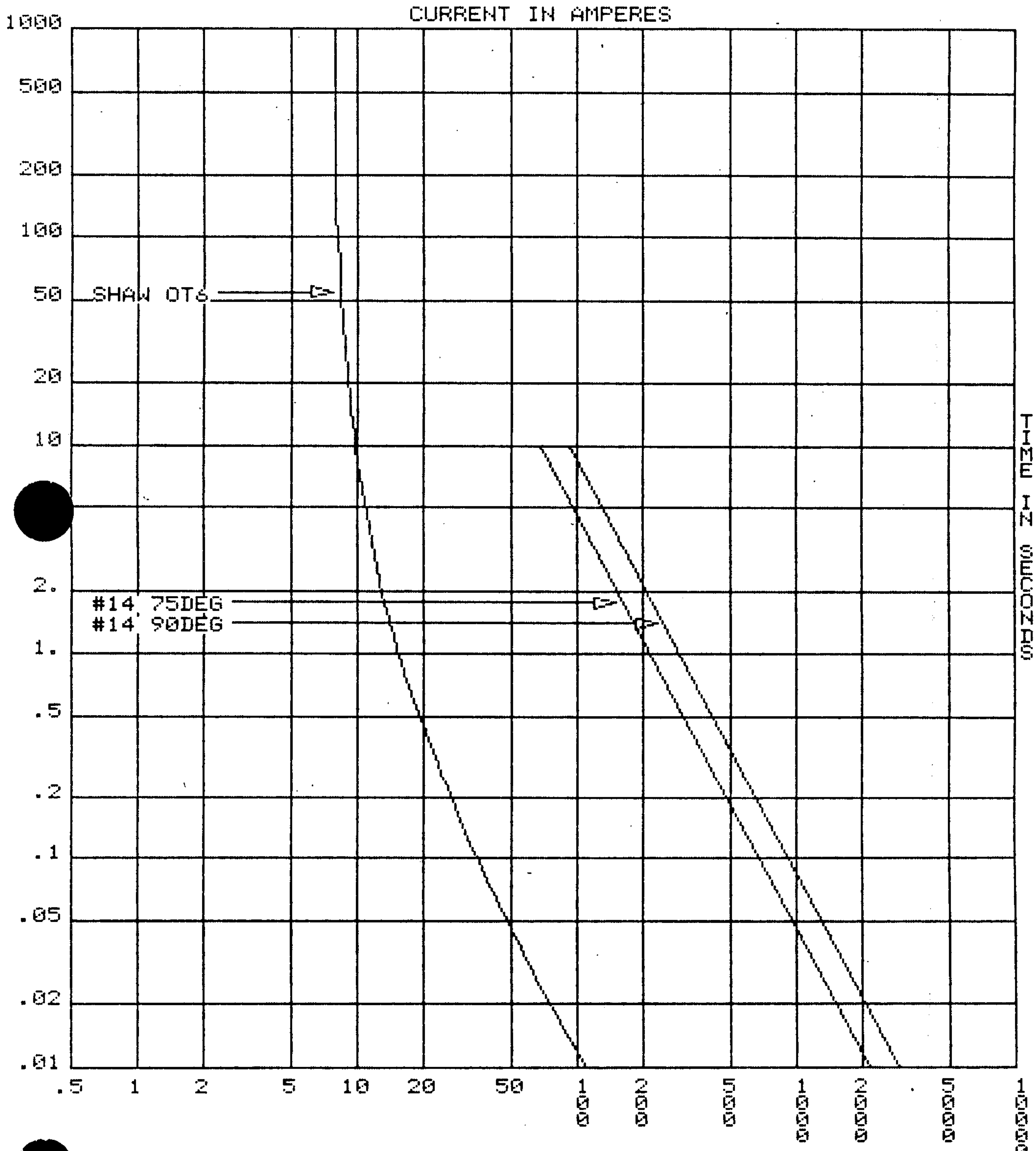
SHEET C89
PREPARED TAD DATE 1-31-90
CHECKED RS DATE 1/31/90



DRAWING CURVE86 PLOT ELL: 120 SCALE: 10^0

WBPEVAR 9001006

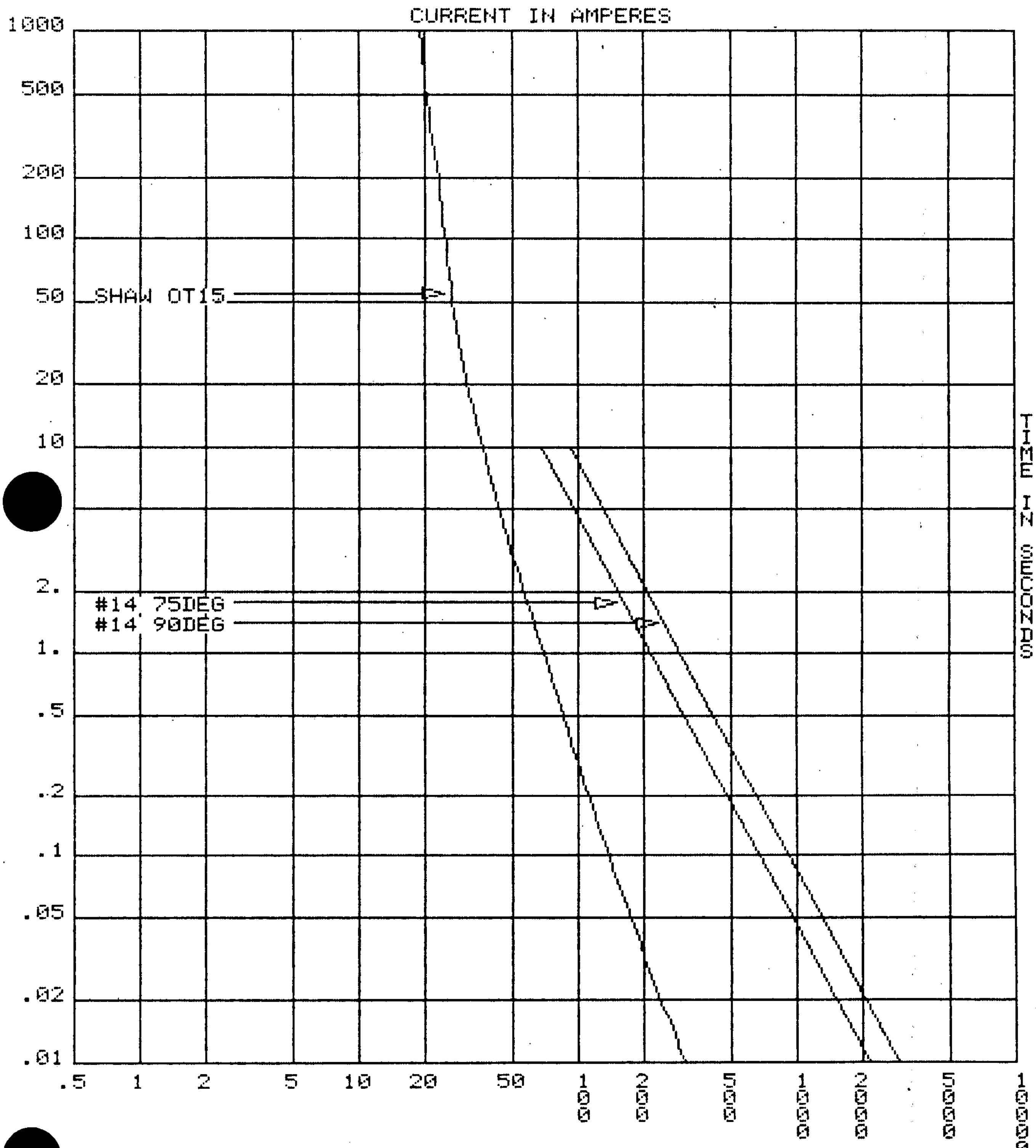
SHEET C90
PREPARED [illegible] DATE 1-31-90
CHECKED [illegible] DATE 1/31/90



DRAWING CURVE87 PLOT ELL: 120 SCALE: 10^0

WBPEVAR9001006

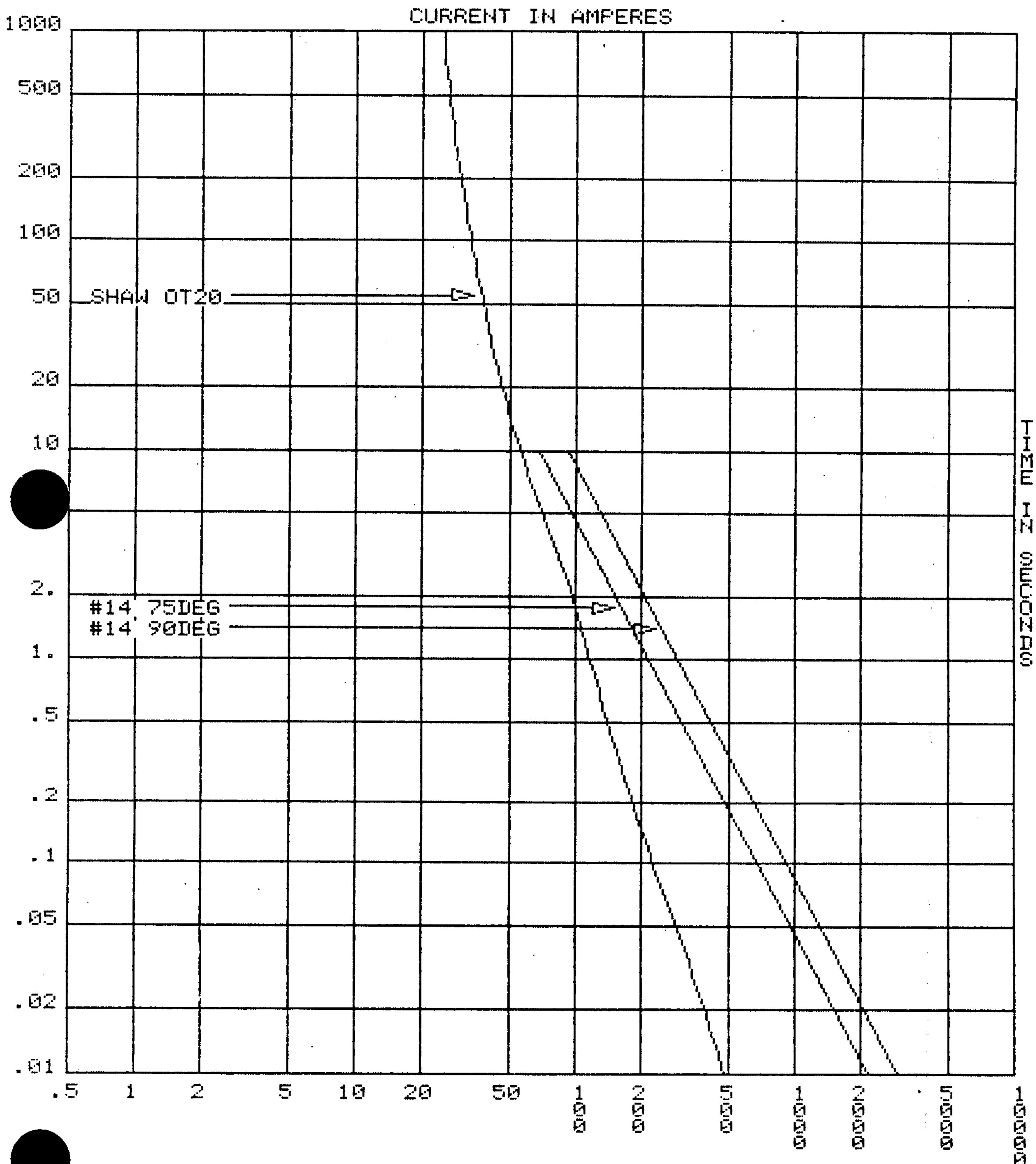
[illegible] C91
PREPARED TWD DATE 1-31-90
CHECKED RS DATE 2/1/90



DRAWING CURVE88 PLOT ELL: 120 SCALE: 10^0

WBPEVAR 9001006

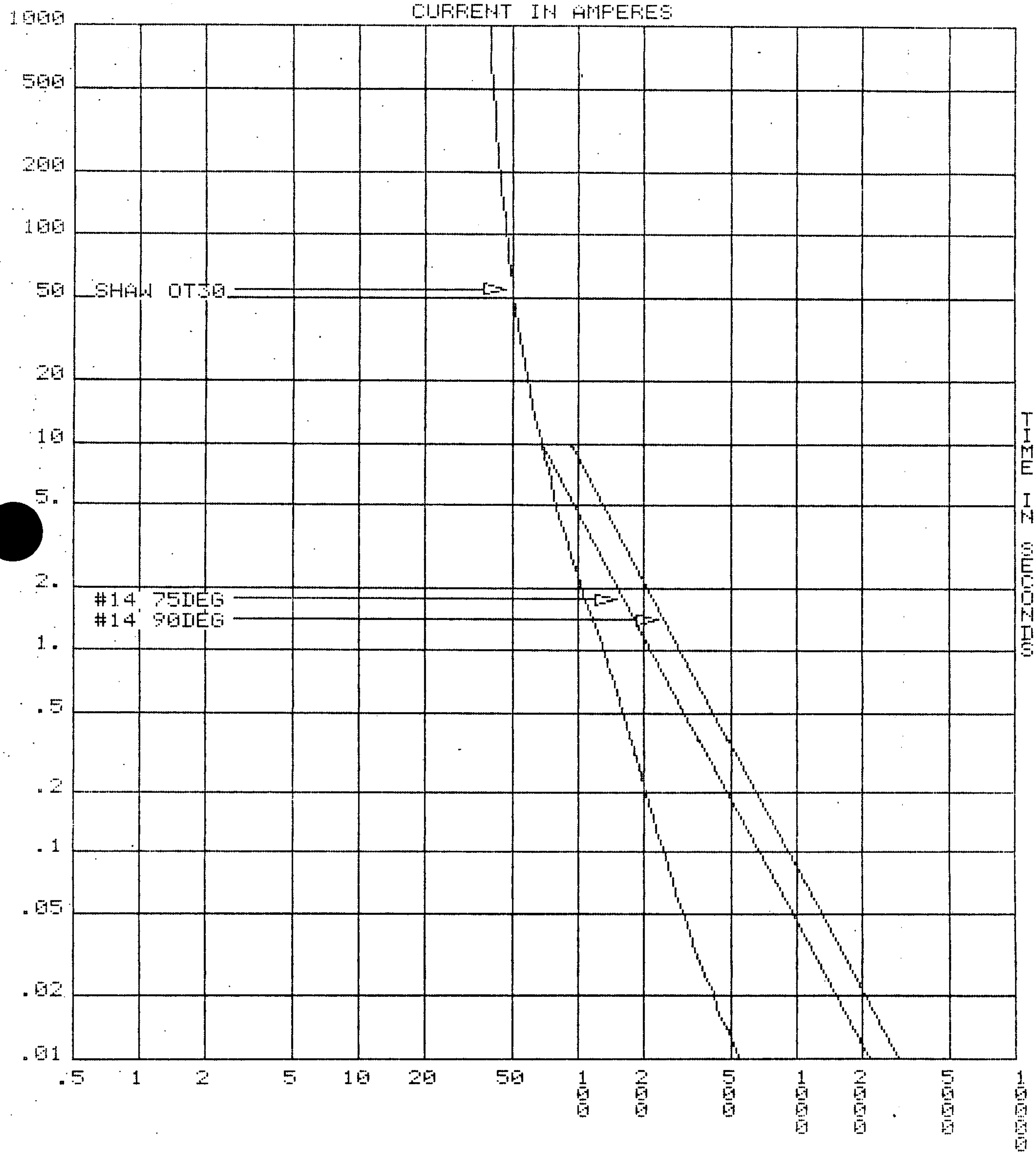
SHEET C92
PREPARED ZKD DATE 1-31-90
CHECKED RS DATE 2/1/90



DRAWING CURVE89 PLOT ELL: 120 SCALE: 10^0

WBPEVAR 9001006

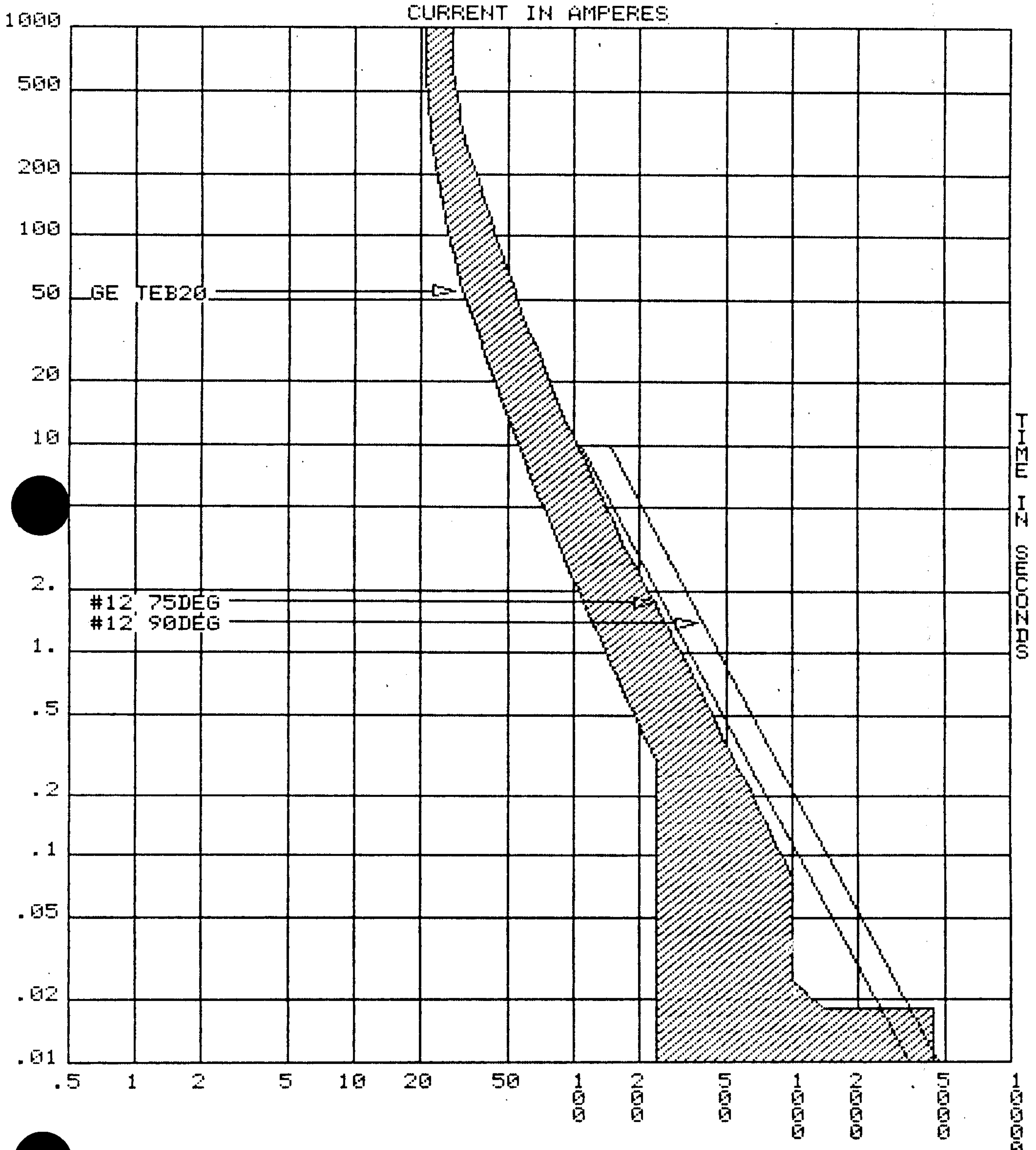
SHEET C93
PREPARED [illegible] DATE 1-32-90
CHECKED [illegible] DATE 1/31/90



DRAWING CURVE90 PLOT ELL: 120 SCALE: 10^0

WBPEVAR9001006

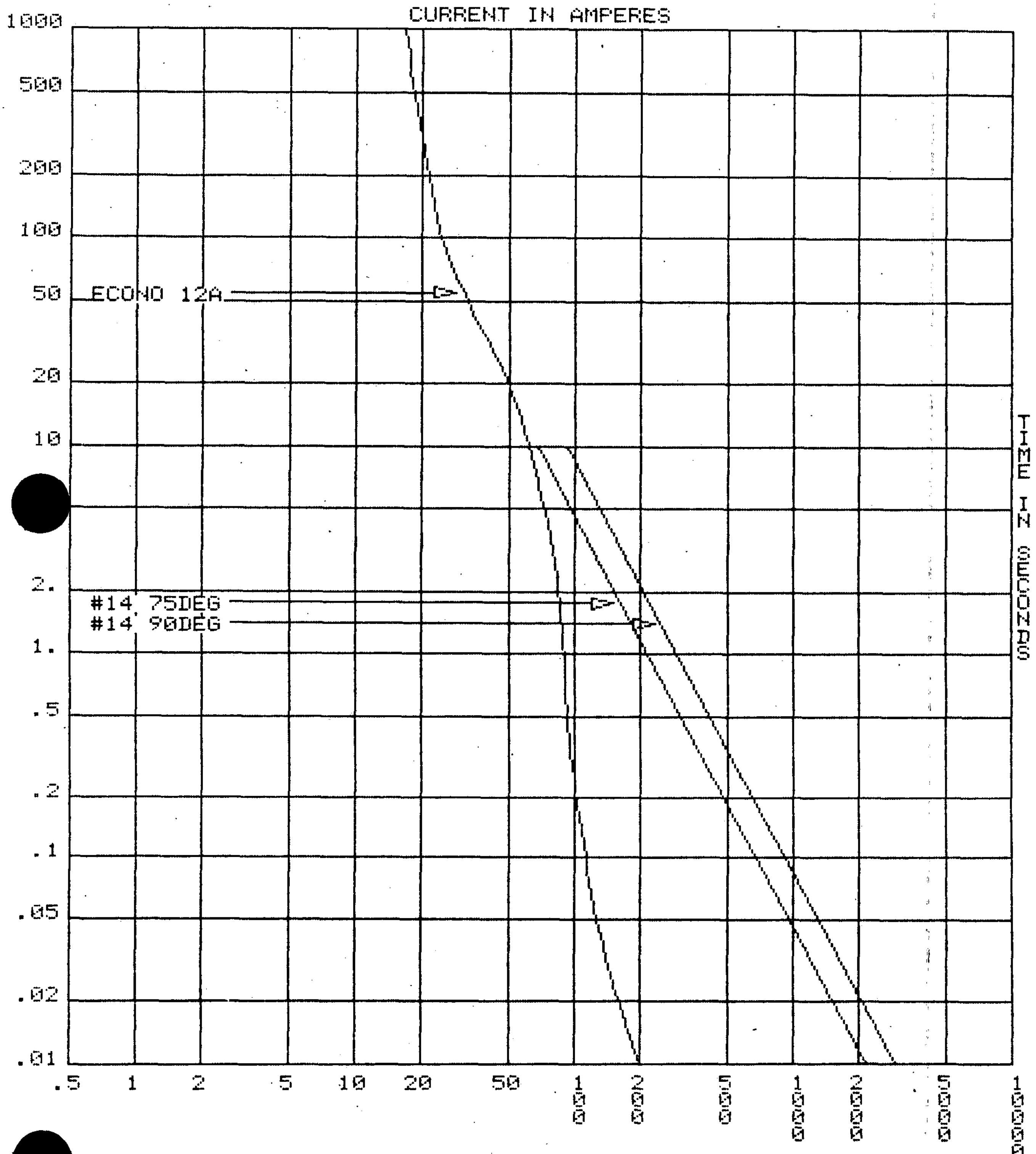
SHEET C94
PREPARED TLD DATE 1-31-90
CHECKED DS DATE 1/31/90



DRAWING CURVE91 PLOT ELL: 120 SCALE: 10^0

WBPEVAR9001006

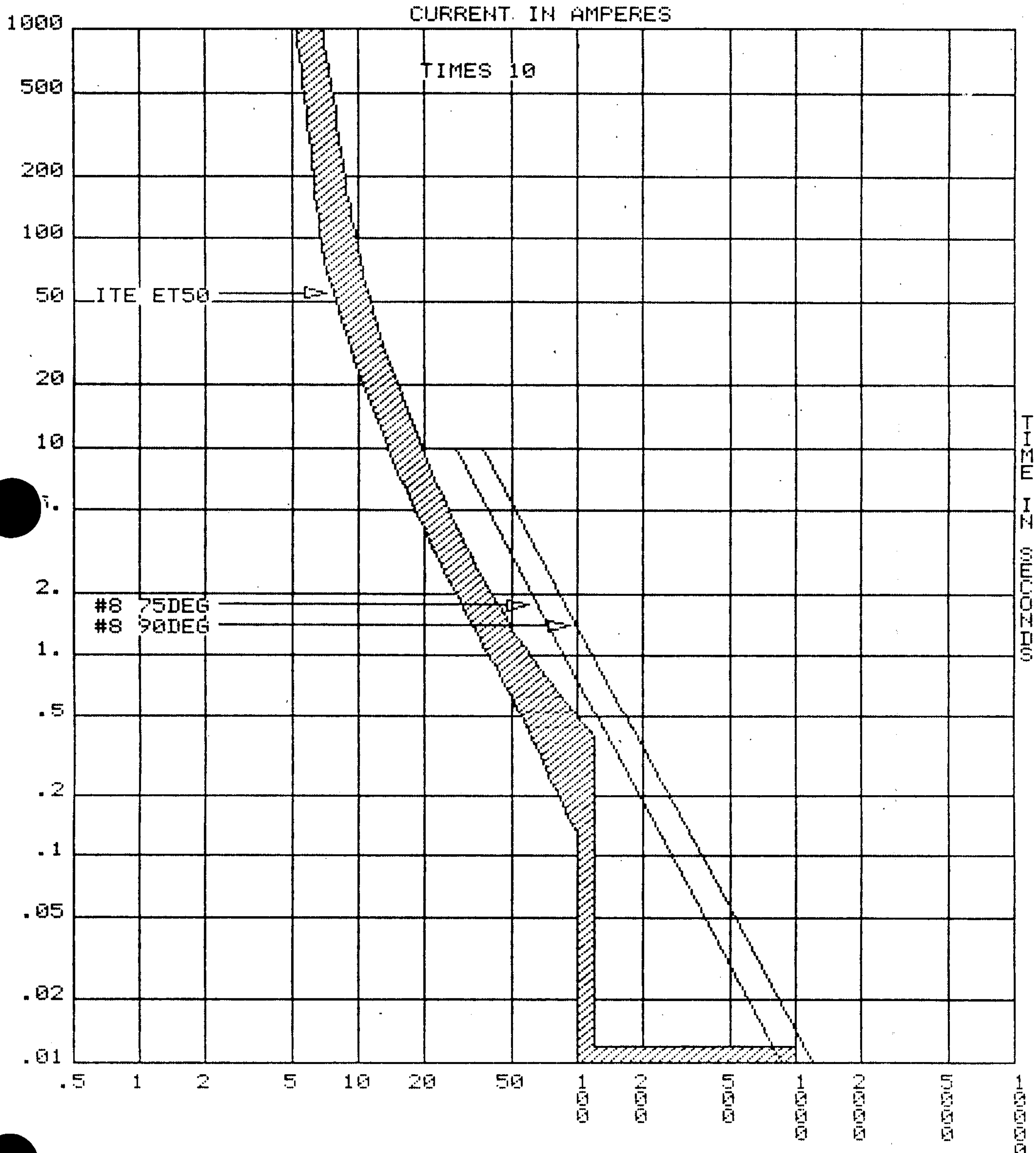
SHEET C95
PREPARED [illegible] DATE 1-31-90
CHECKED RS DATE 1/31/90



DRAWING CURVE92 PLOT ELL: 120 SCALE: 10^0

WBPEVAR9001006

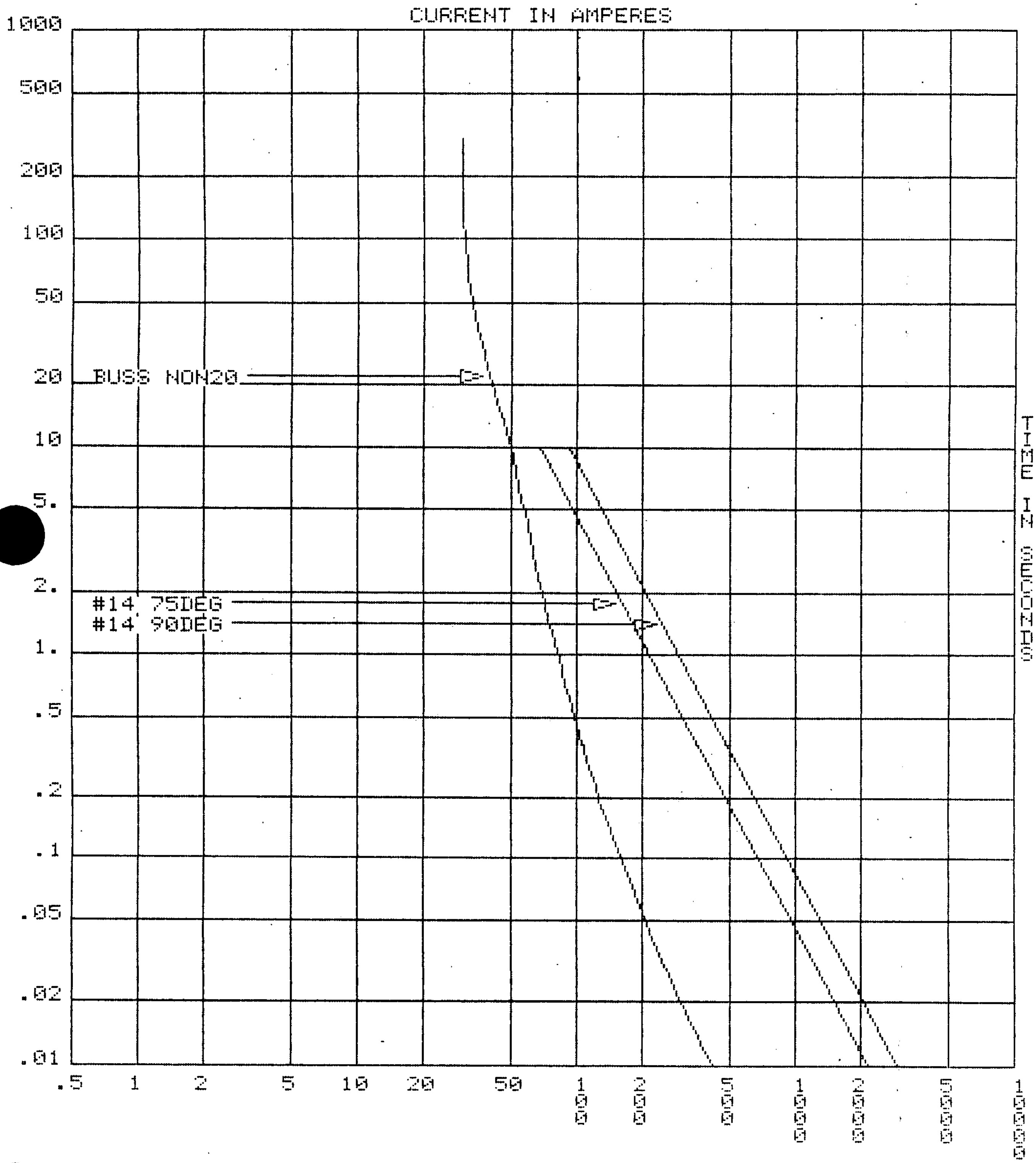
SHEET C96
PREPARED 702 DATE 1-31-90
CHECKED PS DATE 1/31/90



DRAWING CURVE93 PLOT ELL: 120 SCALE: 10^1

WBPEVAR9001006

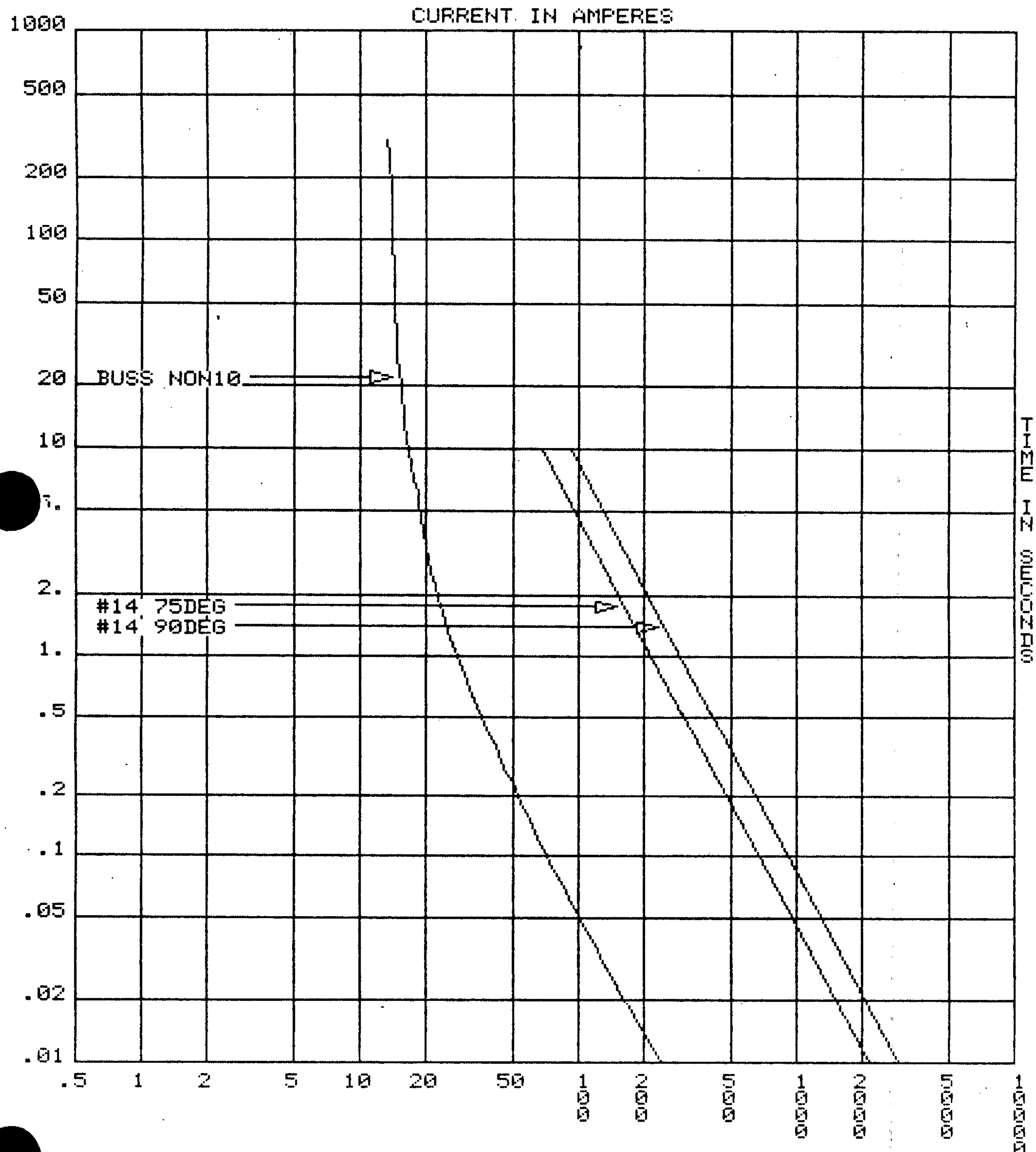
SHEET C97
PREPARED [illegible] DATE 1-31-90
CHECKED [illegible] DATE 1/31/90



DRAWING CURVE94 PLOT ELL: 120 SCALE: 10^0

WBPEVAR9001006

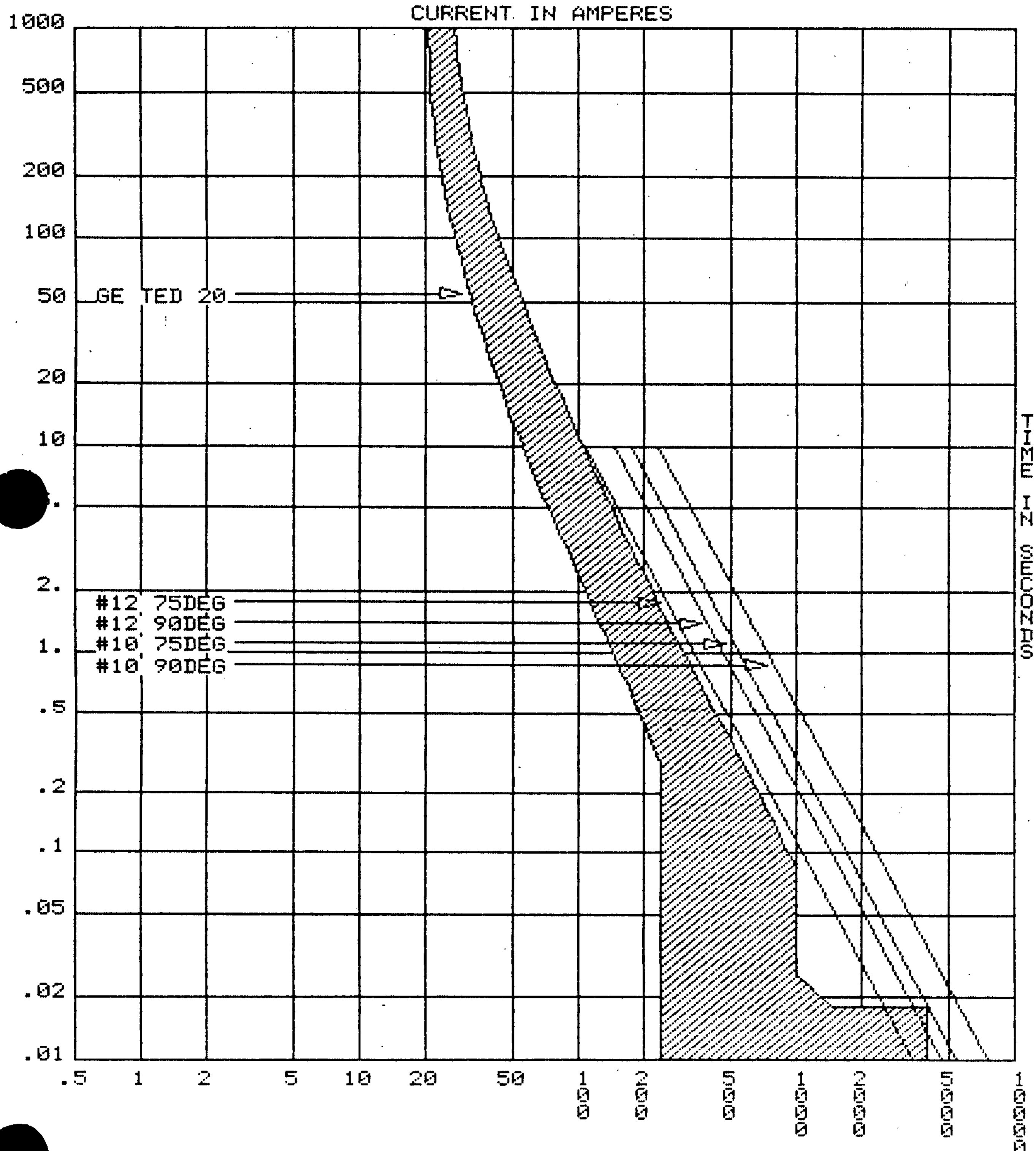
SHEET C98
PREPARED [initials] DATE 1-31-90
CHECKED [initials] DATE 1/31/90



DRAWING CURVE95 PLOT ELL: 120 SCALE: 10^0

WBPEVAR 9001006

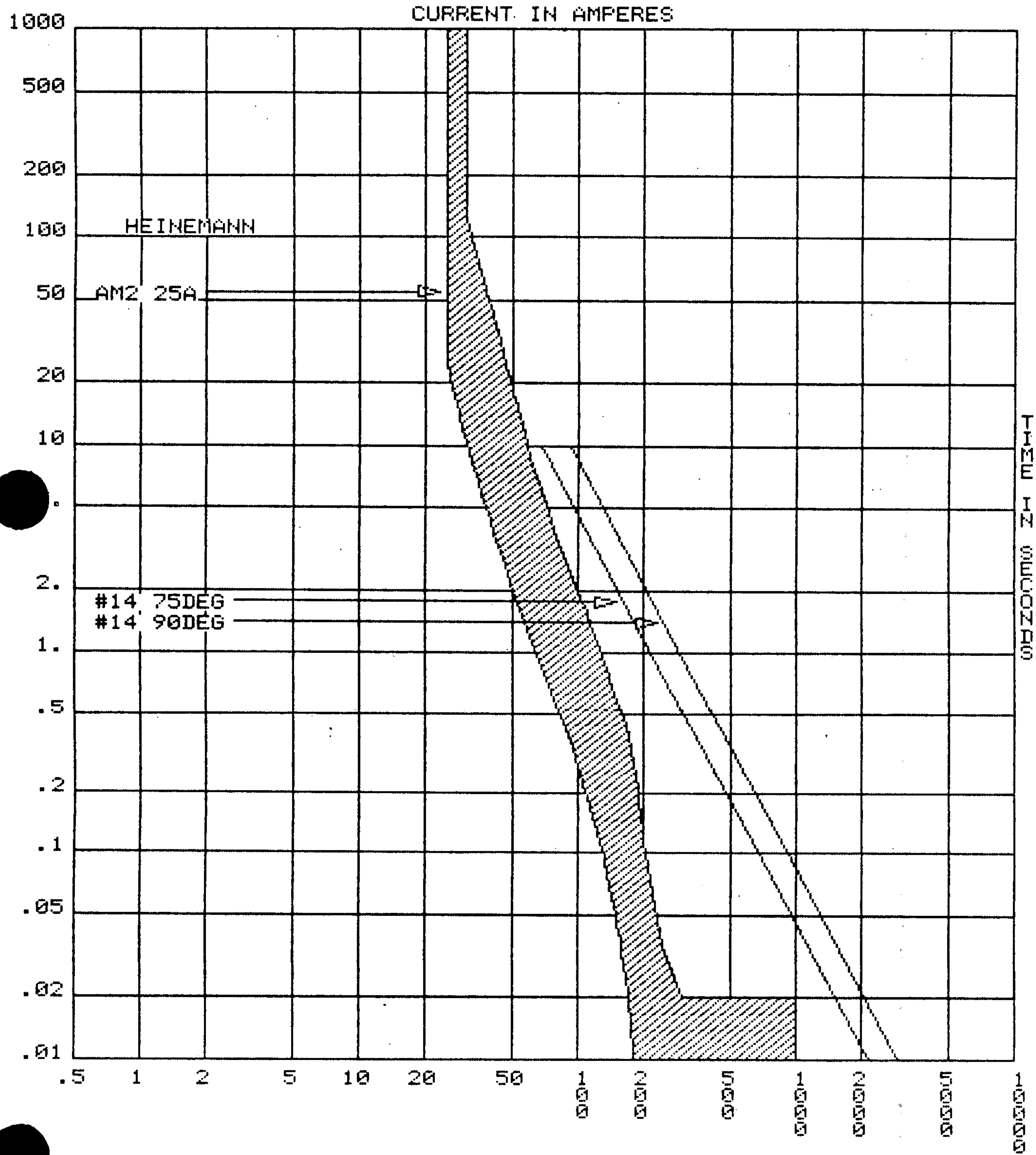
SHEET C99
PREPARED [illegible] DATE 1-31-90
CHECKED ORS DATE 1/31/90



DRAWING CURVE96 PLOT ELL: 120 SCALE: 10^0

WBPEVAR9001006

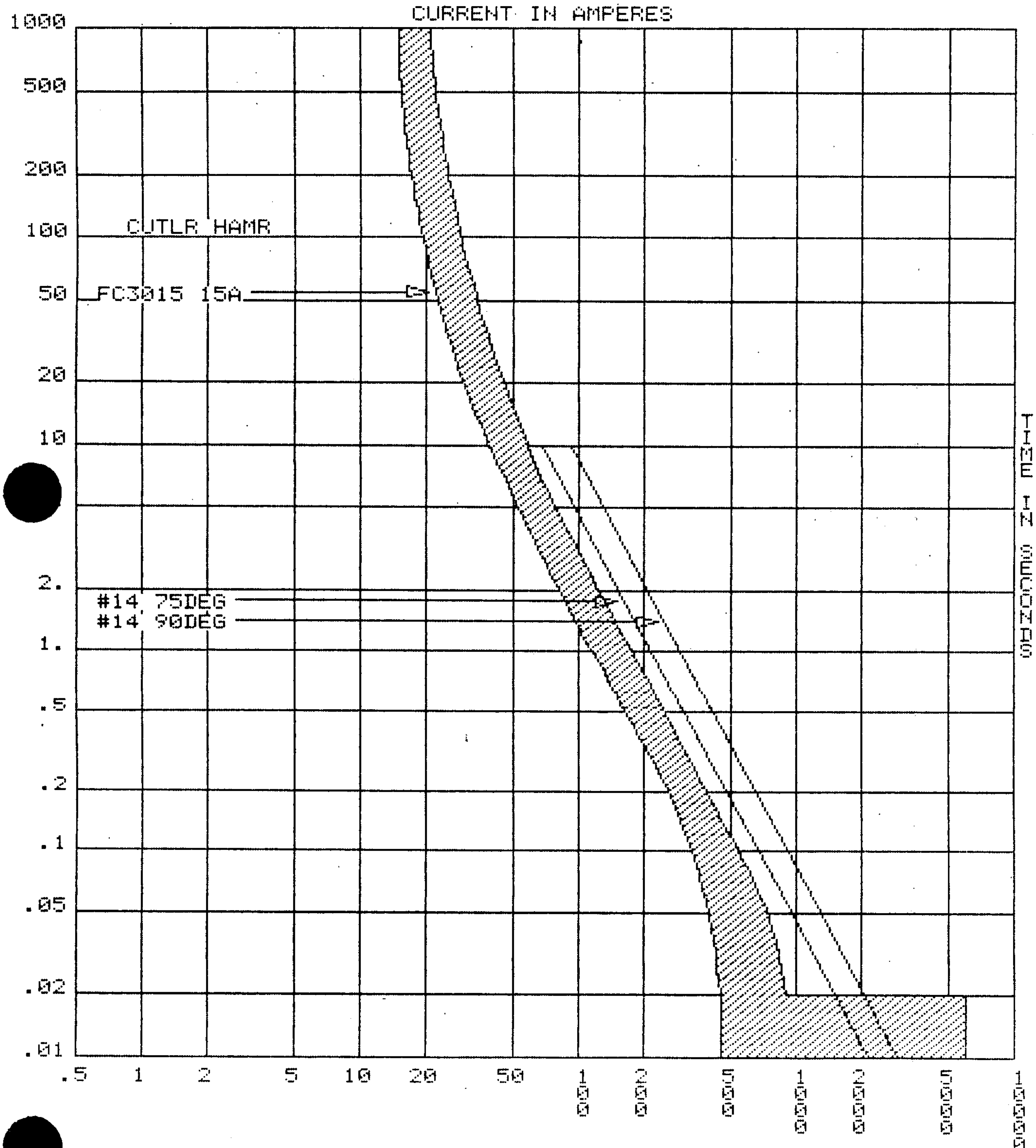
SHEET C100
PREPARED [illegible] DATE 1-31-90
CHECKED [illegible] DATE 1/31/90



DRAWING CURVE97 PLOT ELL: 120 SCALE: 10^0

WBPEVAR9001006

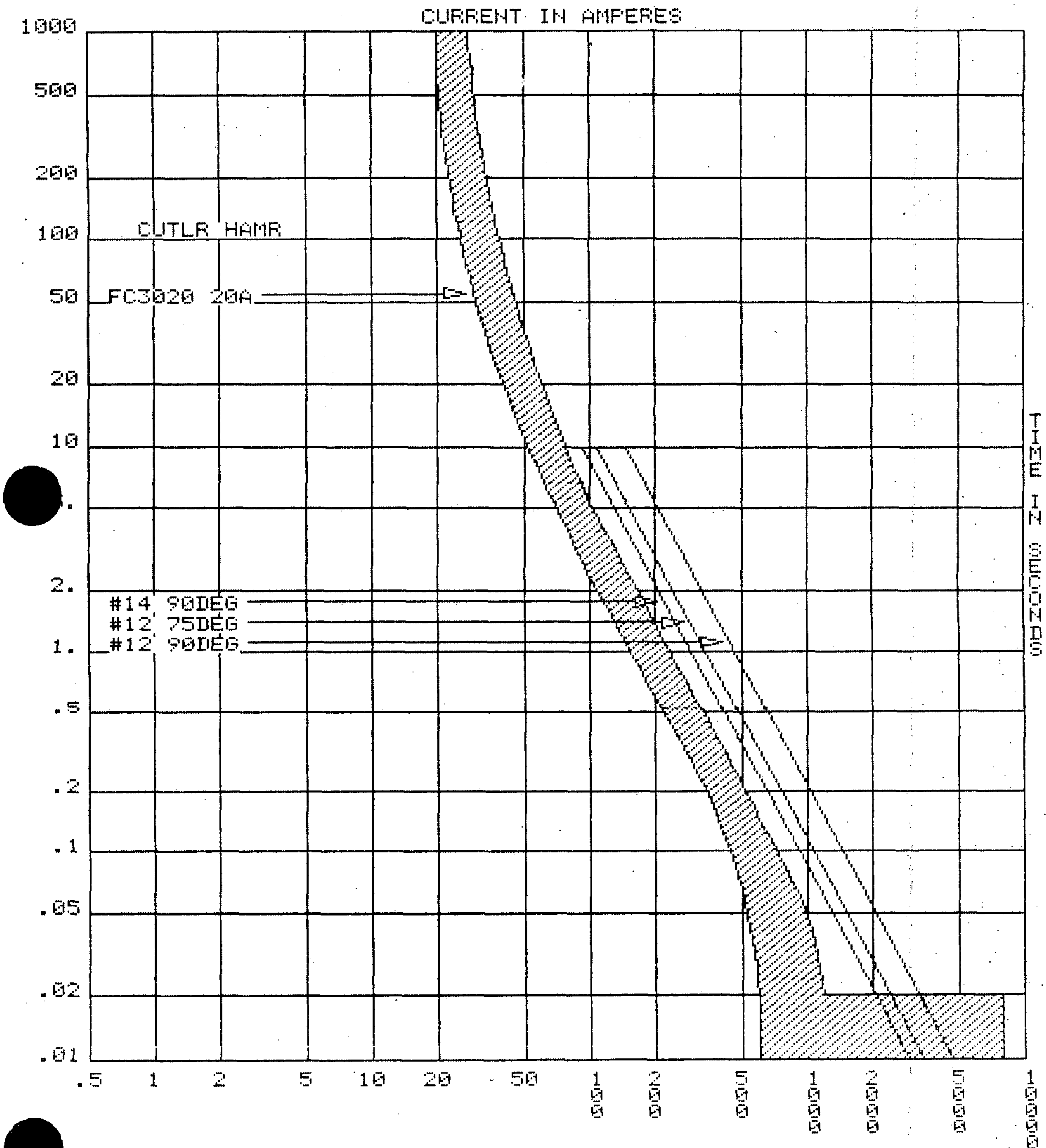
SHEET C101
PREPARED 70Q DATE 1-31-90
CHECKED RS DATE 1/31/90



DRAWING CURVE98 PLOT ELL: 120 SCALE: 10^0

WBPEVAR9001006

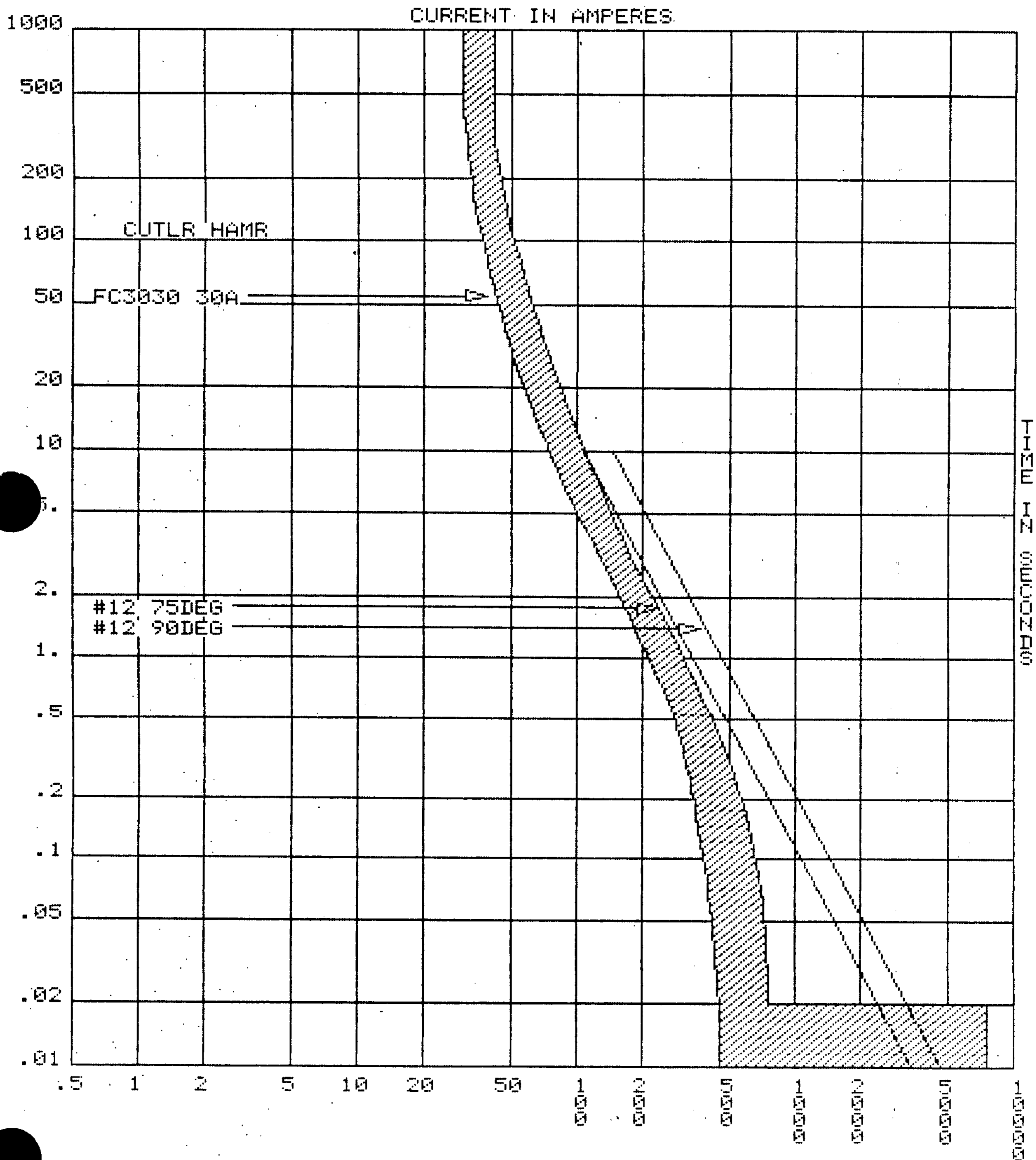
SHEET C102
PREPARED ZWD DATE 1-31-90
CHECKED DS DATE 1/31/90



DRAWING CURVE99 PLOT ELL: 120 SCALE: 10^0

WBPEVAR9001006

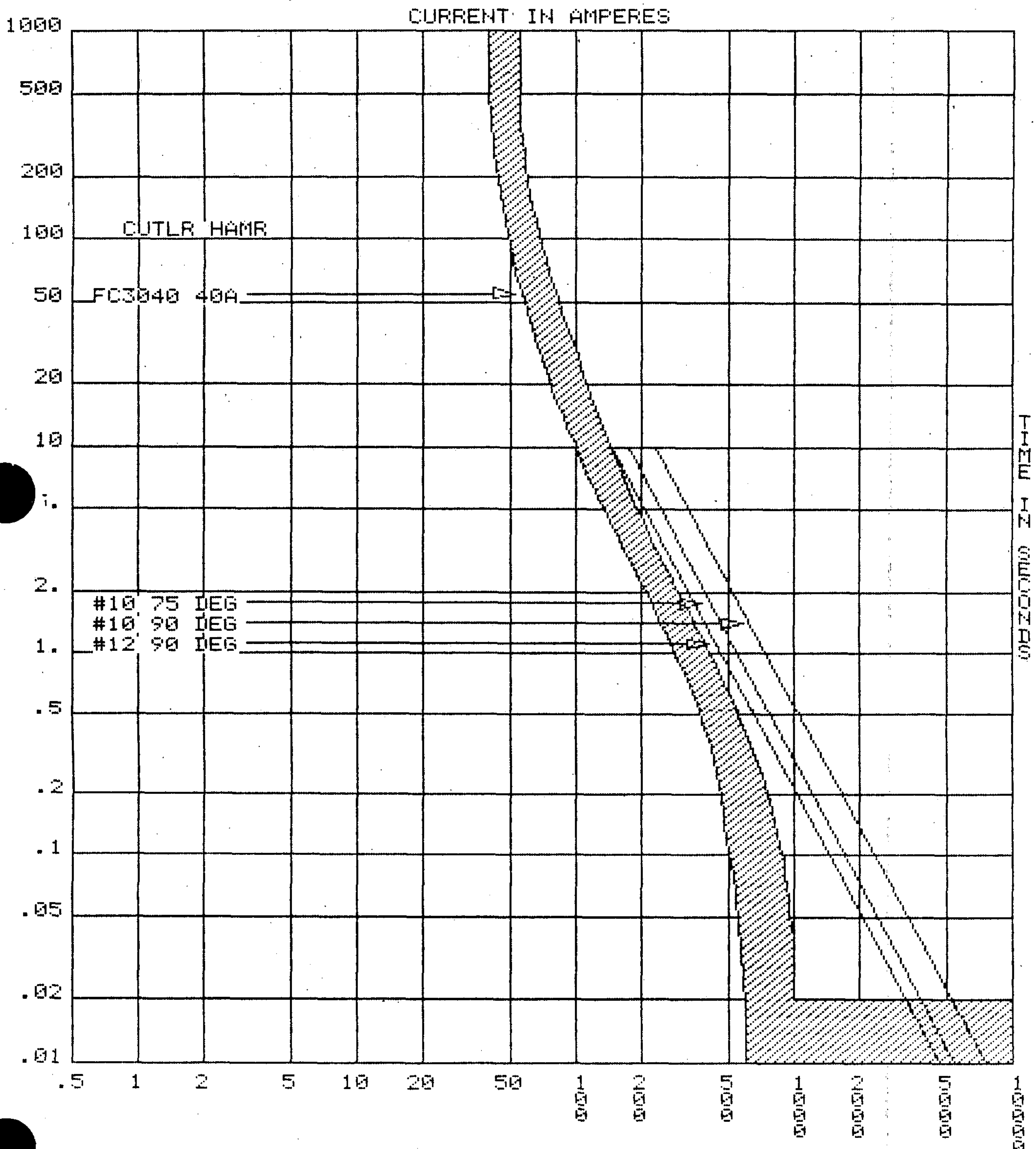
SHEET C103
PREPARED [illegible] DATE 1-31-90
CHECKED QS DATE 1/31/90



DRAWING CURVE100 PLOT ELL: 120 SCALE: 10^0

WBPEVAR9001006

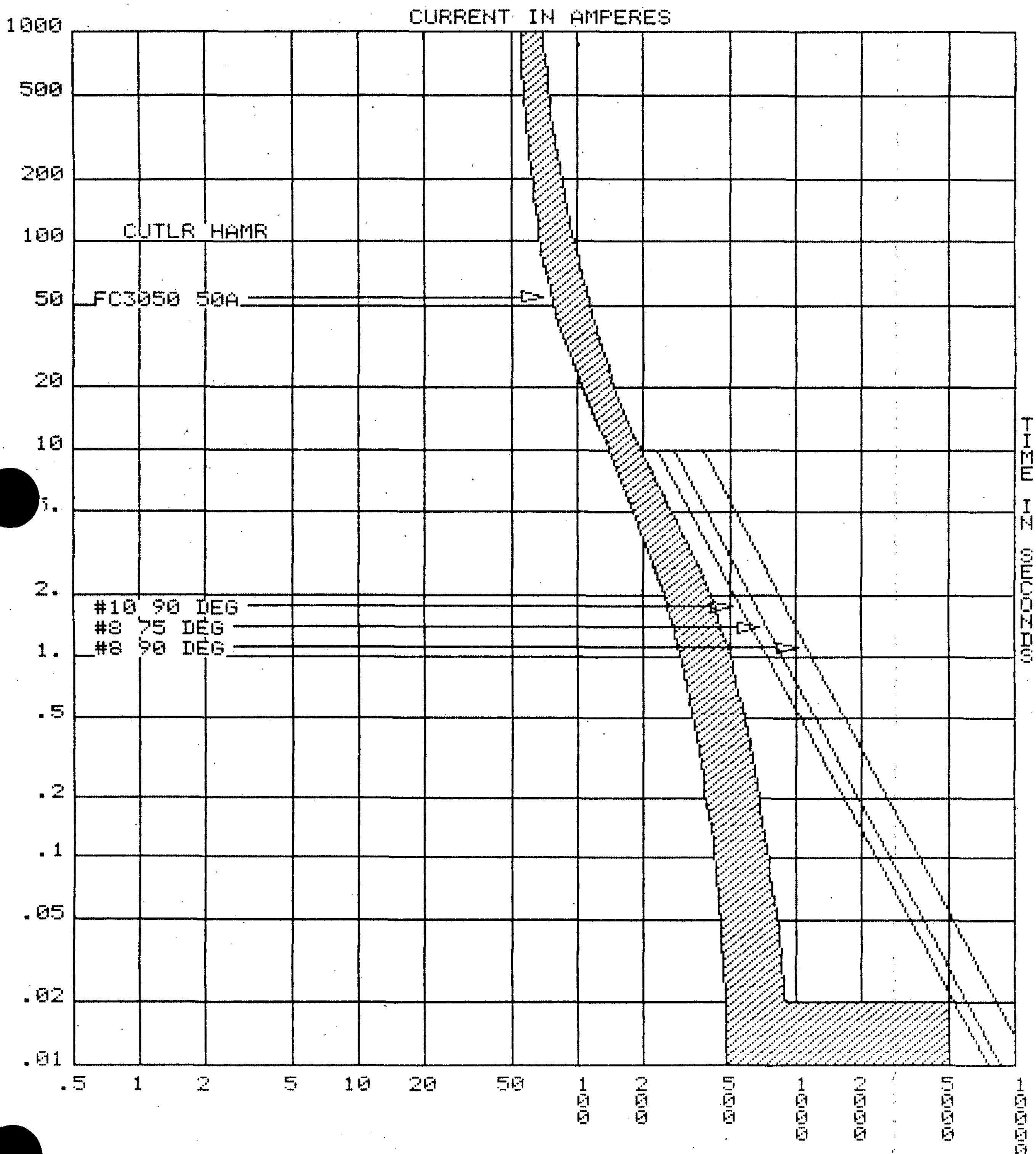
SHEET C104
PREPARED 7Wd DATE 1-31-90
CHECKED RS DATE 1/31/90



DRAWING CURVE101 PLOT ELL: 120 SCALE: 10^0

WBPEVAR9001006

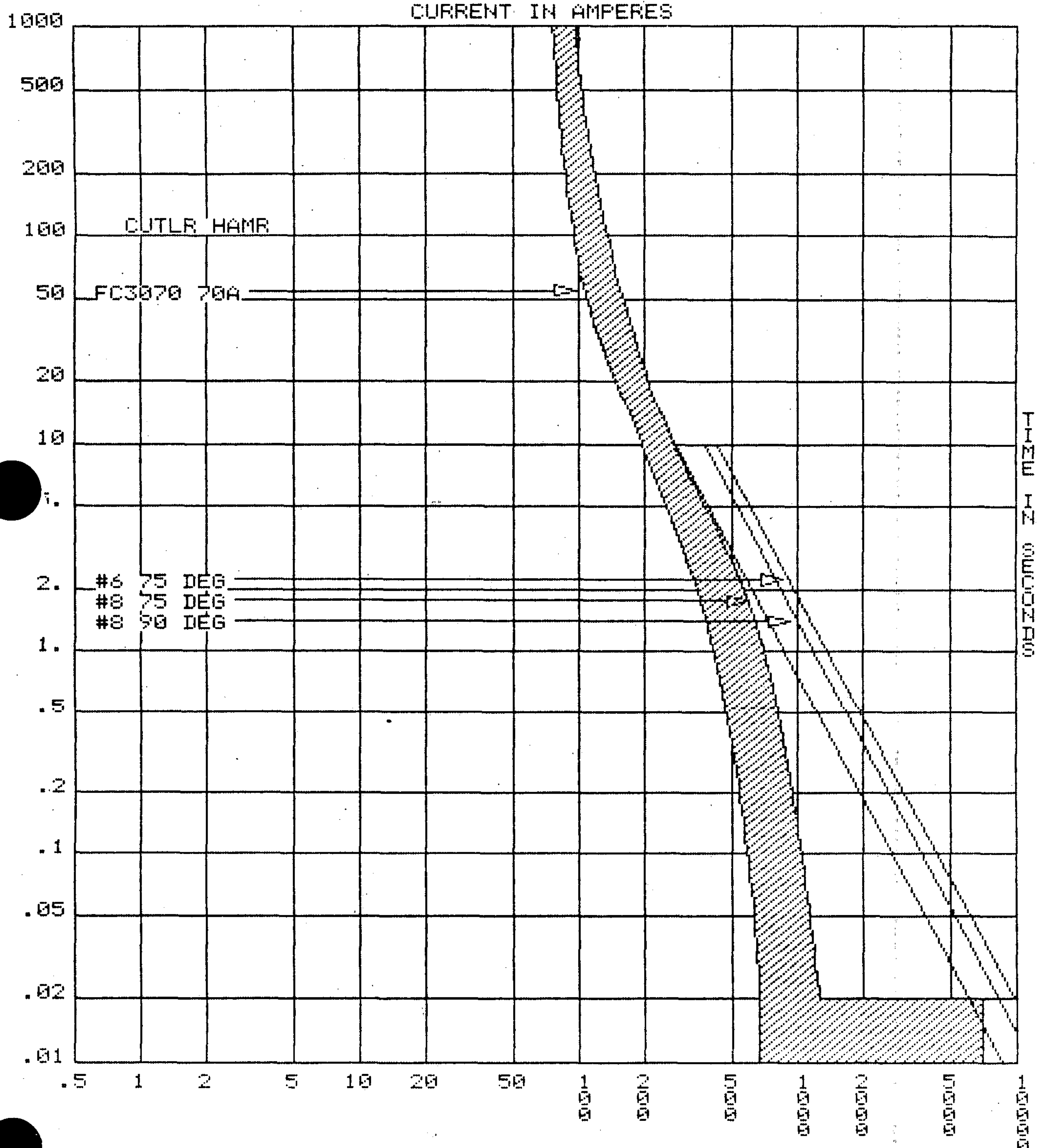
SHEET C105
PREPARED 7aQ DATE 1-31-90
CHECKED QS DATE 1/31/90



DRAWING CURVE102 PLOT ELL: 120 SCALE: 10^0

SHEET C106
PREPARED [illegible] DATE 1-31-90
CHECKED RS DATE 1/31/90

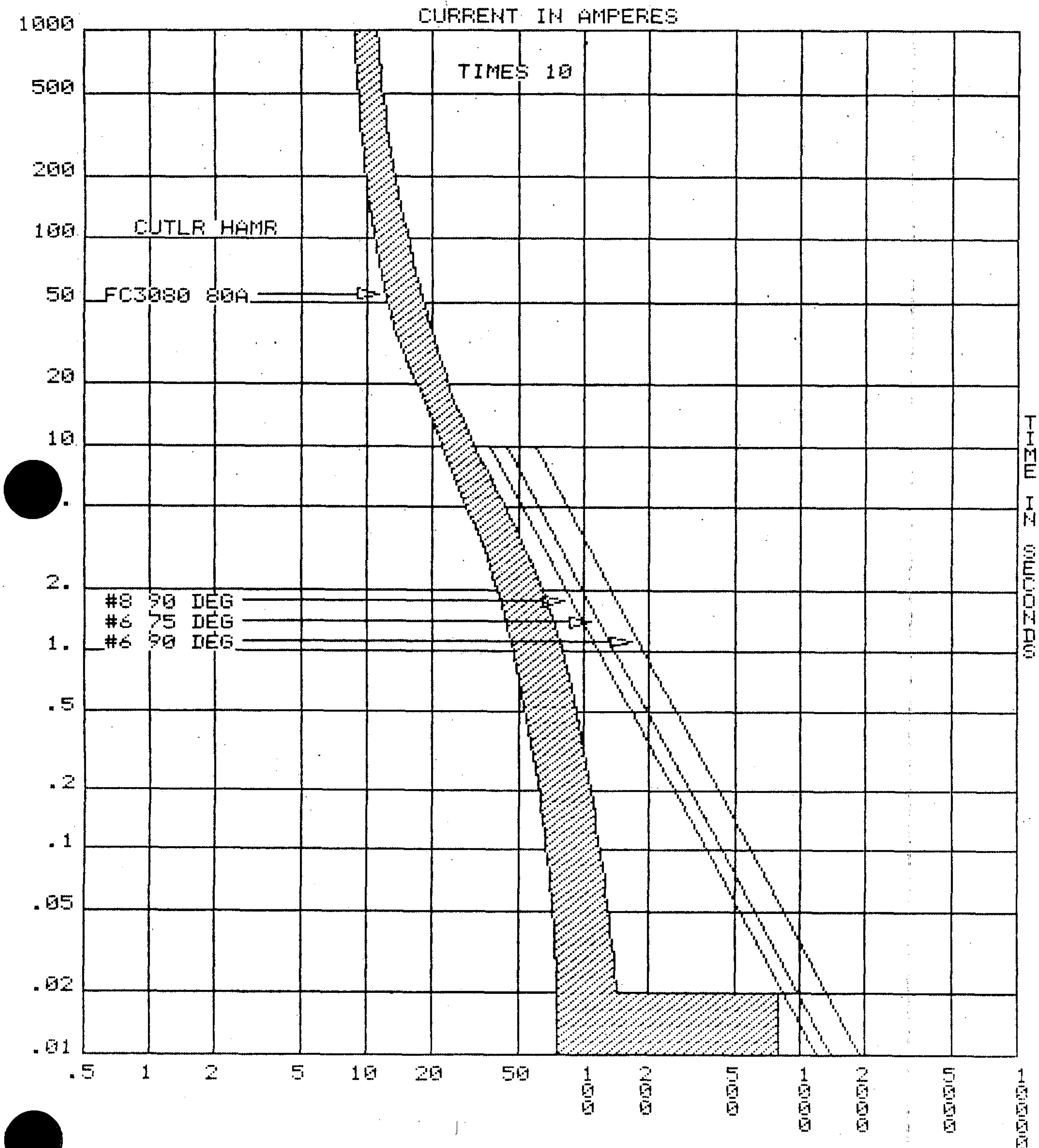
WBPEVAR9001006



DRAWING CURVE103 PLOT ELL: 120 SCALE: 10^0

SHEET C107
PREPARED [illegible] DATE 1-31-90
CHECKED RS DATE 1/31/90

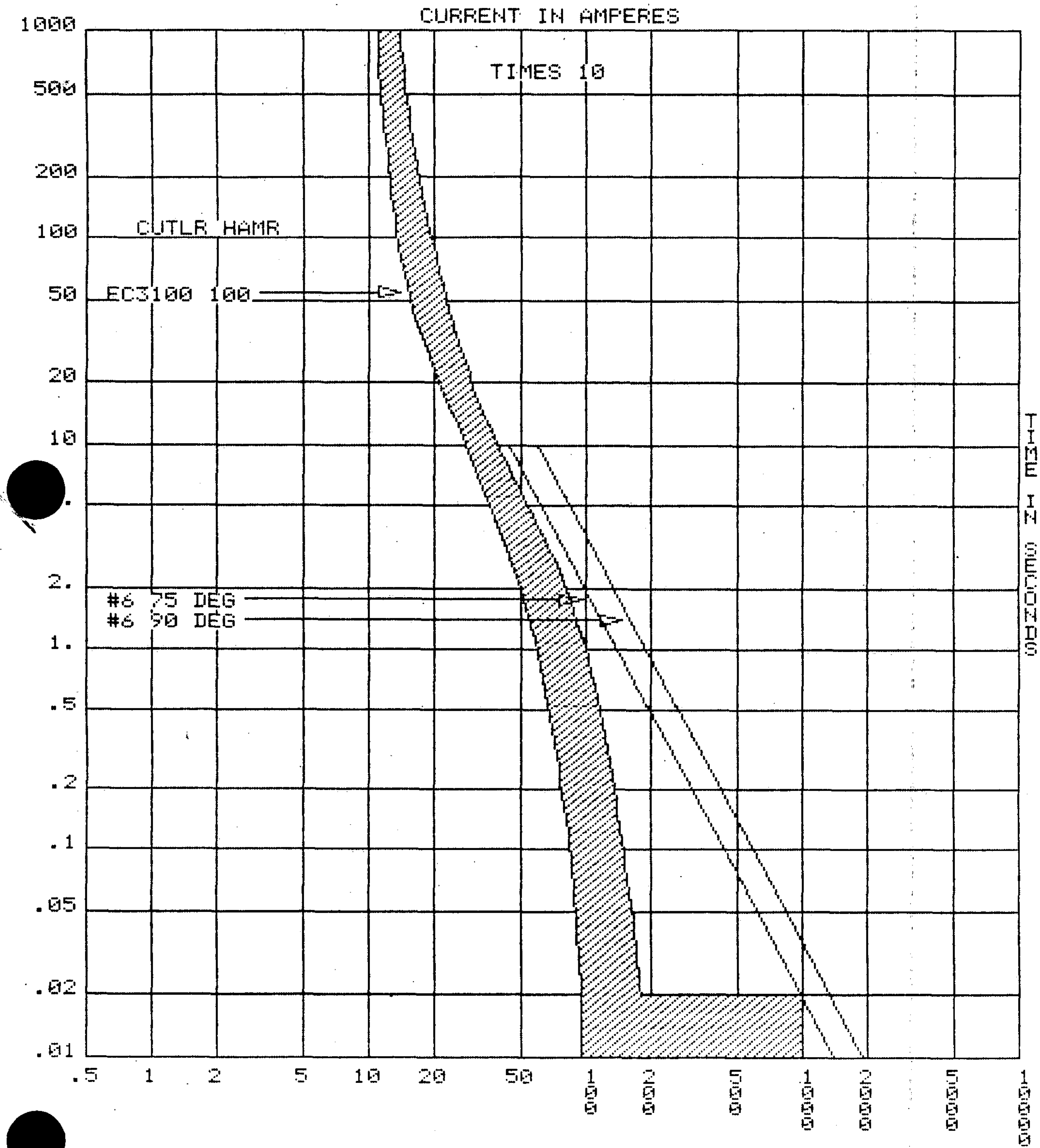
WBPEVAR 9001 006



DRAWING CURVE104 PLOT ELL: 120 SCALE: 10^1

SHEET C108
PREPARED [illegible] DATE 1-31-90
CHECKED PS DATE 1/31/90

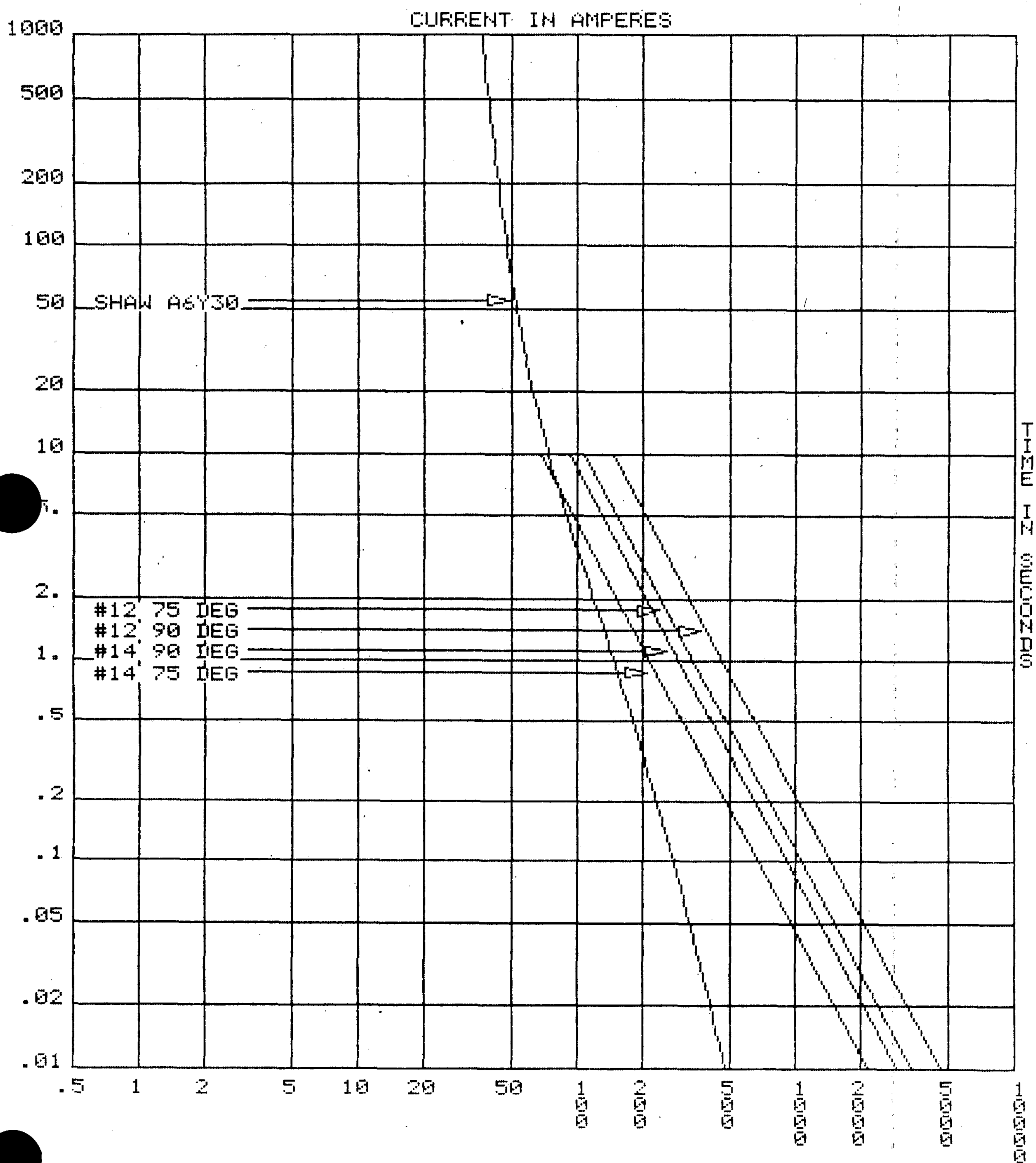
WBPEVAR9001006



DRAWING CURVE105 PLOT ELL: 120 SCALE: 10^1

SHEET C109
PREPARED [handwritten initials] DATE 1-31-90
CHECKED RS DATE 1/31/90

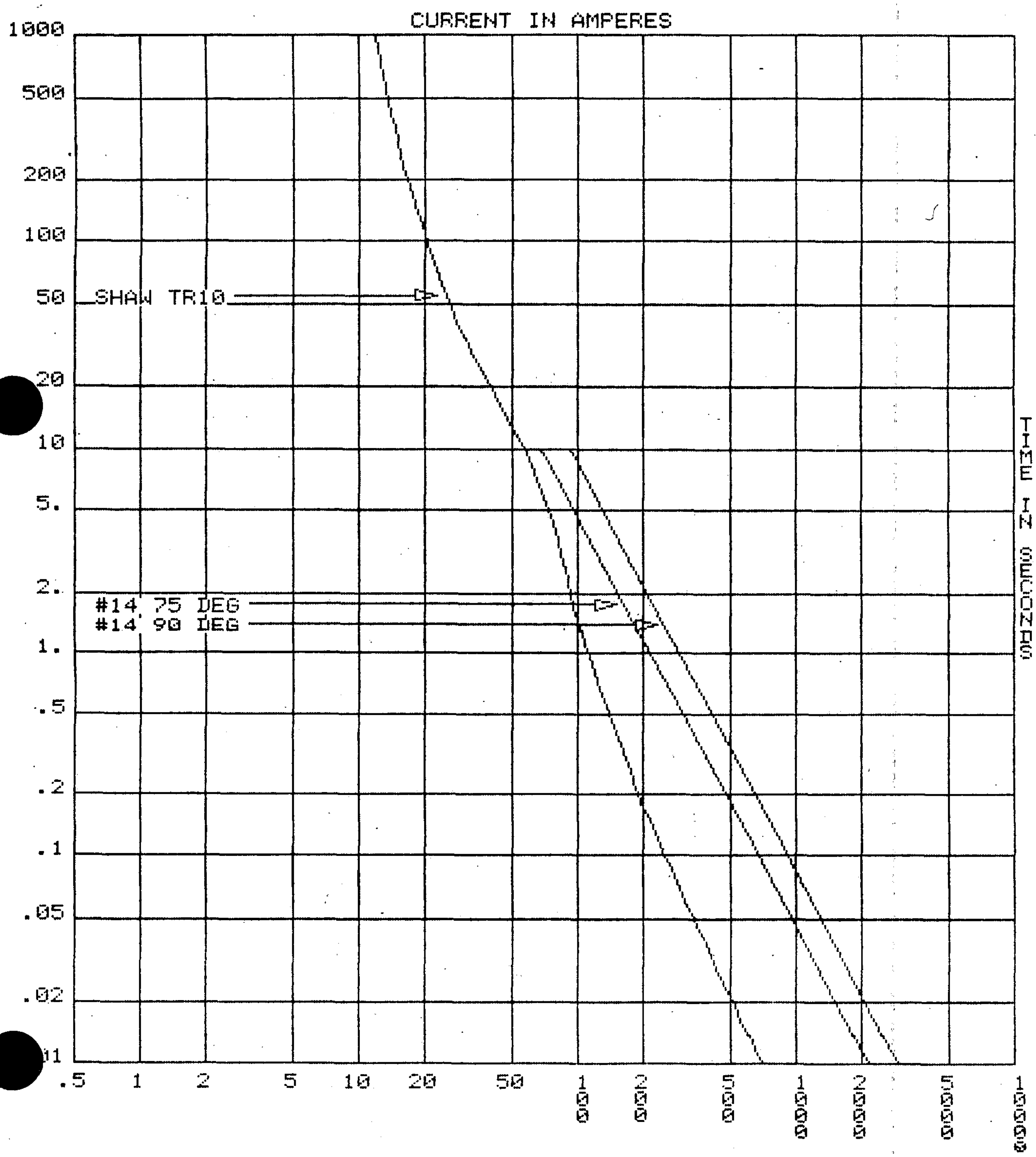
WBPEVAR 9001006



DRAWING CURVE106 PLOT ELL: 120 SCALE: 10^0

WBPEVAR 9001006

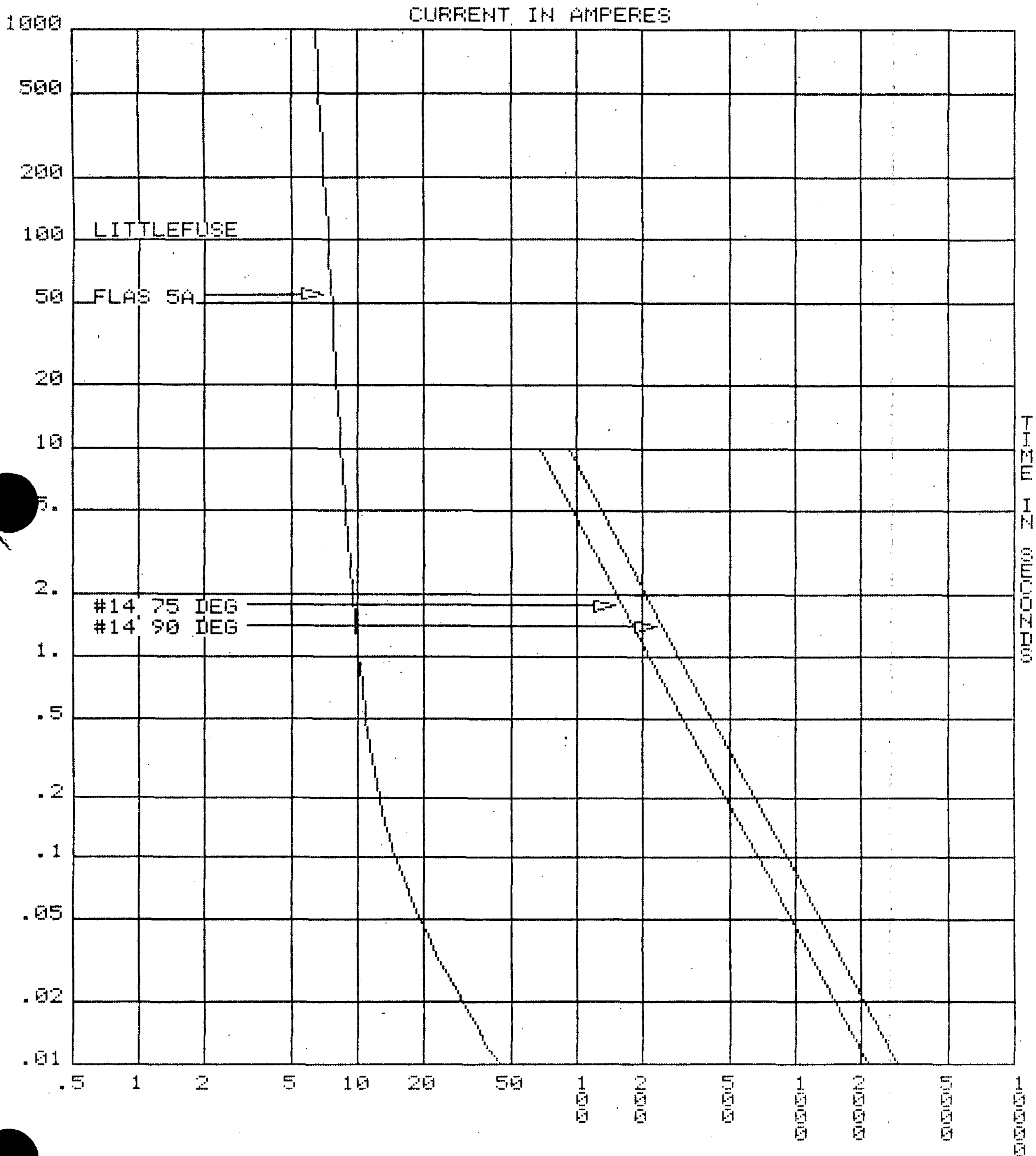
SHEET C110
PREPARED [illegible] DATE 1-31-90
CHECKED [illegible] DATE 1/31/90



DRAWING CURVE107 PLOT ELL: 120 SCALE: 10^0

WBPEVAR9001006

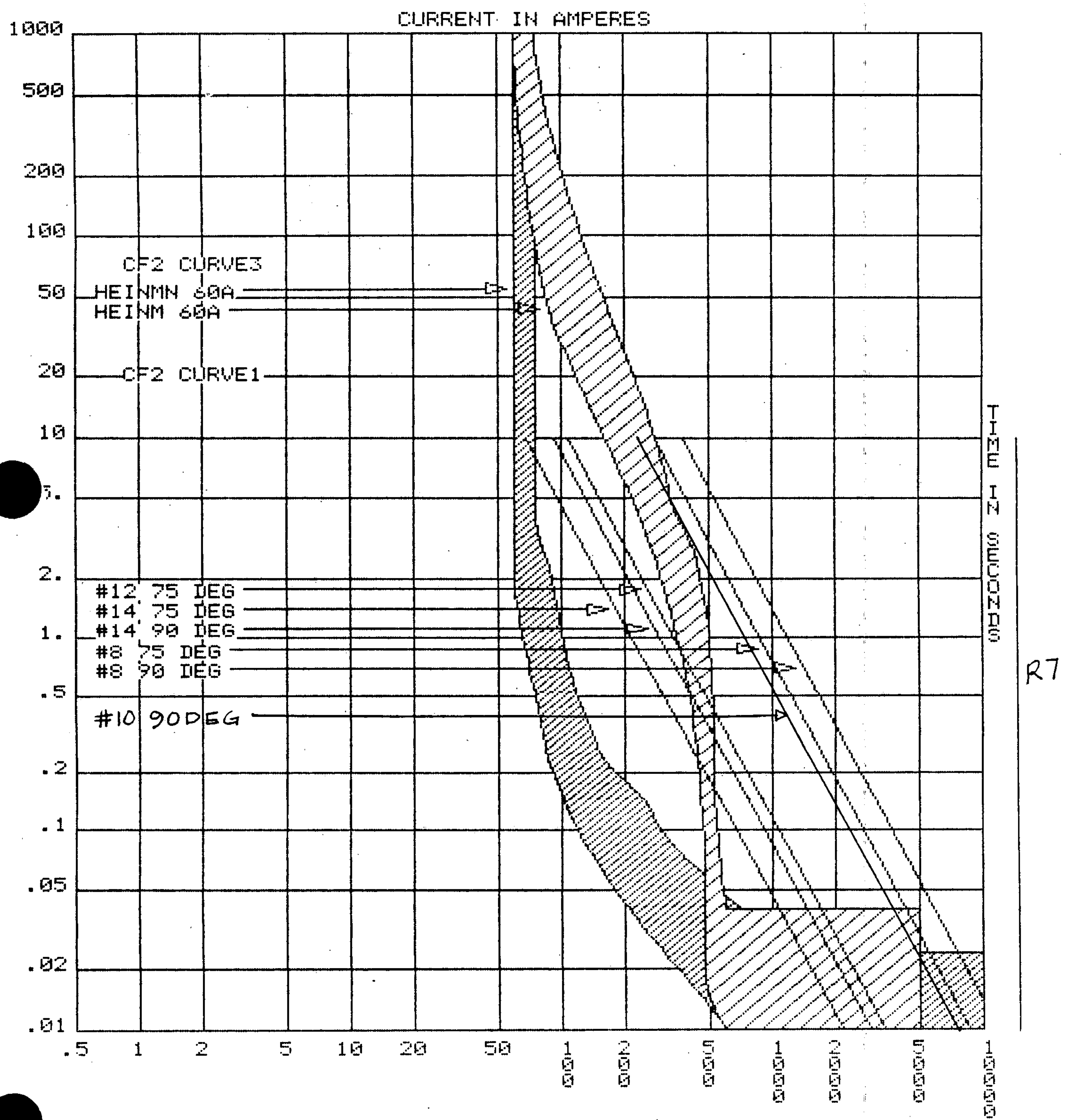
SHEET C111
PREPARED TDD DATE 1-31-90
CHECKED RS DATE 1/31/90



DRAWING CURVE108 PLOT ELL: 120 SCALE: 10^0

WBPEVAR 9001006

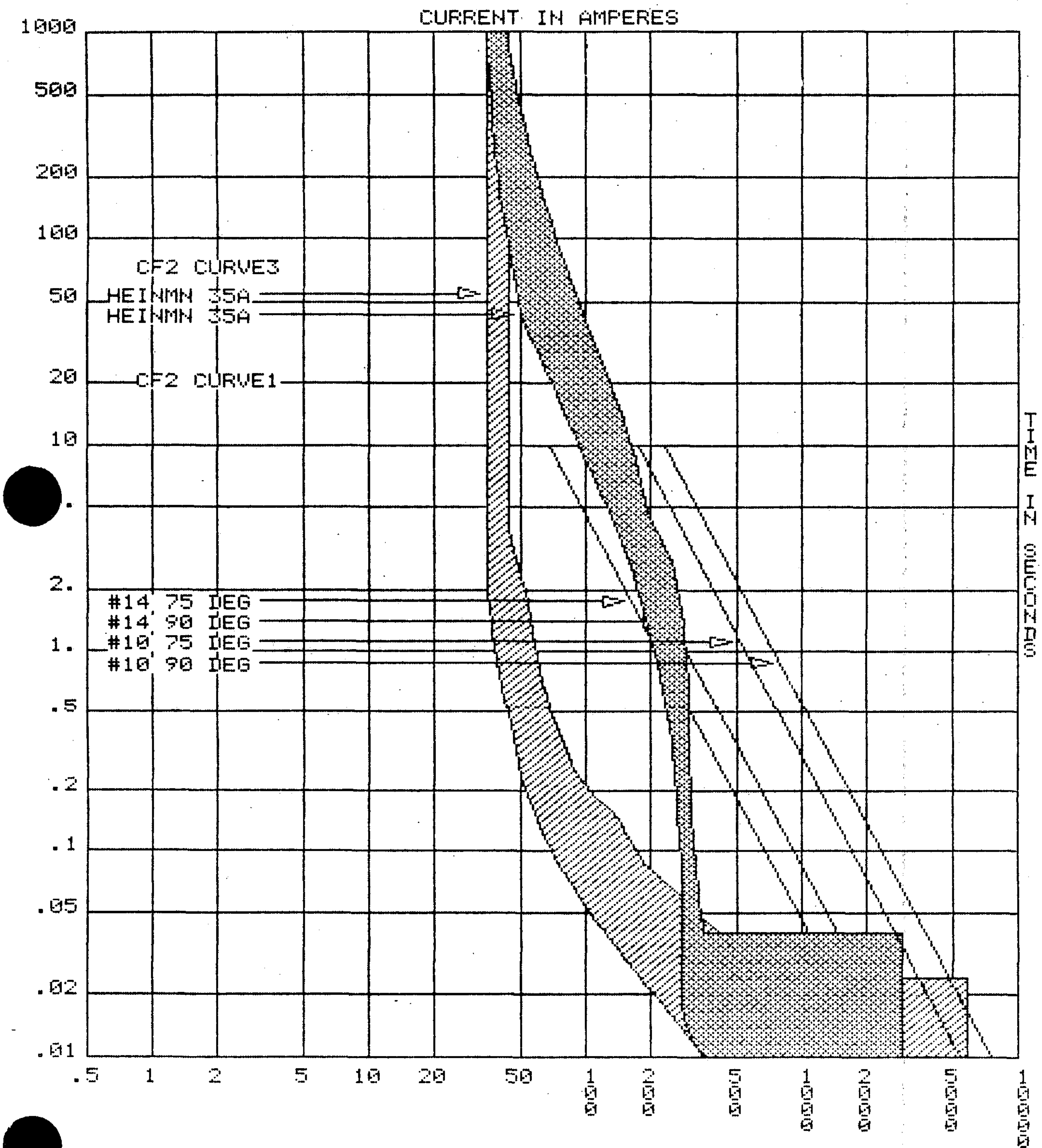
SHEET C112
PREPARED [illegible] DATE 1-31-90
CHECKED [illegible] DATE 2/1/90



DRAWING CURVE109 PLOT ELL: 120 SCALE: 10^0

WBPEVAR9001006

SHEET C113
PREPARED 7LD DATE 1-31-90
CHECKED RS DATE 2/1/90

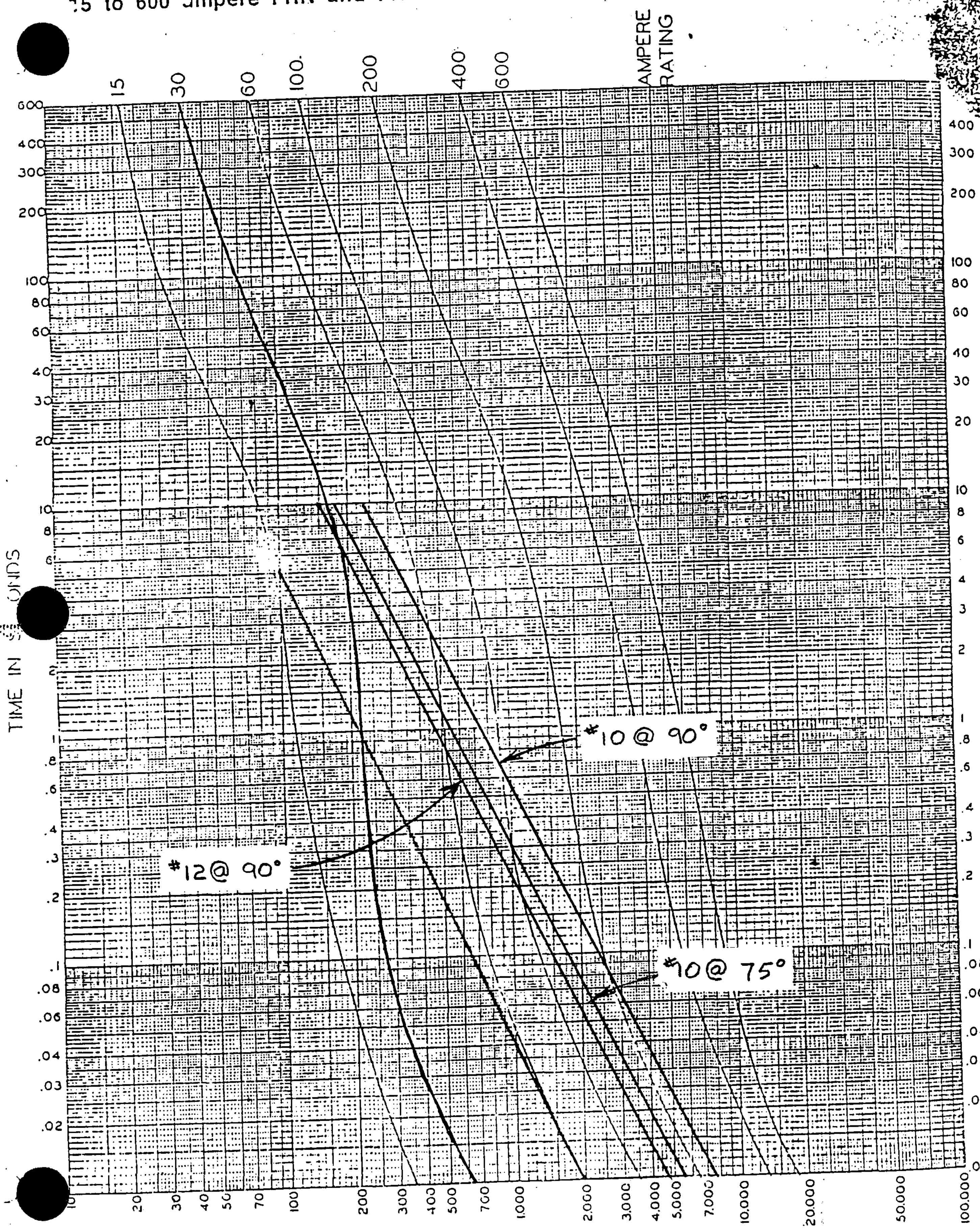


DRAWING CURVE110 PLOT ELL: 120 SCALE: 10^0

WBPEVAR9001006

SHEET C114

Average Melting Time Current Characteristic Curves*
15 to 600 ampere FRN and FRN-R FUSETRON Dual-Element Fuses (250 volt)



FORM 250
2-73

*For reference only.
Contact factory for latest information.

CURVE 111

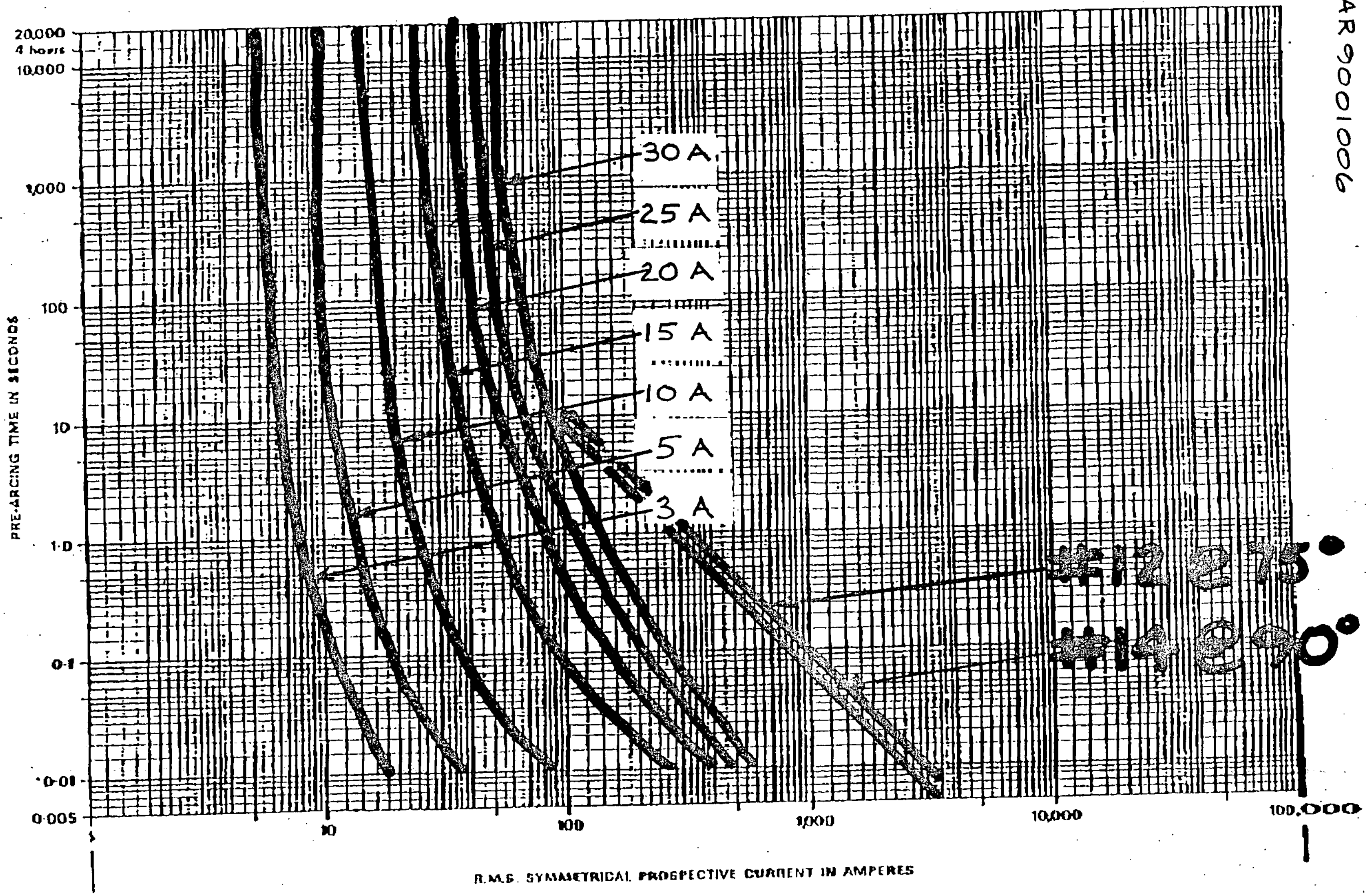
TYPE
BR

GEC – Englis.. ɛlectric H.R.C. Fuse-links

TIME-CUR..NT CHARACTERISTICS

WBPE VAR 9001006

CURVE 112



SHEET C115

20.11.46	F G H	17-1-36	M N R	CURVES FOR 25A & 30A EXTENDED TO 0·01s	2/91	R V W	REDRAWN FROM OBSOLETE FORMAT.					FGD 101/ BR
A		E			F							

GEC - English Electric Fusegear Ltd. Liverpool England

SHEET D1 OF

COMPUTED [illegible] DATE 2-2-90

CHECKED GCP DATE 2-2-90

ATTACHMENT D

SHORT CIRCUIT ANALYSIS

APPENDIX D - SHEET 1

SHORT CIRCUIT AC ANALYSIS

COMPUTED J.R. Hall DATE 2/2/90
CHECKED T.A.D DATE 2/2/90

PURPOSE: Assure that the available fault current of non-IE circuits entering or routed within Category I structures is less than breaker/fuse rating and protects the cables within their I^2T value. Identify breakers/fuses which do not provide protection.

METHODOLOGY:

The maximum short circuit current (Isc) thru transformers feeding 208/120 3Ø distribution boards is calculated using transformer data from walkdown. The walkdown data sheets are shown in Attachment D1. The transformer data; KVA, phase, % impedance and voltage is used to calculate Isc.

This short circuit is compared to the protective devices (breakers and fuses) minimum short circuit rating in distribution boards and panels, lighting cabinets and racks. The short circuit ratings are obtained from Appendix A, for the breaker/fuse with the least rating. Where the calculated Isc at boards, panels, cabinets, and racks exceeds the breaker/fuse rating, the actual Isc is calculated using cable impedance as follows:

Bases: MVA_B, KV_B, Z_B where $Z_B = KV_B^2 / MVA_B$ Ω

Transformer: $Z_T = \frac{\%Z}{100} \angle \tan^{-1} X/R$ PU (X/R from DG E2.4.6)

Cable: $Z_C = R_C + jX_C$ Ω (from DG E2.4.6)

$Z_C(PU) = Z_C / Z_B = (R + jX_C) \times MVA_B / KV_B^2$

$Z_{TOTAL} = Z_T + Z_C$ PU

COMPUTED J.R. Hall DATE 2/2/90
CHECKED TAD DATE 2/2/90

METHODOLOGY-CONT'D:

$$I_{SC} = I_B \times I_{PU} = \frac{MVA_B}{1.732 \times KV_B} \times \frac{1000}{|Z_{TOT}|} \quad \text{for } 3\phi$$

$$\text{OR} \quad \frac{MVA_B}{KV_B} \times \frac{1000}{|Z_{TOT}|} \quad \text{for } 1\phi$$

Attachment D2 shows the results (Phase 1) of the comparison between the maximum Isc and the least breaker (in the board, panel and cabinet) interrupting capacity. Futher analysis is performed in Attachment D4 and tabulated in Attachment D3.

Attachment D3 lists breakers which failed phase 1. ~~and require analysis of cable cable contribution~~ This phase 2 evaluation lists cable size, straight-line lengths, and results (PASS/FAIL) of calculated Isc per Attachment D4 versus breaker/fuse interrupt capacity.

CONCLUSION:

Attachment D3 lists the panel, board, and cabinet with the breaker number which failed the phase 1 evaluation and shows that all breakers pass using phase 2. Therefore, no replacement is necessary.

WBPEVAR9001006 R0

ATTACHMENT D1

ATTACHMENT 6

DIESEL GENERATOR NEUTRAL GROUNDING TRANSFORMERS, POWER TRANSFORMERS,
INVERTERS, BATTERY CHARGERS
AUXILIARY ELECTRICAL POWER EQUIPMENT
FIELD VERIFICATION DATA SHEET

EQUIPMENT UNID NO. 0-DXF-234-B/IPS EQUIPMENT NAME IPS HEAT TRACE XFMR B

DESCRIPTION JEFFERSON ELECTRIC POWERFORMER CAT. # 223-3174

SINGLE LINE DRAWING REFERENCE 45W755-4 R15

EQUIPMENT NAMEPLATE DATA BELOW ~~(INCLUDE TAP SETTINGS FOR TRANSFORMERS):~~ N/A

KVA : 20

PHASE : 3

% IMP : 3.4

VOLTAGE : 480-208/120V

INSULATION CLASS : H

°C RISE : 150

Prepared By E. Sqlaras

Date 1/25/90

Verified By T. R. Hall

Date 1/25/90

WBPEVAR 9001006 R0

ATTACHMENT D1

ATTACHMENT 6

DIESEL GENERATOR NEUTRAL GROUNDING TRANSFORMERS, POWER TRANSFORMERS, INVERTERS, BATTERY CHARGERS
AUXILIARY ELECTRICAL POWER EQUIPMENT
FIELD VERIFICATION DATA SHEET

EQUIPMENT UNID NO. 0-DXF-234-A/IPS EQUIPMENT NAME HEAT TRACE XFMR A

DESCRIPTION JEFFERSON ELECTRIC POWERFORMER CAT. 223-3174

SINGLE LINE DRAWING REFERENCE 45W755-2 R16

EQUIPMENT NAMEPLATE DATA BELOW ~~(INCLUDE TAP SETTINGS FOR TRANSFORMERS):~~ N/A

KVA: 20

PHASE: 3

% IMP: 3.4

VOLTAGE: 480-208/120 V

INSULATION CLASS: H

% RISE: 150

Prepared By E. J. Igharas

Date 1/25/90

Verified By J. R. Hall

Date 1/25/90

WBPEVAR9001006 R0
ATTACHMENT D1

ATTACHMENT 6

DIESEL GENERATOR NEUTRAL GROUNDING TRANSFORMERS, POWER TRANSFORMERS, INVERTERS, BATTERY CHARGERS
AUXILIARY ELECTRICAL POWER EQUIPMENT
FIELD VERIFICATION DATA SHEET

EQUIPMENT UNID NO. 0-OXF-228-1 EQUIPMENT NAME AUX BLDG LTG BD 1 XFMR △

DESCRIPTION WESTINGHOUSE SERIAL NO. PAV 0354-01

SINGLE LINE DRAWING REFERENCE 45W 765 R12

EQUIPMENT NAMEPLATE DATA BELOW ~~(INCLUDE TAP SETTINGS FOR TRANSFORMERS):~~ N/A

KVA: 300

PHASE 3

% IMP.: 4.56

VOLTAGE: 6900-208Y/120 V

INSULATION CLASS: OA

°C RISE: 55

△ PER SINGLE LINE

Prepared By E. J. Johans
Date 1/25/90

Verified By L. R. Hall
Date 1/25/90

WBPEVAR9001006 R0
ATTACHMENT D1

ATTACHMENT 6

DIESEL GENERATOR NEUTRAL GROUNDING TRANSFORMERS, POWER TRANSFORMERS, INVERTERS, BATTERY CHARGERS
AUXILIARY ELECTRICAL POWER EQUIPMENT
FIELD VERIFICATION DATA SHEET

EQUIPMENT UNID NO. 0-CXF-228-2 EQUIPMENT NAME AUX BLDG LTG BD 2 XFMR Δ

DESCRIPTION WESTINGHOUSE SERIAL NO. PAV 0354-02

SINGLE LINE DRAWING REFERENCE 45W735R12

EQUIPMENT NAMEPLATE DATA BELOW ~~(INCLUDE TAP SETTINGS FOR TRANSFORMERS):~~ N/A

KVA: 300

PHASE: 3

% IMP.: 4.66

VOLTAGE: 6900-208Y/120V

INSULATION CLASS: OA

°C RISE: 55

Δ PER SINGLE LINE

Prepared By E. J. Agkavas
Date 1/25/90

Verified By R. Hall
Date 1/25/90

WBPEVAR9001006 R0

ATTACHMENT D1

ATTACHMENT 6

**DIESEL GENERATOR NEUTRAL GROUNDING TRANSFORMERS, POWER TRANSFORMERS, INVERTERS, BATTERY CHARGERS
AUXILIARY ELECTRICAL POWER EQUIPMENT
FIELD VERIFICATION DATA SHEET**

EQUIPMENT UNID NO. 0-OXF-229-3 EQUIPMENT NAME AUX BLDG LTG BD 3 XFMR △

DESCRIPTION WESTINGHOUSE SERIAL NO. PAV 0354-03

SINGLE LINE DRAWING REFERENCE 45W735 R12

EQUIPMENT NAMEPLATE DATA BELOW (INCLUDE TAP SETTINGS FOR TRANSFORMERS):

KVA = 300

PHASE: 3

% IMP.: 4.53

VOLTAGE: 6900-208Y/120 V

INSULATION: OA

°C RISE: 55

△ PER SINGLE LINE

Prepared By E. J. [signature]

Date 1/26/90

Verified By T. R. Hall

Date 1/26/90

WBPEVAR9001006 R0
ATTACHMENT D1

ATTACHMENT 6

DIESEL GENERATOR NEUTRAL GROUNDING TRANSFORMERS, POWER TRANSFORMERS,
INVERTERS, BATTERY CHARGERS
AUXILIARY ELECTRICAL POWER EQUIPMENT
FIELD VERIFICATION DATA SHEET

EQUIPMENT UNID NO. 0-0XF-228-4 EQUIPMENT NAME AUX BLDG LTG BD 4 XFMR △

DESCRIPTION WESTINGHOUSE SERIAL NO. 0354-04

SINGLE LINE DRAWING REFERENCE 45W735 R12

EQUIPMENT NAMEPLATE DATA BELOW ~~(INCLUDE TAP SETTINGS FOR TRANSFORMERS):~~ N/A

KVA : 300

PHASE : 3

% IMP. : 4.60

VOLTAGE : 6900-208Y/120

INSULATION CLASS: OA

°C RISE : 55

△ PER SINGLE LINE

Prepared By E. I. Iglesias

Date 1/26/90

Verified By J. R. Hall

Date 1/26/90

WBPEVAR9001006 R0
ATTACHMENT D1

ATTACHMENT 6

DIESEL GENERATOR NEUTRAL GROUNDING TRANSFORMERS, POWER TRANSFORMERS, INVERTERS, BATTERY CHARGERS
AUXILIARY ELECTRICAL POWER EQUIPMENT
FIELD VERIFICATION DATA SHEET

EQUIPMENT UNID NO. 2-DXF-237-A EQUIPMENT NAME INSTRUMENT POWER TRANSFORMER 2A

DESCRIPTION FEDERAL PACIFIC SERIAL NO. 26751-003

SINGLE LINE DRAWING REFERENCE 45N700-1 R5

EQUIPMENT NAMEPLATE DATA BELOW ~~(INCLUDE TAP SETTINGS FOR TRANSFORMERS):~~

KVA: 50

PHASE: 1

% IMP.: 4.0

VOLTAGE: 240 X 480 - 120/240 V

INSULATION CLASS: FH

°C RISE: 150

Prepared By E. J. Seharas
Date 1/25/90

Verified By J. R. Hall
Date 1/25/90

WBPE VAR9001006 R0
ATTACHMENT D1

ATTACHMENT 6

DIESEL GENERATOR NEUTRAL GROUNDING TRANSFORMERS, POWER TRANSFORMERS,
INVERTERS, BATTERY CHARGERS
AUXILIARY ELECTRICAL POWER EQUIPMENT
FIELD VERIFICATION DATA SHEET

EQUIPMENT UNID NO. 1-DXF-237-B EQUIPMENT NAME INSTRUMENT POWER TRANSFORMER 1B

DESCRIPTION FEDERAL PACIFIC SERIAL NO. 26751-002

SINGLE LINE DRAWING REFERENCE 45N700-1 R5

EQUIPMENT NAMEPLATE DATA BELOW ~~(INCLUDE TAP SETTINGS FOR TRANSFORMERS).~~ N/A

KVA : 50

PHASE : 1

% IMP. : 4.0

VOLTAGE: 240X480 - 120/240 V

INSULATION CLASS : FH

°C RISE : 150

Prepared By C. J. Iglarias
Date 1/25/90

Verified By T. R. Hall
Date 1/25/90

WBPE VAR 9001006 RO

ATTACHMENT D1

ATTACHMENT 6

DIESEL GENERATOR NEUTRAL GROUNDING TRANSFORMERS, POWER TRANSFORMERS,
INVERTERS, BATTERY CHARGERS
AUXILIARY ELECTRICAL POWER EQUIPMENT
FIELD VERIFICATION DATA SHEET

EQUIPMENT UNID NO. 1-DXF-237-A EQUIPMENT NAME INSTRUMENT POWER TRANSFORMER 1A

DESCRIPTION FEDERAL PACIFIC SERIAL NO. 26751-001

SINGLE LINE DRAWING REFERENCE 45N700-1 R5

EQUIPMENT NAMEPLATE DATA BELOW ~~(INCLUDE TAP SETTINGS FOR TRANSFORMERS)~~: N/A

KVA: 50

PHASE 1

% IMP.: 4.0

VOLTAGE: 240X480 - 120/240 V

INSULATION CLASS: FH

°C RISE: 150

Prepared By E. J. Jekavas

Date 1/25/90

Verified By J. R. Hall

Date 1/25/90

WBPE VAR 9001006 R0
ATTACHMENT D1

ATTACHMENT 6

DIESEL GENERATOR NEUTRAL GROUNDING TRANSFORMERS, POWER TRANSFORMERS,
INVERTERS, BATTERY CHARGERS
AUXILIARY ELECTRICAL POWER EQUIPMENT
FIELD VERIFICATION DATA SHEET

EQUIPMENT UNID NO. 2-DXF-237-B EQUIPMENT NAME INSTRUMENT POWER TRANSFORMER 2B

DESCRIPTION FEDERAL PACIFIC SERIAL NO. 26751-004

SINGLE LINE DRAWING REFERENCE 45N700-1 R5

EQUIPMENT NAMEPLATE DATA BELOW (~~INCLUDE TAP SETTINGS FOR TRANSFORMERS):~~ N/A

KVA: 50

PHASE: 1

% IMP.: 4.0

VOLTAGE: 240 X 480 - 120/240 V

INSULATION CLASS: FH

°C RISE: 150

Prepared By E. J. Igtavas
Date 1/25/90

Verified By [signature]
Date 1/25/90

WBPEVAR9001006 R0
ATTACHMENT D1

ATTACHMENT 6

DIESEL GENERATOR NEUTRAL GROUNDING TRANSFORMERS, POWER TRANSFORMERS, INVERTERS, BATTERY CHARGERS
AUXILIARY ELECTRICAL POWER EQUIPMENT
FIELD VERIFICATION DATA SHEET

EQUIPMENT UNID NO. 0-DXF-227-2* EQUIPMENT NAME XFMR FOR L.C. LS-3 *

DESCRIPTION FEDERAL PACIFIC ELECTRIC CO. CONTRACT 75-86438 *

SINGLE LINE DRAWING REFERENCE 45W756-6 R31

EQUIPMENT NAMEPLATE DATA BELOW (~~INCLUDE TAP SETTINGS FOR TRANSFORMERS):~~ N/A

* KVA: 30

* PHASE: 3

* % IMP: 5.6

* VOLTAGE: 480-208Y/120

* INSULATION CLASS: H

* °C RISE: 150

* Transformer inaccessible. Data was obtained from design review as follows: Conduit & Grounding drawing 45W804-11 R20 shows the transformer MK. BCO and conduit 1½I-L1112 extending to Lighting Cabinet LS-3. Contract data for MK. BCO is attached. UNID No. based on Conduit ID/CCRS.

Prepared By [signature]
Date 1/26/90

Verified By E. J. [signature]
Date 1/26/90

FEDERAL PACIFIC ELECTRIC COMPANY

TRANSFORMER PLANT DES PLAINES, ILLINOIS

WBPEVAR9001006 RO
ATTACHMENT D1

TRANSFORMER PERFORMANCE DATA

INSULATION CLASS	H
TYPE	Dry
PHASE	3
KVA	30
HIGH VOLTAGE	600 Volts and Below
LOW VOLTAGE	600 Volts and Below
TAPS	Standard
APPLIED VOLTAGE HV	2.5KV to 250 Volts, 4KV Above 250 Volts
APPLIED VOLTAGE LV	2.5KV to 250 Volts, 4KV Above 250 Volts
CORE LOSS	200 Watts
LOAD LOSS @170°C	1550 Watts
IMPEDANCE VOLTAGE	5.6%

MP

% REGULATION			% EFFICIENCY				
1.0 PF	___ PF	0.80 PF	125% LOAD	100% LOAD	75% LOAD	50% LOAD	25% LOAD
5.2		5.7		94.5	95.5	96.2	96.2

75K3-86438
ITEM 4
"BCD"
WATTS BAR NUCLEAR PLANT

TVA
JAN 8 1976
~~SEQUOYAH~~
CONTRACT NO: 75-86438
TITLE: Aux Transf
CHECKED:

TRANSFORMERS CONFORM TO APPLICABLE ASA, NEMA AND AIEE STANDARDS.

SIGNED Dean Dimizas DATE May 11, 1970

DEAN DIMIZAS, ENGINEER

FILE

WBPEVAR9001006 R0

ATTACHMENT D1

ATTACHMENT 6

DIESEL GENERATOR NEUTRAL GROUNDING TRANSFORMERS, POWER TRANSFORMERS,
INVERTERS, BATTERY CHARGERS
AUXILIARY ELECTRICAL POWER EQUIPMENT
FIELD VERIFICATION DATA SHEET

EQUIPMENT UNID NO. 0-DXF-228-1-B EQUIPMENT NAME STANDBY LIGHTING CAB XFMR NO. 2 △

DESCRIPTION FEDERAL PACIFIC SERIAL NO: 27527-004

SINGLE LINE DRAWING REFERENCE 45W756-6 R31

EQUIPMENT NAMEPLATE DATA BELOW ~~(INCLUDE TAP SETTINGS FOR TRANSFORMERS):~~ N/A

KVA: 45

PHASE: 3

% IMP: -4.72

VOLTAGE: 480 - 208/120 V

INSULATION: FH

°C RISE: 150

△ PER SINGLE LINE

Prepared By E. S. Igharas

Date 1/25/90

Verified By T. R. Hall

Date 1/25/90

WBPEVAR9001006 R0

ATTACHMENT D1

ATTACHMENT 6

DIESEL GENERATOR NEUTRAL GROUNDING TRANSFORMERS, POWER TRANSFORMERS, INVERTERS, BATTERY CHARGERS
AUXILIARY ELECTRICAL POWER EQUIPMENT
FIELD VERIFICATION DATA SHEET

EQUIPMENT UNID NO. 0-DXF-234-B1/CVCS* EQUIPMENT NAME CVCS HEAT TRACE XFMR B1

DESCRIPTION JEFFERSON ELECTRIC POWERFORMER CAT. 223-3234

SINGLE LINE DRAWING REFERENCE 45W760-6 R31

EQUIPMENT NAMEPLATE DATA BELOW ~~(INCLUDE TAP SETTINGS FOR TRANSFORMERS)~~: N/A

KVA: 75

PHASE: 3

% IMP.: 2.5

VOLTAGE: 480-208Y/120 V

INSULATION CLASS: H

~~%~~ EJJ 1/25/90 JAM 1/25/90

°C RISE: 150

CONDUIT ID: 2PLC3229

*UNID NO. BASED ON CONDUIT ID AND CCRS.

Prepared By E. J. Iglarias

Date 1/25/90

Verified By T. R. Hall

Date 1/25/90

WBPEVAR9001006 RO

ATTACHMENT D1

ATTACHMENT 6

DIESEL GENERATOR NEUTRAL GROUNDING TRANSFORMERS, POWER TRANSFORMERS,
INVERTERS, BATTERY CHARGERS
AUXILIARY ELECTRICAL POWER EQUIPMENT
FIELD VERIFICATION DATA SHEET
B1/SIS EJJ 1/25/90

EQUIPMENT UNID NO. ~~0-PXF-234-A4~~ * EQUIPMENT NAME TRANSFORMER #4

DESCRIPTION JEFFERSON ELECTRIC POWER FORMER CAT. NO. 213-144

SINGLE LINE DRAWING REFERENCE 45W 760-5 R23

EQUIPMENT NAMEPLATE DATA BELOW ~~(INCLUDE TAP SETTINGS FOR TRANSFORMERS):~~ N/A

KVA : 9

PHASE: 3

% IMP: 2.3

VOLTAGE: 480-208 Y/120

INSULATION CLASS: H

°C RISE: NOT GIVEN

CONDUIT ID: 1PLC 3298

* UNID NO. BASED ON CONDUIT ID AND CCRS.

Prepared By E. J. Johnson

Date 1/25/90

Verified By J. R. Hall

Date 1/25/90

WBPE VAR 9001006 RO
ATTACHMENT D1

ATTACHMENT 6

DIESEL GENERATOR NEUTRAL GROUNDING TRANSFORMERS, POWER TRANSFORMERS, INVERTERS, BATTERY CHARGERS
AUXILIARY ELECTRICAL POWER EQUIPMENT
FIELD VERIFICATION DATA SHEET

EQUIPMENT UNID NO. 0-DXF-234-B2/SIS* EQUIPMENT NAME SIS HEAT TRACE XFMR B2 Δ

DESCRIPTION JEFFERSON ELECTRIC POWERFORMER CAT 213-144

SINGLE LINE DRAWING REFERENCE 45W756-5 R23

EQUIPMENT NAMEPLATE DATA BELOW ~~(INCLUDE TAP SETTINGS FOR TRANSFORMERS):~~ N/A

KVA: 9

PHASE: 3

% IMP.: 2.3

VOLTAGE: 480 - 208Y/120

INSULATION CLASS: H

°C RISE: NOT GIVEN

CONDUIT: 2PLC 3238

* UNID NO. BASED ON CONDUIT ID AND CCRS.

Δ PER SINGLE LINE

Prepared By E. J. Iglaras

Date 1/25/90

Verified By S. R. Hall

Date 1/25/90

WBPEVAR 9001006 R0
ATTACHMENT D1

ATTACHMENT 6

DIESEL GENERATOR NEUTRAL GROUNDING TRANSFORMERS, POWER TRANSFORMERS, INVERTERS, BATTERY CHARGERS
AUXILIARY ELECTRICAL POWER EQUIPMENT
FIELD VERIFICATION DATA SHEET

EQUIPMENT UNID NO. 0-DXF-234-B4/CVCS EQUIPMENT NAME CVCS HEAT TRACE TRANSFORMER B4

DESCRIPTION JEFFERSON ELECTRIC POWERFORMER CAT. NO. 213-144

SINGLE LINE DRAWING REFERENCE 45W756-5 R23

EQUIPMENT NAMEPLATE DATA BELOW ~~(INCLUDE TAP SETTINGS FOR TRANSFORMERS):~~ N/A

KVA : 9
PHASE : 3
% IMP. : 2.3
VOLTAGE : 480-208Y/120 V
INSULATION CLASS : H.

Prepared By E. J. Iglesias
Date 1/26/90

Verified By T. R. Hall
Date 1/26/90

WBPEVAR9001006 RO
ATTACHMENT D1

ATTACHMENT 6

DIESEL GENERATOR NEUTRAL GROUNDING TRANSFORMERS, POWER TRANSFORMERS,
INVERTERS, BATTERY CHARGERS
AUXILIARY ELECTRICAL POWER EQUIPMENT
FIELD VERIFICATION DATA SHEET

EQUIPMENT UNID NO. 2-DXF-242-1 EQUIPMENT NAME RAD MONITOR, SAMPLING, ~~FIRE PROT.~~ XFMR Δ

DESCRIPTION FEDERAL PACIFIC SERIAL NO. 27494-002

SINGLE LINE DRAWING REFERENCE 45W756-1 R25

EQUIPMENT NAMEPLATE DATA BELOW ~~(INCLUDE TAP SETTINGS FOR TRANSFORMERS):~~ N/A

KVA : 37.5

PHASE : 1

% IMP. : 4.12

VOLTAGE : 240 X 480 - 120/240 V

INSULATION : FH

°C RISE : 150

Δ PER SINGLE LINE

Prepared By E. J. Iskaras
Date 1/25/90

Verified By J. R. Hall
Date 1/25/90

WBPEVAR9001006 R0
ATTACHMENT D1

ATTACHMENT 6

DIESEL GENERATOR NEUTRAL GROUNDING TRANSFORMERS, POWER TRANSFORMERS,
INVERTERS, BATTERY CHARGERS
AUXILIARY ELECTRICAL POWER EQUIPMENT
FIELD VERIFICATION DATA SHEET

EQUIPMENT UNID NO. 1-DXF-242-1 EQUIPMENT NAME RAD MONITOR, SAMPLING, ~~FIRE PROTECTION~~ XFMR △

DESCRIPTION FEDERAL PACIFIC SERIAL NO. 27722-012

SINGLE LINE DRAWING REFERENCE 45W756-1 R25

EQUIPMENT NAMEPLATE DATA BELOW ~~(INCLUDE TAP SETTINGS FOR TRANSFORMERS):~~ N/A

KVA: 37.5

PHASE: 1

% IMP: NOT STAMPED; ASSUMED 4.12 BASED ON FIELD VERIFICATION OF UNIT 2 COUNTERPART.

VOLTAGE: 240 X 480 - 120/240 V

°C RISE: 150

INSULATION CLASS: FH

△ PER SINGLE LINE

Prepared By E. I. Iglarar
Date 1/25/90

Verified By R. Hall
Date 1/25/90

WBPEVAR 9001006 R0
ATTACHMENT D1

ATTACHMENT 6

DIESEL GENERATOR NEUTRAL GROUNDING TRANSFORMERS, POWER TRANSFORMERS,
INVERTERS, BATTERY CHARGERS
AUXILIARY ELECTRICAL POWER EQUIPMENT
FIELD VERIFICATION DATA SHEET

EQUIPMENT UNID NO. 0-DXF-234-A4 * EQUIPMENT NAME CVCS HEATTRACE XFMR A4 △

DESCRIPTION JEFFERSON ELECTRIC POWERFORMER CAT. 213-144

SINGLE LINE DRAWING REFERENCE 45W756-1 R25

EQUIPMENT NAMEPLATE DATA BELOW ~~(INCLUDE TAP SETTINGS FOR TRANSFORMERS):~~ N/A

KVA: 9

PHASE: 3

% IMP.: 2.3

VOLTAGE: 480-208Y/120

INSULATION CLASS: H

CONDUIT ID - 2PLC 3298

* UNID NO. BASED ON CONDUIT ID AND CCRS

△ PER SINGLE LINE

Prepared By E. J. Johanas
Date 1/26/90

Verified By T. R. Hall
Date 1/26/90

WBPEVAR9001006 R0
ATTACHMENT D1

ATTACHMENT 6

DIESEL GENERATOR NEUTRAL GROUNDING TRANSFORMERS, POWER TRANSFORMERS, INVERTERS, BATTERY CHARGERS
AUXILIARY ELECTRICAL POWER EQUIPMENT
FIELD VERIFICATION DATA SHEET SIS HEAT TRACE XFMR Δ

EQUIPMENT UNID NO. 0-DXF-234-A1/SIS* EQUIPMENT NAME TRANSFORMER #3

DESCRIPTION JEFFERSON ELECTRIC POWERFORMER CAT. 213-144

SINGLE LINE DRAWING REFERENCE 45W756-1 R25

EQUIPMENT NAMEPLATE DATA BELOW ~~(INCLUDE TAP SETTINGS FOR TRANSFORMERS):~~ N/A

KVA: 9

PHASE: 3

% IMP.: 2.3

VOLTAGE: 480-208Y/120 V

INSULATION CLASS: H

CONDUIT ID: 1PLC3299

* UNID NO. BASED ON CONDUIT ID AND CCRS

Δ PER SINGLE LINE

Prepared By E. [illegible] Date 1/26/90

Verified By [illegible] Date 1/26/90

WBPEVAR 9001006 R0
ATTACHMENT D1

ATTACHMENT 6

DIESEL GENERATOR NEUTRAL GROUNDING TRANSFORMERS, POWER TRANSFORMERS,
INVERTERS, BATTERY CHARGERS
AUXILIARY ELECTRICAL POWER EQUIPMENT
FIELD VERIFICATION DATA SHEET

EQUIPMENT UNID NO. 0-DXF-234-A2/615* EQUIPMENT NAME 615 HEAT TRACE XFMR Δ

DESCRIPTION JEFFERSON ELECTRIC POWERFORMER CAT. NO. 213-144

SINGLE LINE DRAWING REFERENCE 45W756-1 R25

EQUIPMENT NAMEPLATE DATA BELOW ~~(INCLUDE TAP SETTINGS FOR TRANSFORMERS):~~ N/A

KVA: 9

PHASE: 3

% IMP.: 2.3

VOLTAGE: 480 - 208Y/120 V

INSULATION CLASS: H

CONDUIT ID: ~~2PLC 3239~~ 2PLC 3239 EJJ 1/26/90 JML 1/26/90

* UNID NO. BASED ON CONDUIT ID AND CCRS

Δ PER SINGLE LINE

Prepared By E. J. Salanas

Date 1/26/90

Verified By T. R. Hall

Date 1/26/90

WBPEVAR9001006 R0
ATTACHMENT D1

ATTACHMENT 6

DIESEL GENERATOR NEUTRAL GROUNDING TRANSFORMERS, POWER TRANSFORMERS,
INVERTERS, BATTERY CHARGERS
AUXILIARY ELECTRICAL POWER EQUIPMENT
FIELD VERIFICATION DATA SHEET

EQUIPMENT UNID NO. 0-DXF-227-1 * EQUIPMENT NAME XFMR FOR L.C. LS-1 *

DESCRIPTION FEDERAL PACIFIC ELECTRIC CO. CONTRACT 75-86438 *

SINGLE LINE DRAWING REFERENCE 45W756-2R31

EQUIPMENT NAMEPLATE DATA BELOW ~~(INCLUDE TAP SETTINGS FOR TRANSFORMERS):~~ N/A

* KVA: 30

* PHASE: 3

* %IMP: 5.6

* VOLTAGE: 480-208Y/120

* INSULATION CLASS: H

* °C RISE: 150

* Transformer inaccessible. Data was obtained from design review as follows: Conduit & Grounding Drawing 45W804-5 R25 shows the transformer MK. BCO and conduit 1½I-L1111 extending to Lighting cabinet LS1. Contract data for MK. BCO is attached. UNID NO. based on CONDUIT ID/CCR.

Prepared By [signature] Verified By E J [signature]

Date 1/26/90 Date 1/26/90

FEDERAL PACIFIC ELECTRIC COMPANY

Page D27

TRANSFORMER PLANT DES PLAINES, ILLINOIS

WBPEVAR9001006 R0
ATTACHMENT D1

TRANSFORMER PERFORMANCE DATA

INSULATION CLASS ________ H

TYPE ________ Dry

PHASE ________ 3

KVA ________ 30

HIGH VOLTAGE ________ 600 Volts and Below

LOW VOLTAGE ________ 600 Volts and Below

TAPS ________ Standard

APPLIED VOLTAGE HV ________ 2.5KV to 250 Volts, 4KV Above 250 Volts

APPLIED VOLTAGE LV ________ 2.5KV to 250 Volts, 4KV Above 250 Volts

CORE LOSS ________ 200 Watts

LOAD LOSS @170°C ________ 1550 Watts

IMPEDANCE VOLTAGE ________ 5.6%

MF

% REGULATION			% EFFICIENCY				
1.0 PF	____PF	0.80 PF	125% LOAD	100% LOAD	75% LOAD	50% LOAD	25% LOAD
5.2		5.7		94.5	95.5	96.2	96.2

TVA
JAN 8 1976
~~SEQUOYAH~~
CONTRACT NO: 75-86438
TITLE: Aux Transf
CHECKED:

75K3-86438
ITEM 4
"BCO"
WATTS BAR NUCLEAR PLANT

TRANSFORMERS CONFORM TO APPLICABLE ASA, NEMA AND AIEE STANDARDS.

SIGNED Dean Dimizas DATE May 11, 1970

DEAN DIMIZAS, ENGINEER

FILE

WBPEVAR 9001006 R0
ATTACHMENT D1

ATTACHMENT 6

DIESEL GENERATOR NEUTRAL GROUNDING TRANSFORMERS, POWER TRANSFORMERS,
INVERTERS, BATTERY CHARGERS
AUXILIARY ELECTRICAL POWER EQUIPMENT
FIELD VERIFICATION DATA SHEET

EQUIPMENT UNID NO. 0-DXF-228-2-A EQUIPMENT NAME STANDBY LIGHTING CAB. XFMR NO. 4 △

DESCRIPTION FEDERAL PACIFIC SERIAL NO. 27527-003

SINGLE LINE DRAWING REFERENCE 45W756-2 R31

EQUIPMENT NAMEPLATE DATA BELOW ~~(INCLUDE TAP SETTINGS FOR TRANSFORMERS):~~ N/A

KVA: 45 KVA

PHASE: 3

% IMP: 4.72

VOLTAGE: 480-208/120 V

INSULATION CLASS: FH

°C RISE: 150

△ PER SINGLE LINE

Prepared By E. J. Icharas
Date 1/25/90

Verified By J. R. Hall
Date 1/25/90

WBPEVAR 9001006 R0
ATTACHMENT D1

ATTACHMENT 6

DIESEL GENERATOR NEUTRAL GROUNDING TRANSFORMERS, POWER TRANSFORMERS, INVERTERS, BATTERY CHARGERS
AUXILIARY ELECTRICAL POWER EQUIPMENT
FIELD VERIFICATION DATA SHEET

EQUIPMENT UNID NO. 0-DXF-234-A1/CVCS* EQUIPMENT NAME CVCS HEAT TRACE XFMR A1

DESCRIPTION JEFFERSON ELECTRIC POWERFORMER CAT. 223-3234

SINGLE LINE DRAWING REFERENCE 45W756-2 R31

EQUIPMENT NAMEPLATE DATA BELOW ~~(INCLUDE TAP SETTINGS FOR TRANSFORMERS):~~ N/A

KVA : 75

PHASE: 3

% IMP. : 2.5

VOLTAGE: 480 - 208Y/120 V

INSULATION CLASS: H

°C RISE: 150

CONDUIT ID: 2PLC 3232

* UNID NO. BASED ON CONDUIT ID AND CCRS.

Δ PER SINGLE LINE

Prepared By E. J. [illegible] Date 1/25/90

Verified By [illegible] Hall Date 1/25/90

WBPEVAR9001006 RO
ATTACHMENT D1

ATTACHMENT 6

DIESEL GENERATOR NEUTRAL GROUNDING TRANSFORMERS, POWER TRANSFORMERS,
INVERTERS, BATTERY CHARGERS
AUXILIARY ELECTRICAL POWER EQUIPMENT
FIELD VERIFICATION DATA SHEET

EQUIPMENT UNID NO. 0-DXF-234-2/WDS* EQUIPMENT NAME WDS HEAT TRACE XFMR △

DESCRIPTION JEFFERSON ELECTRIC POWER FORMER CAT. 213-144

SINGLE LINE DRAWING REFERENCE 45W746-2 R11

EQUIPMENT NAMEPLATE DATA BELOW ~~(INCLUDE TAP SETTINGS FOR TRANSFORMERS):~~ N/A

KVA: 9

PHASE 3

% IMP: 2.3

VOLTAGE 480-208Y/120 V

INSULATION: H

CONDUIT ID: PLC 2651

*UNID NO. BASED ON CONDUIT ID AND CCRS.

△ PER SINGLE LINE

Prepared By E. J. Igharas
Date 1/26/90

Verified By T. R. Hall
Date 1/26/90

WBPE VAR 9001006 RO
ATTACHMENT D1

ATTACHMENT 6

DIESEL GENERATOR NEUTRAL GROUNDING TRANSFORMERS, POWER TRANSFORMERS, INVERTERS, BATTERY CHARGERS AUXILIARY ELECTRICAL POWER EQUIPMENT FIELD VERIFICATION DATA SHEET

EQUIPMENT UNID NO. 0-DXF-234-1WD * EQUIPMENT NAME WDG HEAT TRACE XFMR Δ

DESCRIPTION JEFFERSON ELECTRIC POWERFORMER CAT 223-3174

SINGLE LINE DRAWING REFERENCE 45W746-1 R11

EQUIPMENT NAMEPLATE DATA BELOW ~~(INCLUDE TAP SETTINGS FOR TRANSFORMERS):~~ N/A

KVA: 20

PHASE: 3

% IMP: 3.4

VOLTAGE: 480-208Y/120V

INSULATION CLASS: H

°C RISE: 150

CONDUIT ID: PLC 2640

* UNID NO. BASED ON CONDUIT ID AND CCRS.

Δ PER SINGLE LINE

Prepared By E. J. Schauss
Date 1/26/90

Verified By J R Hall
Date 1/26/90

WBPEVAR9001006 R0 ATTACHMENT D2 SHEET 1 OF 7

SHORT CIRCUIT AC ANALYSIS - PHASE 1

SHEET
PREPARED J.R. [illegible] DATE 2/2/90
CHECKED GCP DATE 2-2-90

TRANSFORMER UNID NO.	TRANSFORMER NAME	SINGLE-LINE DWG	KVA	PHASE	% Z	SEC VOLT	PRI VOLT	I sc (Amps)	DISTRIBUTION PANEL UNID NO	COMPONENT NAME	LEAST BKR/FUSE INTERRUPT	PASS/FAIL	FOR FAILED PANELS CABLE NO(S)	REF. DWG
0-0FX-228-1	A.B. LTG BD 1 XFMR	45W735 R12	300	3	4.56	208/120	6900	18,262	0-BD-228-1	A.B. LTG BD 1	22,000	PASS		
									0-LAC-228-132	LC132				
										BKR'S 1, 9-18	25,000	PASS		
										BKR'S 3-8	14,000	FAIL	L132	45W735 R12
									0-LAC-228-154	LC154				
										BKR'S 1-6	14,000	FAIL	L154	45W735 R12
										BKR'S 7-18	25,000	PASS		
									0-LAC-228-155	LC155				
										BKR'S 1,2, 4-6	14,000	FAIL	L155	45W735 R12
										BKR'S 7-11,17,18	25,000	PASS		
									0-LAC-228-156	LC156				
										BKR'S 1-6	14,000	FAIL	L156	45W735 R12
										BKR'S 7-15, 17, 18	25,000	PASS		
									0-LAC-228-157	LC157				
										BKR'S 1,2, 4-6	14,000	FAIL	L157	45W735 R12
										BKR'S 7-11, 14, 16-18	25,000	PASS		
									0-LAC-228-159	LC159				
										BKR'S 1-5	14,000	FAIL	L159	45W735 R12
										BKR'S 7-14, 18	25,000	PASS		
									0-LAC-228-180	LC180				
										BKR'S 1-6	14,000	FAIL	L437, L180	45W735 R12
										BKR'S 7-12	25,000	PASS		
									0-LAC-228-181	LC181				
										BKR'S 1-4	14,000	FAIL	L438, L181	45W735 R12
										BKR'S 7,8, 10-18	25,000	PASS		

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WBPEVAR9001006 R0 ATTACHMENT D2 SHEET 2 OF 7
SHORT CIRCUIT AC ANALYSIS - PHASE 1

SHEET ___
PREPARED L.R. Hall DATE 2/2/90
CHECKED GCP DATE 2-2-90

TRANSFORMER UNID NO.	TRANSFORMER NAME	SINGLE-LINE DWG	KVA	PHASE	% Z	SEC VOLT	PRI VOLT	I SC (Amps)	DISTRIBUTION PANEL UNID NO	COMPONENT NAME	LEAST BKR/FUSE INTERRUPT	PASS/FAIL	FOR FAILED PANELS CABLE NO(S)	REF. DWG
0-OXF-228-2	A.B. LTG BD 2 XFMR	45W735 R12	300	3	4.66	208/120	6900	17,870	0-BD-228-2	A.B. LTG BD 2	22,000	PASS		
									0-LAC-228-232	LC 232				
										BKR'S 1, 2, 9-18	25,000	PASS		
										BKR'S 4-8	14,000	FAIL	L232	45W735 R12
									0-LAC-228-254	LC 254				
										BKR'S 1, 3-6	14,000	FAIL	L254	45W735 R12
										BKR'S 7-18	25,000	PASS		
									0-LAC-228-255	LC 255				
										BKR'S 1, 2, 4, 5	14,000	FAIL	L255	45W735 R12
										BKR'S 7-11, 17, 18	25,000	PASS		
									0-LAC-228-256	LC 256				
										BKR'S 1-6	14,000	FAIL	L256	45W735 R12
										BKR'S 7-13, 15, 17, 18	25,000	PASS		
									0-LAC-228-257	LC 257				
										BKR'S 1-6	14,000	FAIL	L257	45W735 R12
										BKR'S 8-18	25,000	PASS		
									0-LAC-228-280	LC 280				
										BKR'S 1-6	14,000	FAIL	L439, L280	45W735 R12
										BKR'S 7-12	25,000	PASS		
									0-LAC-228-281	LC 281				
										BKR'S 1-4, 7, 8 & 10-18	25,000	PASS	L440, L281	45W735 R12

WBPEVAR9001006 RO ATTACHMENT D2 SHEET 3 OF 7

SHORT CIRCUIT AC ANALYSIS - PHASE 1

SHEET
PREPARED J.R. Hall DATE 2/2/90
CHECKED GCP DATE 2-2-90

TRANSFORMER UNID NO.	TRANSFORMER NAME	SINGLE-LINE DWG	KVA	PHASE	% Z	SEC VOLT	PRI VOLT	I SC (Amps)	DISTRIBUTION PANEL UNID NO	COMPONENT NAME	LEAST BKR/FUSE INTERRUPT	PASS/FAIL	FOR FAILED PANELS CABLE NO(S)	REF. DWG
0-CXF-228-3	A.B. LTG BD 3 XFMR	45W735 R12	300	3	4.53	208/120	6900	18,383	0-BD-228-3	A.B. LTG BD 3	22,000	PASS		
									0-LAC-228-130	LC 130 BKRS 3-5, 7, 9, 11	10,000	FAIL	L130	45W735 R12
									0-LAC-228-131	LC 131				
										BKR 1	10,000	FAIL	L131	45W735 R12
										BKR'S 3-8	14,000	FAIL	L131	45W735 R12
										BKR'S 9-14, 18	22,000	PASS		
									0-LAC-228-150	LC150				
										BKR'S 1-6	14,000	FAIL	L150	45W735 R12
										BKR'S 7-12, 18	25,000	PASS		
									0-LAC-228-151	LC 151				
										BKR'S 1-6	14,000	FAIL	L151	45W735 R12
										BKR'S 7-12, 18	25,000	PASS		
									0-LAC-228-152	LC 152				
										BKR'S 1-6	14,000	FAIL	L152	45W735 R12
										BKR'S 7-13, 16, 17	25,000	PASS		
									0-LAC-228-153	LC153				
										BKR'S 1, 3-6	14,000	FAIL	L153	45W735 R12
										BKR'S 7-13, 17	25,000	PASS		
									0-LAC-228-158	LC158				
										BKR'S 1, 2	14,000	FAIL	L158	45W735 R12
										BKR'S 7-9, 12-15	25,000	PASS		
									0-DPL-234-1	HEAT TRACE DPL BKRS 1-20	10,000	FAIL	P3220	45W735 R12

WBPEVAR9001 006 R0 ATTACHMENT D2 SHEET 4 OF 7
SHORT CIRCUIT AC ANALYSIS - PHASE 1

SHEET
PREPARED J.R. Hull DATE 2/2/90
CHECKED GCP DATE 2-2-90

TRANSFORMER UNID NO.	TRANSFORMER NAME	SINGLE-LINE DWG	KVA	PHASE	% Z	SEC VOLT	PRI VOLT	I SC (Amps)	DISTRIBUTION PANEL UNID NO	DISTRIBUTION PANEL COMPONENT NAME	LEAST BKR/FUSE INTERRUPT	PASS/FAIL	FOR FAILED PANELS CABLE NO(S)	FOR FAILED PANELS REF. DWG
0-0XF-228-4	A.B. LTG BD 4 XFMR	45W735 R12	300	3	4.60	208/120	6900	18,103	0-BD-228-4	A.B. LTG BD 4	22,000	PASS		
									0-LAC-228-230	LC 230				
										BKR'S 3-7	10,000	FAIL	L230	45W735 R12
										BKR'S 9-13,17,18	22,000	PASS		
									0-LAC-228-231	LC 231				
										BKR'S 3-8	10,000	FAIL	L231	45W735 R12
										BKR'S 9-14, 18	22,000	PASS		
									0-LAC-228-250	LC 250				
										BKR'S 1-4	14,000	FAIL	L250	45W735 R12
										BKR'S 7-10,17,18	25,000	PASS		
									0-LAC-228-251	LC 251				
										BKR'S 2-6	14,000	FAIL	L251	45W735 R12
										BKR'S 8-15,17,18	25,000	PASS		
									0-LAC-228-252	LC 252				
										BKR'S 1-6	14,000	FAIL	L252	45W735 R12
										BKR'S 7-18	25,000	PASS		
									0-LAC-228-253	LC 253				
										BKR'S 1-6	14,000	FAIL	L253	45W735 R12
										BKR'S 7-18	25,000	PASS		
									0-DPL-234-2	HEAT TRACE DPL BKR'S 1-20	10,000	FAIL	P3225	45W735 R12

WBPEVAR9001 006 RO ATTACHMENT D2 SHEET 5 OF 7
SHORT CIRCUIT AC ANALYSIS - PHASE 1

SHEET
PREPARED [illegible] DATE 2/2/90
CHECKED GCP DATE 2-2-90

TRANSFORMER UNID NO.	TRANSFORMER NAME	SINGLE-LINE DWG	KVA	PHASE	% Z	SEC VOLT	PRI VOLT	I sc (Amps)	DISTRIBUTION PANEL UNID NO	COMPONENT NAME	LEAST BKR/FUSE INTERRUPT.	PASS/FAIL	FOR FAILED PANELS CABLE NO(S)	REF. DWG
0-DXF-234-B/IPS	IPS HEAT TRACE XFMR B	45W255-4 R15	20	3	3.4	208/120	480	1,633	0-DPL-234-A1/IPS	IPS H.T. DPL A1	10,000	PASS		
									0-DPL-234-A2/IPS	IPS H.T. DPL A2	10,000	PASS		
									0-DPL-234-A3/IPS	IPS H.T. DPL A3	10,000	PASS		
0-DXF-234-A/IPS	IPS HEAT TRACE XFMR A	45W255-2 R16	20	3	3.4	208/120	480	1,633	0-DPL-234-B1/IPS	IPS H.T. DPL B1	10,000	PASS		
									0-DPL-234-B2/IPS	IPS H.T. DPL B2	10,000	PASS		
									0-DPL-234-B3/IPS	IPS H.T. DPL B3	10,000	PASS		
0-DXF-234-B1/CVCS	CVCS HEAT TRACE XFMR B1	45W756-6 R31	75	3	2.5	208/120	480	8,327	0-DPL-234-B1/CVCS	CVCS H.T. DPL B1	10,000	PASS		
									0-DPL-234-B2/CVCS	CVCS H.T. DPL B2	10,000	PASS		
									0-DPL-234-B3/CVCS	CVCS H.T. DPL B3	10,000	PASS		
0-DXF-228-1-B	STANDBY L.C. LS-2 XFMR	45W756-6 R31	45	3	4.72	208/120	480	2,646	0-LSC-228-2	L.C. LS-2	14,000	PASS		
0-DXF-227-2	STANDBY L.C. LS-3 XFMR	45W756-6 R31	30	3	5.6	208/120	480	1,487	0-LSC-227-3	L.C. LS-3	14,000	PASS		
2-DXF-237-B	INSTR PWR XFMR 2B	45N700-1 R5	50	1	4.0	120	480	10,417	2-BD-237-B	INSTR PWR DPL 2B				
										BKR'S 1-4	10,000	FAIL	2M10	45N708-2 R12
										REMAINING BKRS/FUSES	25,000	PASS		
									2-BD-238-M7	INSTR PWR RACKS A & B	18,000	PASS		
									2-L-234 (Fed from 2-BD-237-B, BKR 7)	TITRATION RM SMPL PNL	10,000	FAIL	2R1513	45N708-2 R12
									2-DPL-242-1	RAD MON & AREA DPL 2	25,000	PASS		
1-DXF-237-B	INSTR PWR XFMR 1B	45N700-1 R5	50	1	4.0	120	480	10,417	1-BD-237-B	INSTR PWR DPL 1B				
										BKR'S 1-4	10,000	FAIL	1M10	45N708-1 R14
										REMAINING BKR'S/FUSES	25,000	PASS		
									1-BD-238-M7	INST PWR RACKS A & B	18,000	PASS		
									1-L-234 (Fed from 1-BD-237-B, BKR 7)	TITRATION RM SAMPLE PNL	10,000	FAIL	1R1513	45N708-1 R14
									1-DPL-242-1	RAD MON & AREA DPL 1	25,000	PASS		

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WBPEVAR 9001006 R0 ATTACHMENT D2 SHEET 6 OF 7
SHORT CIRCUIT AC ANALYSIS - PHASE 1

SHEET
PREPARED L.R. Hall DATE 2/2/90
CHECKED GCP DATE 2-2-90

TRANSFORMER UNID NO.	TRANSFORMER NAME	SINGLE-LINE DWG	KVA	PHASE	% Z	SEC VOLT	PRI VOLT	I sc (Amps)	DISTRIBUTION PANEL UNID NO	DISTRIBUTION PANEL COMPONENT NAME	LEAST BKR/FUSE INTERRUPT	PASS/FAIL	FOR FAILED PANELS CABLE NO(S)	FOR FAILED PANELS REF. DWG
2-DXF-237-A	INSTR PWR XFMR 2A	45N700-1 R5	50	1	4.0	120	480	10,417	2-BD-237-A	INSTR PWR DPL 2A				
										BKR'S 1-6	10,000	FAIL	2M7	45N708-2 R12
										REMAINING BKR'S/FUSES	25,000	PASS		
									2-BD-238-M7	INSTR PWR RACKS A&B	18,000	PASS		
									2-DPL-242-1	RAD MON & AREA DPL 2	25,000	PASS		
1-DXF-237-A	INSTR PWR XFMR 1A	45N700-1 R5	50	1	4.0	120	480	10,417	1-BD-237-A	INSTR PWR DPL 1A				
										BKR'S 1-6	10,000	FAIL	1M7	45N708-1 R14
										REMAINING BKR'S/FUSES	25,000	PASS		
									1-BD-238-M7	INSTR PWR RACKS A&B	18,000	PASS		
									1-DPL-242-1	RAD MON & AREA DPL 1	25,000	PASS		
0-DXF-234-2/WDS	WDS HEAT TRACE XFMR	45W746-2 R11	9	3	2.3	208/120	480	1,086	0-DPL-234-2/WDS	WDS HEAT TRACE DPL 2	10,000	PASS		
0-DXF-234-1/WDS	WDS HEAT TRACE XFMR	45W746-1 R11	20	3	3.4	208/120	480	1,632	0-DPL-234-1/WDS	WDS HEAT TRACE PNL 1	10,000	PASS		
0-DXF-234-A1/SIS	SIS HEAT TRACE XFMR A1	45W756-1 R25	9	3	2.3	208/120	480	1,086	0-DPL-234-A1/SIS	SIS HEAT TRACE DPL A1	10,000	PASS		
0-DXF-234-A2/SIS	SIS HEAT TRACE XFMR A2	45W756-1 R25	9	3	2.3	208/120	480	1,086	0-DPL-234-A2/SIS	SIS HEAT TRACE DPL A2	10,000	PASS		
0-DXF-234-B1/SIS	SIS HEAT TRACE XFMR B1	45W756-5 R23	9	3	2.3	208/120	480	1,086	0-DPL-234-B1/SIS	SIS HEAT TRACE DPL B1	10,000	PASS		
0-DXF-234-B2/SIS	SIS HEAT TRACE XFMR B2	45W756-5 R23	9	3	2.3	208/120	480	1,086	0-DPL-234-B2/SIS	SIS HEAT TRACE DPL B2	10,000	PASS		
0-DXF-234-A4	CVCS HEAT TRACE XFMR A4	45W756-1 R25	9	3	2.3	208/120	480	1,086	0-DPL-234-A4/CVCS	CVCS HEAT TRACE DPL A4	10,000	PASS		
0-DXF-234-B4/CVCS	CVCS HEAT TRACE XFMR B4	45W756-5 R23	9	3	2.3	208/120	480	1,086	0-DPL-234-B4/CVCS	CVCS HEAT TRACE DPL B4	10,000	PASS		
0-DXF-234-A1/CVCS	CVCS HEAT TRACE XFMR A1	45W756-2 R31	75	3	2.5	208/120	480	8,327	0-DPL-234-A1/CVCS	CVCS HEAT TRACE DPL A1	10,000	PASS		
									0-DPL-234-A2/CVCS	CVCS HEAT TRACE DPL A2	10,000	PASS		
									0-DPL-234-A3/CVCS	CVCS HEAT TRACE DPL A3	10,000	PASS		

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WBPEVAR9001006 R0 ATTACHMENT D2 SHEET 7 OF 7

SHORT CIRCUIT AC ANALYSIS - PHASE 1

SHEET
PREPARED T.L.Hall DATE 2/2/90
CHECKED GCP DATE 2-2-90

TRANSFORMER UNID NO.	TRANSFORMER NAME	SINGLE-LINE DWG	KVA	PHASE	% Z	SEC VOLT	PRI VOLT	I sc (Amps)	DISTRIBUTION PANEL UNID NO	DISTRIBUTION PANEL COMPONENT NAME	LEAST BKR/FUSE INTERRUPT	PASS/FAIL	FOR FAILED PANELS CABLE NO(S)	FOR FAILED PANELS REF. DWG
1-DXF-242-1	RAD MON & SAMP/FIRE PROT XFMR	45W756-1 R25	37.5	1	4.12	120	480	7,585	1-BD-242-1	RAD MON/SAMPLING BD 1	25,000	PASS		
		45N700-2 R7							0-DPL-13-1	FIRE PROT PWR DPL	10,000	PASS		
2-DXF-242-1	RAD MON & SAMP/FIRE PROT XFMR	45W756-1 R25	37.5	1	4.12	120	480	7,585	2-BD-242-1	RAD MON/SAMPLING BD 2	25,000	PASS		
		45N700-2 R7							0-DPL-13-1	FIRE PROT PWR DPL	10,000	PASS		
0-DXF-228-2-A	STANDBY LC LS-4 XFMR	45W756-2 R31	45	3	4.72	208/120	480	2,646	0-LSC-228-4	L.C. LS-4	14,000	PASS		
0-DXF-227-1	STANDBY LC LS-1 XFMR	45W756-2 R31	30	3	5.6	208/120	480	1,487	0-LSC-227-1	L.C. LS-1	14,000	PASS		

Page D38

WBREVAR 9001.006 R0 ATTACHMENT D3 SHEET 1 OF 3

SHEET
PREPARED J.R. [illegible] DATE 2/2/90
CHECKED GCP DATE 2-2-90

SHORT CIRCUIT AC ANALYSIS – PHASE 2: EVALUATION OF BREAKERS WHICH FAILED PHASE 1

*Isc calculated represents a "bounding case" for breakers with identical cable size and I.s.c. available – using the shortest straight line distance.

TRANSFORMER UNID NO.	CONDUIT & GROUNDING DWG	LOCATION	DISTRIBUTION PANEL UNID	CONDUIT & GROUNDING DWG	LOCATION	CABLE NUMBER	NO. CONDUCTOR & SIZE	STRAIGHT LINE LENGTH – FT	I S.C. AVAILABLE	BKR/FUSE INTERRUPT	Isc Calculated (Attachment D4)	PASS/FAIL
2-DXF-237-B	45W828-2 R24 45W828-11 R27	A12R/757	2-BD-237-B (BKR 1-4)	45W828-11 R27	A12R/757	2M10	4-1c #4/0 (2/Ø)	2	10,417	10,000	9,600 (SH 1) (NOTE 1)	PASS
2-DXF-237-B	45W828-2 R24	A12R/757	2-L-234 (via 2-BD-237-B, cable 2M10)	45N824-13 R33	A1R/713	2R1513	2-1c #4	215	10,417	10,000	983.4 (SH 2)	PASS
1-DXF-237-B	45W828-1 R34 45W828-11 R27	A6R/757	1-BD-237-B (BKR 1-4)	45W828-11 R27	A6R/757	1M10	4-1c #4/0 (2/Ø)	2	10,417	10,000	9,600 (SH 3) (NOTE 1)	PASS
1-DXF-237-B	45W828-1 R34	A6R/757	1-L-234 (via 1-BD-237-B, cable 1M10)	45N824-13 R33	A1R/713	1R1513	2-1c #4	140	10,417	10,000	1,449 (SH 4)	PASS
2-DXF-237-A	45W828-11 R27	A11R/757	2-BD-237-A (BKR 1-6)	45W828-11 R27	A11R/757	2M7	4-1c #4/0 (2/Ø)	2	10,417	10,000	9,259 (SH 5) (NOTE 1)	PASS
1-DXF-237-A	45W828-11 R27	A4R/757	1-BD-237-A (BKR 1-6)	45W828-11 R27	A4R/757	1M7	4-1c #4/0 (2/Ø)	2	10,417	10,000	9,259 (SH 6) (NOTE 1)	PASS
0-DXF-228-1	45W826-1 R34	A3R/737	0-LAC-228-132 (BKR 3-8)	45W816-2 R40	C4P/755	L132	4-1c #4/0	60	18,262	14,000	12,103 (SH 7)	PASS
			0-LAC-228-154 (BKR 1-6)	45W826-1 R34	A4T/737	L154	4-1c #4/0	80	18,262	14,000	12,103 (*)	PASS
			0-LAC-228-155 (BKR 1,2,4-6)	45W828-1 R34	A4S/757	L155	4-1c #4/0	65	18,262	14,000	12,103 (*)	PASS
			0-LAC-228-156 (BKR 1-6)	45W828-3 R27	A5W/757	L156	4-1c #4/0	175	18,262	14,000	12,103 (*)	PASS
			0-LAC-228-157 (BKR 1,2,4-6)	45W830-1 R20	A4T/772	L157	4-1c #4/0	110	18,262	14,000	12,103 (*)	PASS
			0-LAC-228-159 (BKR 1-5)	45W828-3 R27	A7W/757	L159	4-1c #4/0	150	18,262	14,000	12,103 (*)	PASS
			0-LAC-228-180 (BKR 1-6)	45N862-2 R25	R-Z79/716	L437, L180	4-1c #300	200	18,262	14,000	7,130 (SH 8)	PASS
			0-LAC-228-181 (BKR 1-4)	45N866-8 R12	R-Z248/757	L438, L181	4-1c #300	340	18,262	14,000	7,130 (*)	PASS

NOTE 1: The short circuit current is calculated using 2 feet of largest cable leaving panel.

TVA 489C (EN DES-11-77)

WBPEVAR 9001006 R0 ATTACHMENT D3 SHEET 2 OF 3

SHEET
PREPARED J.R. Hall DATE 2/2/90
CHECKED GCP DATE 2-2-90

SHORT CIRCUIT AC ANALYSIS – PHASE 2: EVALUATION OF BREAKERS WHICH FAILED PHASE 1

* Isc Calculated represents a "bounding case" for breakers with cable size and Isc available using the shortest straight line distance.

TRANSFORMER UNID NO.	CONDUIT & GROUNDING DWG	LOCATION	DISTRIBUTION PANEL UNID	CONDUIT & GROUNDING DWG	LOCATION	CABLE NUMBER	NO. CONDUCTOR & SIZE	STRAIGHT LINE LENGTH – FT	I S.C. AVAILABLE	BKR/FUSE INTERRUPT	Isc Calculated (Attachment D4)	PASS/FAIL
0-OXE-228-2	45W826-2 R41	A12R/737	0-LAC-228-232 (BKR 4-8)	45W816-2 R40	C10P/755	L232	4-1c #4/0	60	17,870	14,000	12,300 (*)	PASS
			0-LAC-228-254 (BKR 1,3-6)	45W826-2 R41	A12T/737	L254	4-1c #4/0	55	17,870	14,000	12,300 (SH 9)	PASS
			0-LAC-228-255 (BKR 1,2,4,5)	45W828-2 R24	A12S/757	L255	4-1c #4/0	70	17,870	14,000	12,300 (*)	PASS
			0-LAC-228-256 (BKR 1-6)	45W828-4 R24	A11W/757	L256	4-1c #4/0	180	17,870	14,000	12,300 (*)	PASS
			0-LAC-228-257 (BKR 1-6)	45W830-2 R19	A12T/772	L257	4-1c #4/0	90	17,870	14,000	12,300 (*)	PASS
			0-LAC-228-280 (BKR 1-6)	45W872-2 R23	R-Z79/716	L439, L280	4-1c #300	210	17,870	14,000	6,859 (SH 10)	PASS
0-OXF-228-3	45N822-1 R17	A1T/692	0-LAC-228-130 (BKRs 3-5,7,9,11)	45N810-1 R22	CAN/692	L130	4-1c #2	105	18,383	10,000	5,540 (SH 11)	PASS
			0-LAC-228-131	45W812-1 R31	CAN/708	L131	4-1c #4/0	115				
			(BKR 1)						18,383	10,000	9,140 (SH 12)	PASS
			(BKR 3-8)						18,383	14,000	9,140 (*)	PASS
			0-LAC-228-150 (BKR 1-6)	45N820-1 R16	A9U/676	L150	4-1c #4/0	150	18,383	14,000	13,430 (*)	PASS
			0-LAC-228-151 (BKR 1-6)	45N822-1 R17	A3T/692	L151	4-1c #1/0	40	18,383	14,000	12,138 (SH 13)	PASS
			0-LAC-228-152 (BKR 1-6)	45N824-1 R31	A2S/713	L152	4-1c #4/0	44	18,383	14,000	13,430 (SH 14)	PASS
			0-LAC-228-153 (BKR 1,3-6)	45N824-4 R27	A7V/713	L153	4-1c #4/0	145	18,383	14,000	13,430 (*)	PASS
			0-LAC-228-158 (BKR 1,2)	45N824-1 R31	A1R/713	L158	4-1c #4/0	50	18,383	14,000	13,430 (*)	PASS
			0-DPL-234-1 (BKR'S 1-20)	45W824-29 R7	A1S/713	P3220	4-1c #4	40	18,383	10,000	8,187 (SH 15)	PASS

TVA 489C (EN DES-11-77)

WBPEVAR 900/006 R0 ATTACHMENT D3 SHEET 3 OF 3

SHEET
PREPARED J.R. Hall DATE 2/2/90
CHECKED GCP DATE 2-2-90

SHORT CIRCUIT AC ANALYSIS - PHASE 2: EVALUATION OF BREAKERS WHICH FAILED PHASE 1

*Isc calculated represents a "bounding case" for breakers with cable size and Isc available - using the shortest straight line distance.

TRANSFORMER UNID NO.	CONDUIT & GROUNDING DWG	LOCATION	DISTRIBUTION PANEL UNID	CONDUIT & GROUNDING DWG	LOCATION	CABLE NUMBER	NO. CONDUCTOR & SIZE	STRAIGHT-LINE LENGTH-FT	I S.C. AVAILABLE	BKR/FUSE INTERRUPT	Isc Calculated (Attachment D1)	PASS/FAIL
0-0XF-228-4	45N822-2 R16	A15T/692	0-LAC-228-230 (BKR 3-7)	45N810-2 R24	C10N/692	L230	4-1c #2	100	18,103	10,000	5,735 (SH 16)	PASS
			0-LAC-228-231 (BKR 3-8)	45W812-2 R34	C10N/708	L231	4-1c #4/0	110	18,103	10,000	9,279 (SH 17)	PASS
			0-LAC-228-250 (BKR 1-4)	45N822-3 R17	A7W/692	L250	4-1c #4/0	170	18,103	14,000	13,606 (*)	PASS
			0-LAC-228-251 (BKR 2-6)	45N822-2 R16	A13T/692	L251	4-1c #4/0	40	18,103	14,000	13,606 (SH. 18)	PASS
			0-LAC-228-252 (BKR 1-6)	45N824-2 R28	A13S/713	L252	4-1c #4/0	60	18,103	14,000	13,606 (*)	PASS
			0-LAC-228-253 (BKR 1-6)	45N826-7 R19	A8Y/729	L253	4-1c #300	280	18,103	14,000	5,688 (SH 19)	PASS
			0-DPL-234-2 (BKR 1-20)	45W824-29 R7	A15S/713	P3225	4-1c #4	40	18,103	10,000	8,140 (SH 20)	PASS

TVA 489C (EN DES-1-77)

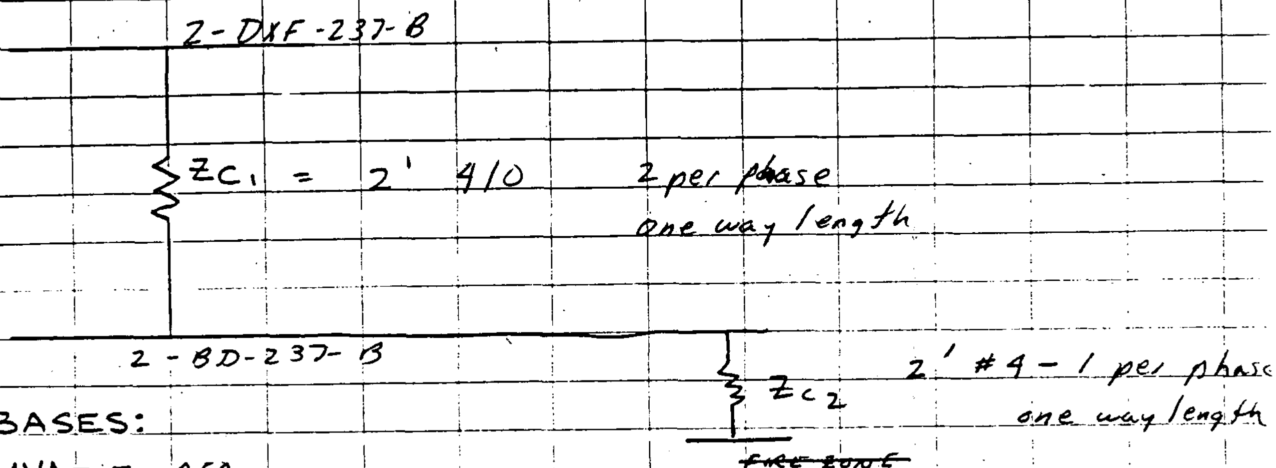
WBPEVAR 9001006 R0

ATTACHMENT D4 - SHEET 1

COMPUTED 7dJ DATE 2/2/90

CHECKED GCP DATE 2-2-90

SHORT CIRCUIT CALCULATION



BASES:

MVAB = .050

KVB = .120

TRANSFORMER:

$Z_T = \frac{Z\%}{100} \angle \tan^{-1} X/R$ PU, $X/R = 1.06$ FROM DG E2.4.6

$.040 \angle 46.6683 = 0.0274 + j\,0.0291$

CABLE:

$Z_C = (R_C + jX_C) \times \text{LENGTH}/1000 \times \text{MVAB}/(\text{KVB})^2$ PU

$Z_{C_1} = (.0507 + j\,.0375)\left(\frac{2}{1000}\right)\left(\frac{.05}{(.12)^2}\right) = .0004 + j\,.0003$

$Z_{C_2} = (.2590 + j\,.0405)\left(\frac{4}{1000}\right)\left(\frac{.05}{(.12)^2}\right) = .0036 + j\,.0006$

$Z_{TOT} = Z_T + Z_{C_1} \cancel{PU} + Z_{C_2}$

$= .0314 + j\,.0300 = |.0434|$

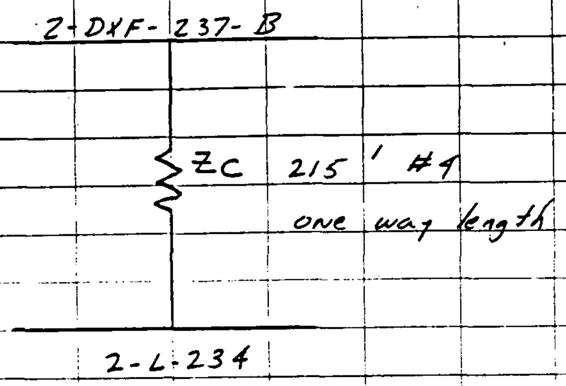
$I_{SC} = \frac{\text{MVAB} \times 10^3}{\cancel{1.732} \times \text{KVB}} \times \frac{1}{|Z_{TOT}|}$

$= \frac{.05 \times 10^3}{(.12)(.0434)} = 9{,}600$ Amps

WBPEVAR 9001006 R0
ATTACHMENT D4 - SHEET 2

COMPUTED TDJ DATE 2/2/90
CHECKED GCP DATE 2-2-90

SHORT CIRCUIT CALCULATION



BASES:

$MVA_B = .050$

$KV_B = .120$

TRANSFORMER:

$Z_T = \frac{Z\%}{100} \angle \tan^{-1} X/R$ PU, X/R = 1.06 FROM DG E2.4.6

$.04 \angle 46.6683 = 0.0274 + j\,.0291$

CABLE:

$Z_C = (R_C + jX_C) \times LENGTH/1000 \times MVA_B/(KV_B)^2$ PU

$= (.2590 + j\,.0405)\left(\frac{430}{1000}\right) \times \frac{.05}{(.12)^2} = 0.3867 + j\,.0605$

$Z_{TOT} = Z_T + Z_C$ PU

$= .4141 + j\,.0896 = .4237$

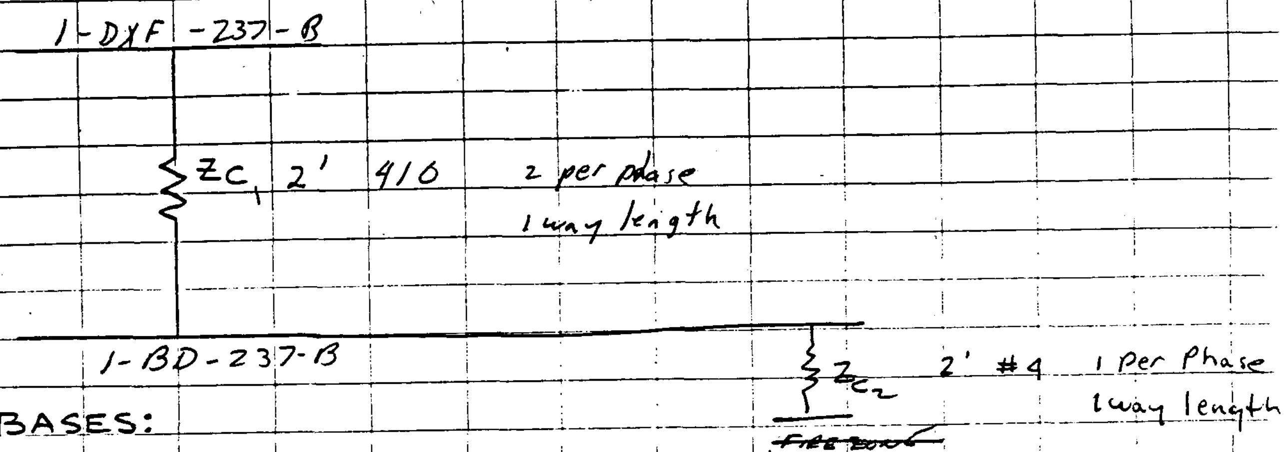
$I_{SC} = \frac{MVA_B \times 10^3}{\cancel{1.732} \times KV_B} \times \frac{1}{|Z_{TOT}|}$

$= \frac{.05 \times 10^3}{(.12)(.4237)} = 983.4$ amps

WBPEVAR 9001006 R0
ATTACHMENT D4 - SHEET 3

COMPUTED TAD DATE 2/2/90
CHECKED GCP DATE 2-2-90

SHORT CIRCUIT CALCULATION



BASES:

MVAB = .050

KVB = .120

TRANSFORMER:

$Z_T = \frac{Z\%}{100} \angle \tan^{-1} X/R$ PU, X/R = 1.06 FROM DG E2.4.6

$.04 \angle 46.6683 = .0274 + j\,.0291$

CABLE:

$Z_C = (R_C + jX_C) \times \text{LENGTH}/1000 \times \text{MVAB}/(\text{KVB})^2$ PU

$Z_{C_1} = (.0507 + j\,.0375)\left(\frac{2}{1000}\right)\left(\frac{.05}{(.12)^2}\right) = .0004 + j\,.0003$

$Z_{C_2} = (.2590 + j\,.0405)\left(\frac{4}{1000}\right)\left(\frac{.05}{(.12)^2}\right) = .0036 + j\,.006$

$Z_{TOT} = Z_T + Z_C$ PU

$= .0314 + j\,.0300 = |.0434|$

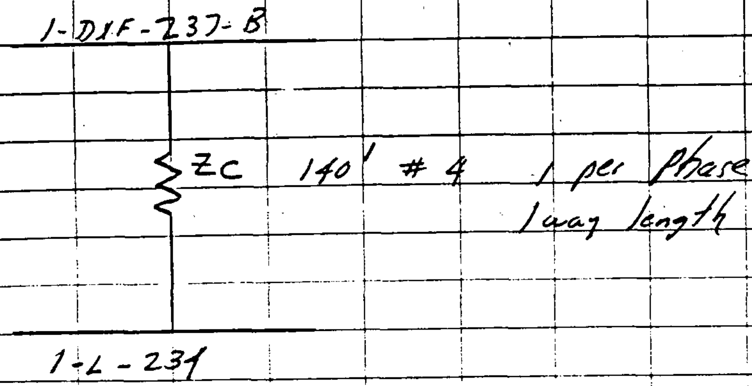
$I_{SC} = \frac{\text{MVAB} \times 10^3}{1.732 \times \text{KVB}} \times \frac{1}{|Z_{TOT}|}$

$= \frac{.05 \times 10^3}{(.12)(.0434)} \approx 9{,}600$ amps

WBPEVAR 9001006 R0
ATTACHMENT D4 - SHEET 4

COMPUTED ZQO DATE 2-2-90
CHECKED GCP DATE 2-2-90

SHORT CIRCUIT CALCULATION



BASES:

$MVA_B = .050$

$KV_B = .120$

TRANSFORMER:

$Z_T = \frac{Z\%}{100} \angle \tan^{-1} X/R$ PU, $X/R = 1.06$ FROM DG E2.4.6

$.040 \angle 46.6683 = 0.0274 + j\, 0.0291$

CABLE:

$Z_C = (R_C + jX_C) \times \text{LENGTH}/1000 \times MVA_B/(KV_B)^2$ PU

$= (.2590 + j\, .0405)\left(\frac{280}{1000}\right)\left(\frac{.05}{(.12)^2}\right) = .2518 + j\, .0394$

$Z_{TOT} = Z_T + Z_C$ PU

$= .2792 + j\, .0685 = |.2875|$

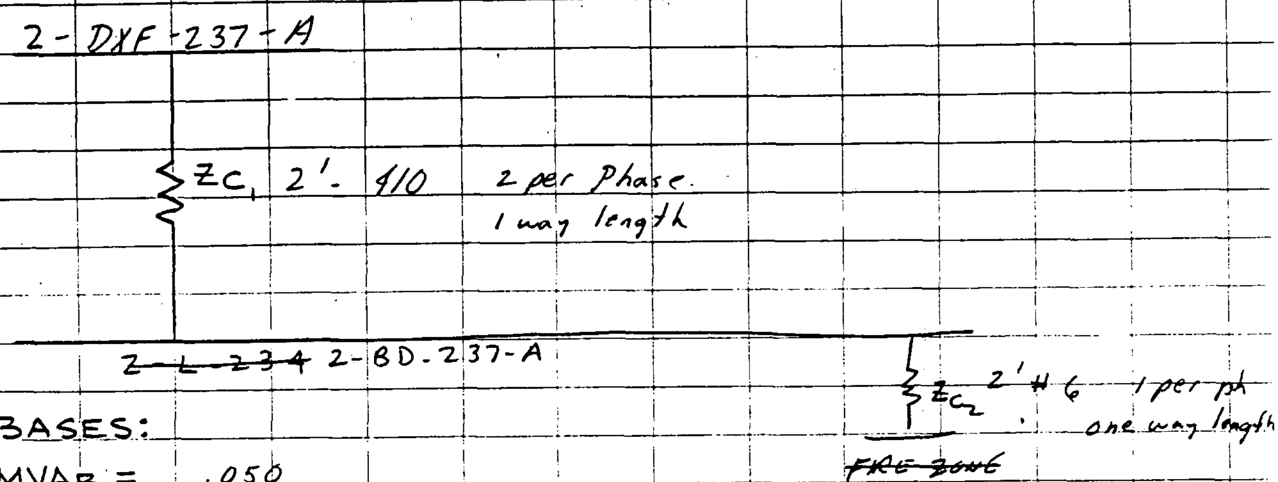
$I_{SC} = \frac{MVA_B \times 10^3}{\cancel{1.732} \times KV_B} \times \frac{1}{|Z_{TOT}|}$

$= \frac{\overset{.050}{\cancel{.850}} \times 10^3}{(.12)(.2875)} = 1,449$ Amps

WBPEVAR 9001006 R0
ATTACHMENT D4 - SHEET 5

COMPUTED [illegible] DATE 2/2/90
CHECKED GCP DATE 2-2-90

SHORT CIRCUIT CALCULATION



BASES:

MVAB = .050

KVB = .120

TRANSFORMER:

$Z_T = \frac{Z\%}{100} \angle \tan^{-1} X/R$ PU, X/R = 1.06 FROM DG E2.4.6

$.04 \angle 46.6 = 0.0274 + j\,.0291$

CABLE:

$Z_C = (R_C + jX_C) \times \text{LENGTH}/1000 \times \text{MVAB}/(\text{KVB})^2$ PU

$Z_{C_1} = (.0507 + j\,.0375)\left(\frac{2}{1000}\right)\left(\frac{.05}{(.12)^2}\right) = .0004 + j\,.0003$

$Z_{C_2} = (.4100 + j\,.0405)\left(\frac{4}{1000}\right)\left(\frac{.05}{(.12)^2}\right) = .0057 + j\,.0006$

$Z_{TOT} = Z_T + Z_C$ PU

$.0335 + j\,.0300 = |.0450|$

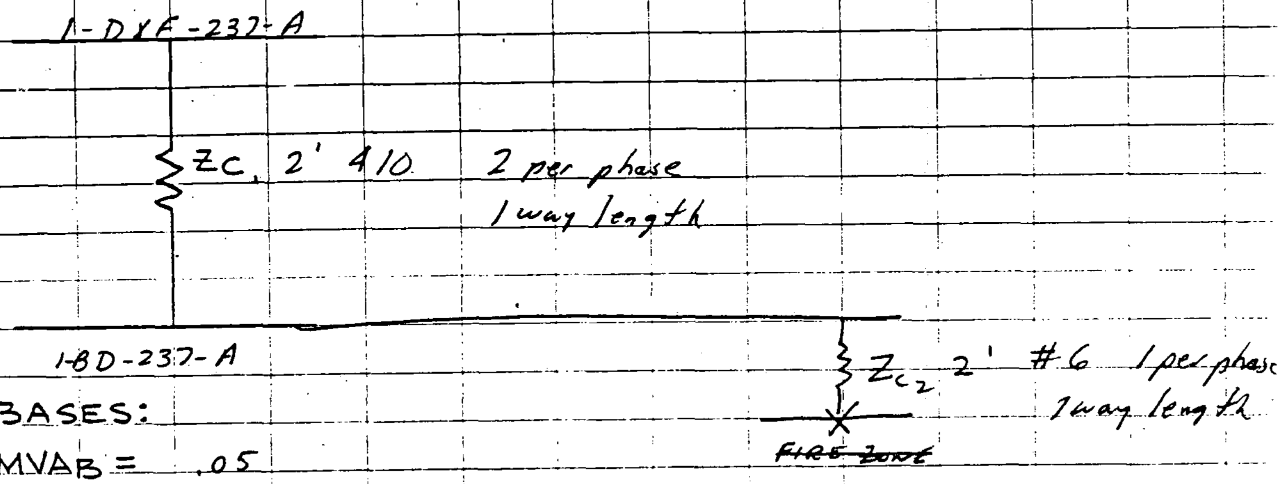
$I_{SC} = \frac{\text{MVAB} \times 10^3}{\cancel{1.732} \times \text{KVB}} \times \frac{1}{|Z_{TOT}|}$

$= \frac{.05 \times 10^3}{.12(.0450)} = 9{,}259$ Amps

WBPEVAR 9001006 R0
ATTACHMENT D4 - SHEET 6

COMPUTED TAJ DATE 2/2/90
CHECKED GCP DATE 2-2-90

SHORT CIRCUIT CALCULATION



BASES:

MVAB = .05

KVB = .12

TRANSFORMER:

$Z_T = \frac{Z\%}{100} \angle \tan^{-1} X/R$ PU, X/R = 1.06 FROM DG E2.4.6

$.04 \angle 46.6683 = 0.0274 + j\,.0291$

CABLE:

$Z_C = (R_C + jX_C) \times \text{LENGTH}/1000 \times \text{MVAB}/(\text{KVB})^2$ PU

$Z_{C1} = (.0507 + j\,.0375) \times \frac{2}{1000} \times \frac{.05}{(.12)^2} = .0004 + j\,.0003$

$Z_{C2} = (0.4100 + j\,0.0405) \times \frac{4}{1000} \times \frac{.05}{(.12)^2} = .0057 + j\,.0006$

$Z_{TOT} = Z_T + Z_C$ PU

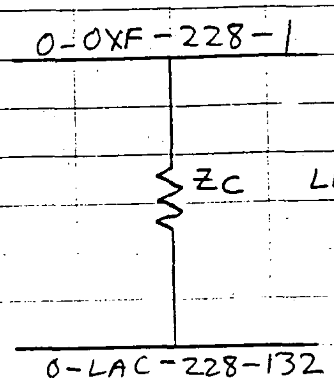
$= \cancel{.00}\,0.0335 + j\,0.0300 = |.0450|$

$I_{SC} = \frac{\text{MVAB} \times 10^3}{\cancel{1.732} \times \text{KVB}} \times \frac{1}{|Z_{TOT}|}$

$= \frac{.05 \times 10^3}{(.12)(.0450)} = 9{,}259$ amps

WBPEVAR 9001006 R0
ATTACHMENT D4 - SHEET 7

COMPUTED POS DATE 2-1-90
CHECKED [illegible] DATE 2-2-90



BASES:

MVA_B = ~~100~~ 0.3

KV_B = 0.208

TRANSFORMER:

$Z_T = \frac{Z\%}{100} \angle \tan^{-1} X/R$ PU , X/R = 3 FROM DG E2.4.6

$= \frac{4.56}{100} \angle \tan^{-1} 3 = 0.0456 \angle 71.6^{\circ}$ PU

$= 0.0144 + j\,0.0433$

CABLE: L132

$Z_C = (R_C + jX_C) \times LENGTH/1000 \times MVA_B/(KV_B)^2$ PU

$= (0.0507 + j0.0375) \times 60/1000 \times (0.3)/(0.208)^2$ PU

$= \cancel{3.95 \times 10^{-5} + j}\ 0.0211 + j\,0.0156$

$Z_{TOT} = Z_T + Z_C$ PU $= 0.0211 + j\,0.0156 + 0.0144 + j\,0.0433$

$= 0.0355 + j\,0.0589$

$= 0.0688 \angle 58.9^{\circ}$

$I_{SC} = \frac{MVA_B \times 10^3}{1.732 \times KV_B} \times \frac{1}{|Z_{TOT}|}$

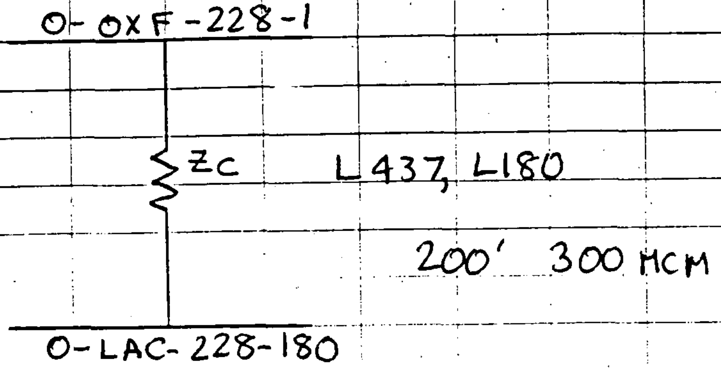
$= \frac{0.3 \times 10^3}{1.732 \times 0.208} \times \frac{1}{0.0688}$

$= 12\,103$ A

WBPEVAR 9001006 R0
ATTACHMENT D4 – SHEET 8

COMPUTED [signature] DATE 2/1/90
CHECKED GCP DATE 2-2-90

SHORT CIRCUIT CALCULATION



BASES:

$MVA_B = .3$

$KV_B = .208$

TRANSFORMER:

$Z_T = \frac{Z\%}{100} \angle \tan^{-1} X/R$ PU, $X/R = 3$ FROM DG E2.4.6

$= \frac{4.56}{100} \angle \tan^{-1} 3 = 0.0144 + j\,0.0433$

CABLE: L437, L180

$Z_C = (R_C + jX_C) \times LENGTH/1000 \times MVA_B/(KV_B)^2$ PU

$= (.0362 + j\,.039) \times 200/1000 \times (.3)/(.208)^2$

$= 0.0502 + j\,0.0541$

$Z_{TOT} = Z_T + Z_C$ PU

$= 0.0144 + j\,0.0433 + 0.0502 + j\,0.0541$

$= 0.0646 + j\,0.0974$, $|Z_{TOT}| = 0.1168$

$I_{SC} = \frac{MVA_B \times 10^3}{1.732 \times KV_B} \times \frac{1}{|Z_{TOT}|}$

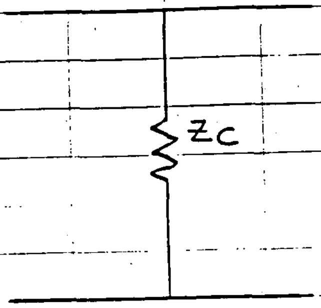
$= \frac{0.3 \times 10^3}{\sqrt{3} \times .208} \times \frac{1}{0.1168}$

$= 7130$ A.

WBPEVAR 9001006 R0
ATTACHMENT D4 - SHEET 9

COMPUTED [illegible] DATE 2/1/90
CHECKED GCP DATE 2-2-90

Xfmr 0-0XF-228-2



use 0-LAC-228-~~25~~ 254
~~210' 300 MCM~~ 55' - 410

BASES:

MVA$_B$ = ~~100~~ .3

KV$_B$ = .208

TRANSFORMER:

$Z_T = \frac{Z\%}{100} \angle \tan^{-1} X/R$ PU, X/R = ~~1.8~~ 3 FROM DG E2.4.6

$Z_T = .0466 \angle \cancel{60.95}\ 71.56 = \cancel{.0226}\ .0147 + j\ \cancel{.0407}\ .0442$

CABLE:

$Z_C = (R_C + jX_C) \times \text{LENGTH}/1000 \times \text{MVA}_B/(\text{KV}_B)^2$ PU

$= (.0507 + j\ .0375)\ \frac{55}{1000} \times \frac{\cancel{100}\ .3}{(.208)^2} = .0193 + j\ .0143$

$Z_{TOT} = Z_T + Z_C$ PU

$= .0340 + j\ .0585 = |.0677|$

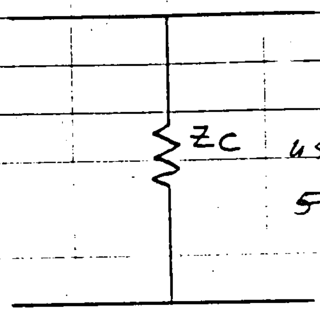
$I_{SC} = \frac{\text{MVA}_B \times 10^3}{1.732 \times \text{KV}_B} \times \frac{}{|Z_{TOT}|} = \frac{.3\,(10^3)}{\sqrt{3}\,(.208)(.0677)}$

$I_{SC} = 12{,}300$ Amps

WBPEVAR 9001006 R0
ATTACHMENT D4 - SHEET 10

COMPUTED [illegible] DATE 2/1/90
CHECKED GCP DATE 2-2-90

Xfmr 0-OXF-228-2



use 0-LAC-228-~~254~~ 280
~~55' 4-1c 4/0~~ 210 300mcm

BASES:
MVAB = .3
KVB = .208

TRANSFORMER:
$Z_T = \frac{Z\%}{100} \angle \tan^{-1} X/R$ PU, X/R = 3 FROM DG E2.4.6

$Z_T = .0466 \angle 71.56 = .0147 + j\,.0442$

CABLE:
$Z_C = (R_C + jX_C) \times \text{LENGTH}/1000 \times \text{MVA}_B/(\text{KV}_B)^2$ PU

$(.0362 + j\,.0390) \times \frac{210}{1000} \times \frac{.3}{(.208)^2} = .0527 + j\,.0568$

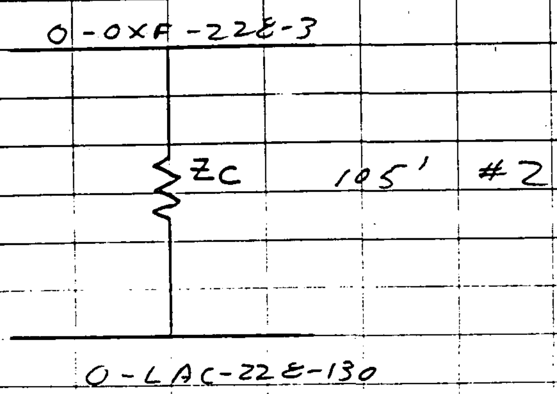
$Z_{TOT} = Z_T + Z_C$ PU
$Z_T = 0.0674 + j0.1010 = |.1214|$

$I_{SC} = \frac{\text{MVA}_B \times 10^3}{1.732 \times \text{KV}_B} \times \frac{1}{|Z_{TOT}|} = 6{,}859$ Amps

WBPEVAR 9001006 R0
ATTACHMENT D4 – SHEET 11

COMPUTED [initials] DATE 2/1/90
CHECKED GCP DATE 2-2-90

SHORT CIRCUIT CALCULATION



BASES:

$MVA_B = .300$

$KV_B = .208$

TRANSFORMER:

$Z_T = \frac{Z\%}{100} \angle \tan^{-1} X/R$ PU, $X/R = 3$ FROM DG E2.4.6

$.0453 \angle 71.56° = .0143 + j\,.0430$

CABLE:

$Z_C = (R_C + jX_C) \times LENGTH/1000 \times MVA_B/(KV_B)^2$ PU

$(.1620 + j\,.0390) \times \frac{105}{1000} \times \frac{.3}{(.208)^2} = .1180 + j\,.0284$

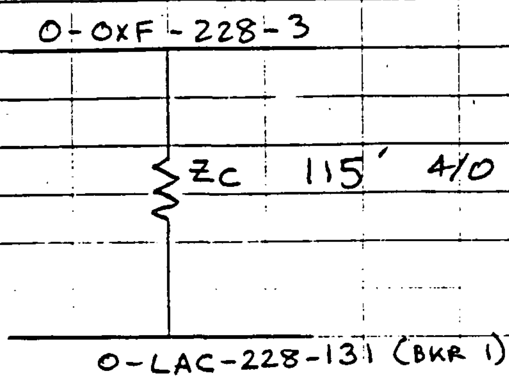
$Z_{TOT} = Z_T + Z_C$ PU

$Z_{TOT} = 0.1323 + .0714 = |.1503|$

$I_{SC} = \frac{MVA_B \times 10^3}{1.732 \times KV_B} \times \frac{1}{|Z_{TOT}|}$

$= \frac{.3 \times 10^3}{\sqrt{3} \times .208} \times \frac{1}{|.1503|} = 5{,}540$ Amps

SHORT CIRCUIT CALCULATION



BASES:

$MVA_B = .300$

$KV_B = .208$

TRANSFORMER:

$Z_T = \frac{Z\%}{100} \angle \tan^{-1} X/R$ PU, $X/R = 3$ FROM DG E2.4.6

$= .0453 \angle 71.56° = .0143 + j\,.0430$

CABLE:

$Z_C = (R_C + jX_C) \times LENGTH/1000 \times MVA_B/(KV_B)^2$ PU

$= (.0507 + j\,.0375)\frac{115}{1000} \times \frac{.3}{(.208)^2} = 0.0404 + j\,.0299$

$Z_{TOT} = Z_T + Z_C$ PU

$= .0547 + j\,.0729 = |.0911|$

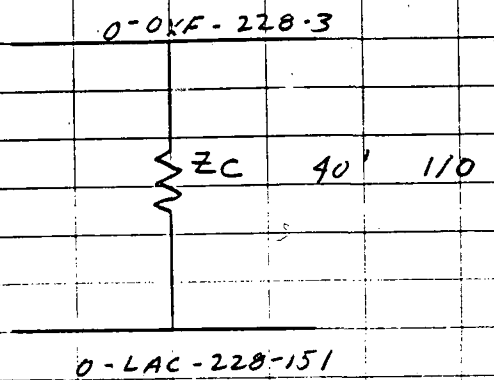
$I_{SC} = \frac{MVA_B \times 10^3}{1.732 \times KV_B} \times \frac{1}{|Z_{TOT}|}$

$= \frac{.3 \times 10^3}{\sqrt{3} \times .208(.0911)} = 9{,}140$ Amps

WBPEVAR 9001006 R0
ATTACHMENT D4 - SHEET 13

COMPUTED TDJ DATE 2/1/90
CHECKED GCP DATE 2-2-90

SHORT CIRCUIT CALCULATION



BASES:

$MVA_B = .3$

$KV_B = .208$

TRANSFORMER:

$Z_T = \frac{Z\%}{100} \angle \tan^{-1} X/R$ PU, $X/R = 3$ FROM DG E2.4.6

$.0453 \angle 71.56 = 0.0143 + j\,0.0430$

CABLE:

$Z_C = (R_C + jX_C) \times LENGTH/1000 \times MVA_B/(KV_B)^2$ PU

$\cancel{.1020}(.1021 + j\,.0390)\ \frac{40}{1000} \times \frac{.3}{(.208)^2} = .0283 + j\,.0108$

$Z_{TOT} = Z_T + Z_C$ PU

$= .0426 + j\,.0538 = |.0686|$

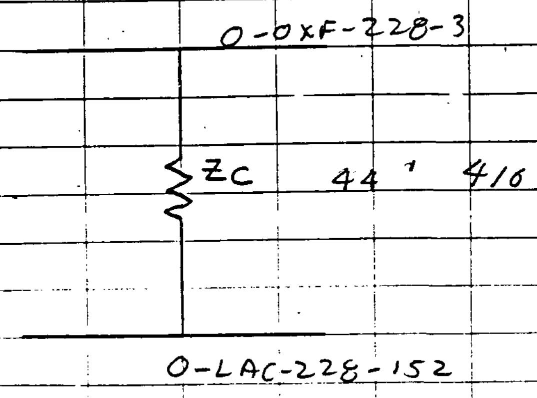
$I_{SC} = \frac{MVA_B \times 10^3}{1.732 \times KV_B} \times \frac{1}{|Z_{TOT}|}$

$= \frac{.3 \times 10^3}{\sqrt{3} \times .208 \times .0686} = 12{,}138$ Amps

WBPEVAR 9001006 R0
ATTACHMENT D4 - SHEET 14

COMPUTED TDL DATE 2/1/90
CHECKED GCP DATE 2-2-90

SHORT CIRCUIT CALCULATION



BASES:

MVAB = .300

KVB = .208

TRANSFORMER:

$Z_T = \frac{Z\%}{100} \underline{/\tan^{-1} X/R}$ PU , X/R = 3 FROM DG E2.4.6

$.0453 \angle 71.56° = .0143 + j\,.0430$

CABLE:

$Z_C = (R_C + jX_C) \times LENGTH/1000 \times MVAB/(KVB)^2$ PU

$(.0507 + j\,.0373)\,\frac{44}{1000} \times \frac{.3}{(.208)^2} = 0.0155 + j\,.0114$

$Z_{TOT} = Z_T + Z_C$ PU

$= .0298 + j\,.0544 = |0.0620|$

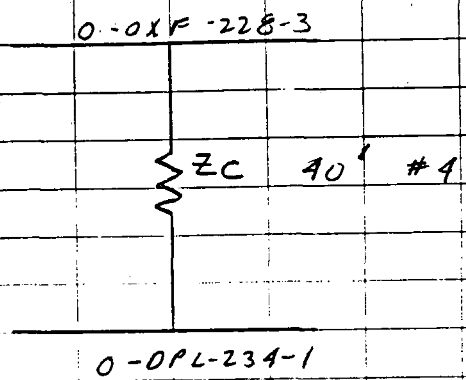
$I_{SC} = \frac{MVAB \times 10^3}{1.732 \times KVB} \times \frac{1}{|Z_{TOT}|}$

$= \frac{.3 \times 10^3}{\sqrt{3} \times .208\,(.0620)} = 13{,}430$ Amps

WBPEVAR 9001006 R0
ATTACHMENT D4 - SHEET 15

COMPUTED 7al9 DATE 2/2/90
CHECKED GCP DATE 2-2-90

SHORT CIRCUIT CALCULATION



BASES:

$MVA_B = .3$

$KV_B = .208$

TRANSFORMER:

$Z_T = \frac{Z\%}{100} \underline{/\tan^{-1} X/R}$ PU, $X/R = 3$ FROM DG E2.4.6

$.0453 \angle 71.56 = 0.0143 + j0.0430$

CABLE:

$Z_C = (R_C + jX_C) \times LENGTH/1000 \times MVA_B/(KV_B)^2$ PU

$= (.2590 + j.0405) \frac{40}{1000} \times \frac{.3}{(.208)^2} = .0718 + j.0112$

$Z_{TOT} = Z_T + Z_C$ PU

$= .0861 + j.0542 = |.1017|$

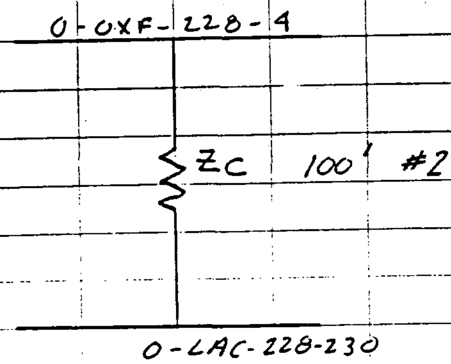
$I_{SC} = \frac{MVA_B \times 10^3}{1.732 \times KV_B} \times \frac{1}{|Z_{TOT}|}$

$= \frac{.3 \times 10^3}{\sqrt{3} \times .208 \times .1017} = 8,187$ Amps

WBPEVAR 9001006 R0
ATTACHMENT D4 - SHEET 16

COMPUTED 7ØJ DATE 2/2/90
CHECKED GCP DATE 2-2-90

SHORT CIRCUIT CALCULATION



BASES:
$MVA_B = .3$
$KV_B = .208$

TRANSFORMER:
$Z_T = \frac{Z\%}{100} \angle \tan^{-1} X/R$ PU, $X/R = 3$ FROM DG E2.4.6

$.046 \angle 71.56 = 0.0146 + j\,0.0436$

CABLE:
$Z_C = (R_C + jX_C) \times LENGTH/1000 \times MVA_B/(KV_B)^2$ PU

$(.1620 + j\,.0390) \times \frac{100}{1000} \times \frac{.3}{(.208)^2} = 0.1123 + j\,0.0270$

$Z_{TOT} = Z_T + Z_C$ PU
$= 0.1269 + j\,0.0706 = |0.1452|$

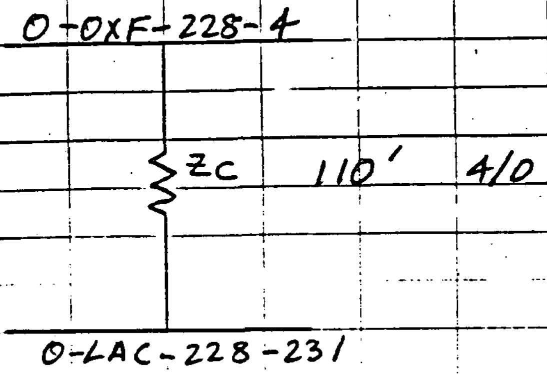
$I_{SC} = \frac{MVA_B \times 10^3}{1.732 \times KV_B} \times \frac{1}{|Z_{TOT}|}$

$= \frac{.3 \times 10^3}{\sqrt{3} \times .208 \times 0.1452} = 5,735$ amps

WBPEVAR 9001006 R0
ATTACHMENT D4 - SHEET 17

COMPUTED [illegible] DATE 2/2/90
CHECKED GCP DATE 2-2-90

SHORT CIRCUIT CALCULATION



BASES:

$MVA_B = .3$

$KV_B = .208$

TRANSFORMER:

$Z_T = \frac{Z\%}{100} \underline{/\tan^{-1} X/R}$ PU, X/R = FROM DG E2.4.6

$= .046 \underline{/71.56} = 0.0146 + j\,0.0436$

CABLE:

$Z_C = (R_C + jX_C) \times LENGTH/1000 \times MVA_B/(KV_B)^2$ PU

$= (.0507 + j\,.0375) \times \frac{110}{1000} \times \frac{.3}{(.208)^2} = 0.0387 + j\,.0286$

$Z_{TOT} = Z_T + Z_C$ PU

$= .0533 + j\,.0722 = |.0897|$

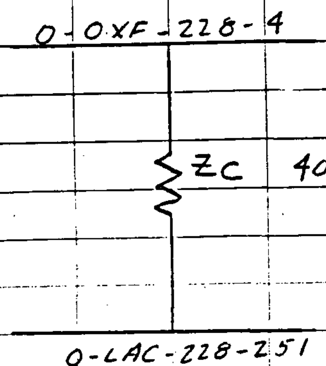
$I_{SC} = \frac{MVA_B \times 10^3}{1.732 \times KV_B} \times \frac{1}{|Z_{TOT}|}$

$= \frac{.3 \times 10^3}{\sqrt{3} \times .208 \times .0897} = 9{,}279$ Amps

WBPEVAR 9001006 R0
ATTACHMENT D4 – SHEET 18

COMPUTED TWD DATE 2/2/90
CHECKED GCP DATE 2-2-90

SHORT CIRCUIT CALCULATION



BASES:
$MVA_B = .3$
$KV_B = .208$

TRANSFORMER:
$Z_T = \frac{Z\%}{100} \angle \tan^{-1} X/R$ PU, $X/R = 3$ FROM DG E2.4.6

$.046 \angle 71.56 = 0.0146 + j0.0436$

CABLE:
$Z_C = (R_C + jX_C) \times LENGTH/1000 \times MVA_B/(KV_B)^2$ PU

$(.0507 + j.0375) \times \frac{40}{1000} \times \frac{.3}{(.208)^2} = 0.0141 + j\,0.0104$

$Z_{TOT} = Z_T + Z_C$ PU

$= .0287 + j.0540 = |0.0612|$

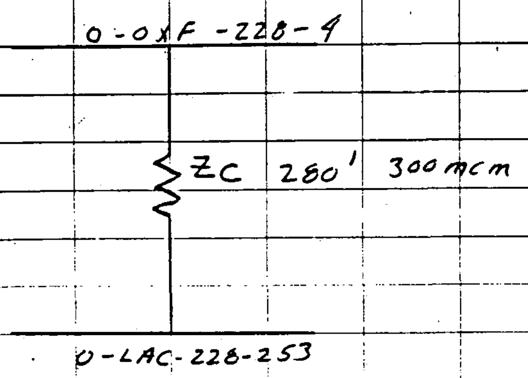
$I_{SC} = \frac{MVA_B \times 10^3}{1.732 \times KV_B} \times \frac{1}{|Z_{TOT}|}$

$= \frac{.3 \times 10^3}{\sqrt{3} \times .208 \times .0612} = 13,606$ Amps

WBPEVAR 9001006 R0
ATTACHMENT D4 - SHEET 19

COMPUTED 7QD DATE 2/2/90
CHECKED GCP DATE 2-2-90

SHORT CIRCUIT CALCULATION



BASES:

$MVA_B = 0.3$

$KV_B = 0.208$

TRANSFORMER:

$Z_T = \frac{Z\%}{100} \underline{/\tan^{-1} X/R}$ PU, $X/R = 3$ FROM DG E2.4.6

$= 0.046 \angle 71.56° = 0.0146 + j\,0.0436$

CABLE:

$Z_C = (R_C + jX_C) \times LENGTH/1000 \times MVA_B/(KV_B)^2$ PU

$(.0362 + j\,.0390) \times \frac{280}{1000} \times \frac{.3}{(.208)^2} = 0.0703 + j\,.0757$

$Z_{TOT} = Z_T + Z_C$ PU

$= 0.0849 + j\,\cancel{0.1}\,.1193 = |0.1464|$

$I_{SC} = \frac{MVA_B \times 10^3}{1.732 \times KV_B} \times \frac{1}{|Z_{TOT}|}$

$= \frac{0.3 \times 10^3}{\sqrt{3} \times .208 \times 0.1464} = 5,688$ Amps

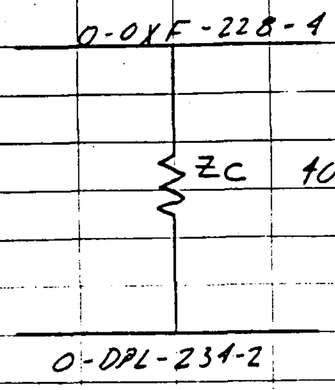
WBPEVAR 9001006 R0

ATTACHMENT D4 - SHEET 20

COMPUTED [illegible] DATE 2/2/90

CHECKED GCP DATE 2-2-90

SHORT CIRCUIT CALCULATION



BASES:

$MVA_B = .3$

$KV_B = .208$

TRANSFORMER:

$Z_T = \frac{Z\%}{100} \angle \tan^{-1} X/R$ PU, $X/R = 3$ FROM DG E2.4.6

$0.046 \angle 71.56 = 0.0146 + j\, 0.0436$

CABLE:

$Z_C = (R_C + jX_C) \times LENGTH/1000 \times MVA_B/(KV_B)^2$ PU

$(0.2590 + j\,.0405) \times \frac{40}{1000} \times \frac{.3}{(.208)^2} = .0718 + j\,.0112$

$Z_{TOT} = Z_T + Z_C$ PU

$= .0864 + j\,.0548 = \cancel{0.1464}\ 0.1023$

$I_{SC} = \frac{MVA_B \times 10^3}{1.732 \times KV_B} \times \frac{1}{|Z_{TOT}|}$

$= \frac{.3 \times 10^3}{\sqrt{3} \times .208 \times .1023} = 8,140$ amps

Appendix E

COMPUTED cjp DATE 2/1/90
CHECKED WJH DATE 2/1/90

Purpose:

The purpose of this section is to evaluate the adequacy of branch circuit protective device interrupt ratings for the following:

250VDC Battery Boards 1 & 2, 0-BD-239-1 & 2
Electrical Control Board 250VDC Distr. Pnls, 0-DBD-239-6 & 8
48VDC Battery Board, 0-BD-240-1
120VAC Preferred Distr. Pnls 1 & 2, 1 & 2-BD-238-1
120VAC Electrical Control Board Distr. Pnl 0-DB-238-3
120VAC Preferred Power Rack - 1 & 2-BD-238-M7
120VAC Computer Distribution Panels 1 & 2-R-103
120VAC TSC Distribution Panels, 1 & 2-DPL-264-1
48VDC Electrical Control Board Distr Pnl, 0-DBD-240-5

Methodology:

Conservatively established maximum available short circuit currents were calculated for the above distribution panels. Breaker ratings were checked to verify the interrupting capacities are sufficient.

TVA drawings, vendor contract data and electrical design standards were used to establish source impedences, cable impedences and component ratings.

Specific references, input data, assumptions, computations, supporting graphics and results are included in the following attachments.

Cable impedences used are for 90°C cable from DG-E2.4.6.

General System configurations per 45N 700-2R7

Appendix E

COMPUTED GP DATE 2/2/90
CHECKED CWH DATE 2/2/90

Conclusions:

All branch circuit protective devices for the distribution panels listed above have adequate interrupt ratings except for:

- Branch circuit breakers of 250VDC Power Distribution Boards 1 & 2

Appendix E - Attachment E.1

COMPUTED GP DATE 2/1/90
CHECKED WSH DATE 2/2/90

250VDC SYSTEM

0-BD-239-1 & 2

250V Bat Bd 1, 2 45N704-1R10, -2R8, 45N709-1R6

Per data on contract 85765, battery I_{sc} = 13,000A

Per EEB-TI-7 motor fault contribution

$I_{msc} = 250/(0.07)(250)^2/(100)(746) = 4263$

(1-75hp motor, 1-25hp motor)

Battery charger is current limited to 140% of 200A per contract 85266. (280A)

Total I_{sc} = 13,000 + 4263 + 280 = 17543

Per contract 85240:
Branch circuit breakers are Westinghouse TRI-PAC LA's and TRI-PAC FB's rated 10,000 AIC @ 250VDC

The battery main fuse is a Chase-Shawmut Form 480, 2000A rated 20,000 AIC at 250VDC. It does not provide current limiting.

The battery main breaker is a GE type AK-50 rated 50,000A @ 250VDC. It has short time delay to permit operation of branch breakers and does not provide protection for branch circuit breakers.

Problem: Branch circuit breakers have inadequate interrupt ratings.

Appendix E- Attachment E.1

COMPUTED GP DATE 2/1/90
CHECKED WJH DATE 2/2/90

Electrical Control Bds — 55716-6 R3, -8R2; 55W715-2R3, 55W702R2, 55W703R1

Cable to panel 6 or 8 - 190' design length - 1/0

DC resistance @ 25°C is $\frac{0.1021}{1.02}\ \Omega/1000'$

Source resistance $= \frac{240V}{17543A} = 0.0137\ \Omega$.

Breakers on ECB panels are GE type THED rated 10,000 AIC @ 250VDC (Walkdown data provided type). For the breakers to be within their ratings, the cable length is calculated as follows:

$$I = \frac{240V}{0.0137 + 2(L)(R_c/L_t)\ \Omega} \leq 10,000A$$

$$240-(10,000)(0.0137) \leq (10^4)(2)\left(\frac{0.1021}{1.02}\right)L$$

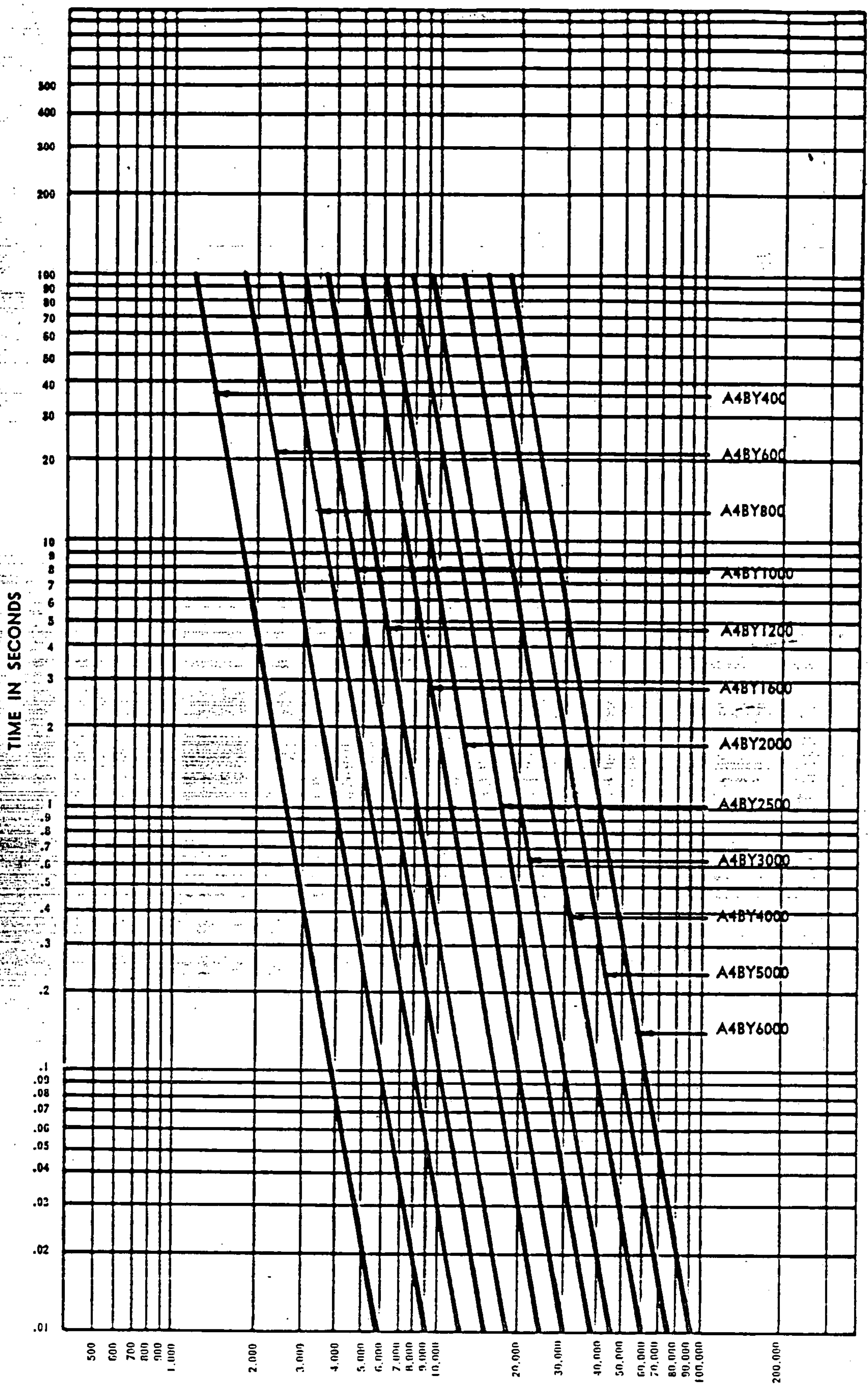
$$103 \leq 2.002L \ ; \quad L \geq 51.4\ ft$$

Since the Battery Bds are at El. 692 and the Electrical Control Bds @ 755', these breakers are acceptable.

WBPEVAK 9001006

PAGE E-5

MELTING TIME-CURRENT
600 V.A.C. FORM 480 AMP-TRAP

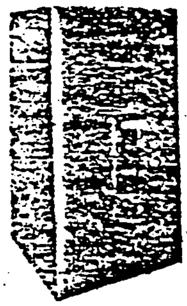


Individually Mounted Units, Type AK

600 Volts, 60 Hz, A-c, or 250 Volts D-c — 3-phase

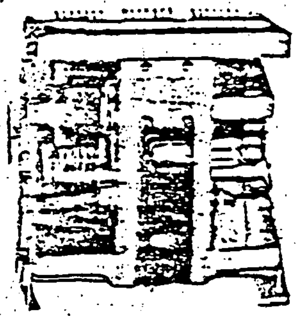
(Photo 8024022)

Fig. 1. Type AK-25 dead-front switchboard mounting



(Photo 8014954)

Fig. 2. Type AK-50 general-purpose enclosure, for indoor wall mounting



(Photo 8017150)

Fig. 3. Type AK-75 skeleton removable drawout element

APPLICATION

Type AK power circuit breakers are recommended for use as individually mounted units or in equipments for industrial, commercial building, and utility applications. They are suitable for severe service and where numerous opening and closing operations are required for general power and lighting circuits. They are also suitable for motor-starting service.

FEATURES

Small size, compact arrangement.

Stored-energy closing mechanism, manual and electrical.

Improved multicontact design.

Pole units or breaker base, mounted on metal frame, providing maximum fire resistance between front and back of breaker.

Accessible and interchangeable overload trips.

Variety of enclosures.

Complete line of accessories.

AK-2 easily interchangeable with AK-1.

MOUNTING OR ENCLOSURE

Dead-front Switchboard

Breaker is not enclosed except for arc quenchers. Dead-front steel plate can be furnished as an accessory.

Skeleton Drawout Breaker Units

Complete one-high drawout unit consisting of skeleton drawout housing and removable drawout breaker element. Housing can be stacked to form section of a standard 90-inch-high enclosure.

General-purpose Enclosure, NEMA Type 1

Breaker is mounted in a steel enclosure. For indoor use only. AK-15, -25, -50 are wall mounted with an easily removable breaker element. AK-75, -100 are floor mounted with stationary breaker elements. Cover plates provided. Terminal or bus bar connectors furnished as required (AK-15, -25, -50 only).

Semi-dust-tight Enclosure, NEMA Type 1A

Enclosure and mounting similar to general-purpose enclosure, with addition of a gasket around the cover and escutcheon.

Weatherproof, NEMA Type 3

Breaker is mounted in a weatherproof steel enclosure including terminal connectors. AK-15, -25, -50 breaker elements are of easily removable type. AK-75, -100 are stationary mounted.

Dust-tight, Watertight, NEMA Types 4 and 5

Breaker is mounted in a heavy-duty steel enclosure with gasketed door including terminal connectors. AK-25, -50 are of easily removable type.

RATINGS

Circuit Breaker Type (Frame Size)	Voltage Rating A-c	Voltage Rating D-c	Current Rating—Amperes: Continuous Range	Interrupting Symmetrical	Interrupting Asymmetrical and D-c	Short-time Rating Symmetrical Amperes	Cascade Interrupting Rating Symmetrical	Standard Trip Coil Ratings—Amperes
AK-2-15	600	250	15–225	14,000	15,000	9,000	25,000	15, 20, 30, 40, 50
	480	...	25–225	22,000	25,000	9,000	42,000	70, 90, 100, 125
	240	...	35–225	25,000	30,000	9,000	50,000	150, 175, 200, 225
AK-2-25	600	250	40–600	22,000	25,000	22,000	42,000	40, 50, 70, 90, 100
	480	...	100–600	30,000	35,000	22,000	60,000	125, 150, 175, 200
	240	...	150–600	42,000	50,000	22,000	85,000	225, 250, 300, 350
								400, 500, 600
*AK-2-50	600	250	200–1600	42,000	50,000	42,000	85,000	200, 225, 250, 300
	480	...	400–1600	50,000	60,000	50,000	85,000	350, 400, 500, 600
	240	...	600–1600	65,000	75,000	50,000	100,000	800, 1000, 1200, 1600
AK-2-75	600	250	2000–3000	55,000	75,000	65,000	85,000	2000, 2500, 3000
	480	...	2000–3000	65,000	75,000	65,000	85,000	
	240	...	2000–3000	85,000	100,000	65,000	130,000	
AK-2-100	600	250	4000	85,000	100,000	85,000	85,000	4000
	480	...	4000	85,000	100,000	85,000	85,000	
	240	...	4000	130,000	150,000	85,000	130,000	

*AKT-50 has same electrical characteristics except continuous current rating of 2000 amperes.

PRICING INFORMATION

See Page 2.

REFERENCES:

Conditions of Sale............Section 8601
Ordering Directions............See Page 3
Sales Offices.......Section 95, Back Cover
Selection and Application.......GEA-8733
Instructions.......................GEI-5021
Renewal Parts......................GEF-1139

Individually Mounted Units, Type AX

600 Volts, 60 Hz A-c, or 250 Volts D-c — 3-phase

G INFORMATION—3-pole Breakers ϕ

Switchgear-P(073)

Breaker Type	Continuous Current Rating	Type of Operation	★List Price, GO-226: Dead-front Switchboard Mounting	Generalpurpose Enclosure NEMA 1	General-purpose Closed Door Drawout Enclosure	Semi-dust-tight Enclosure NEMA 1A	Weatherproof Enclosure NEMA 3	Dust-tight, Watertight NEMA 4, 5	Drawout: Complete Unit	Box Only	Removable Element	Modified Skeleton Box Only
AK-15	15 to 225	Manual Electrical	$950 1529	$1136 1707	$1564 2179	$1200 1777	$1493 2057	....	$1564 2179	$493 514	$1071 1644	$336 343
AK-25	40 to 600	Manual Electrical	1186 1736	1334 1943	1907 2407	1471 2014	1721 2240	$2264 2914	1807 2407	493 514	1214 1893	336 343
AK-50	200 to 1500	Manual Electrical	2921 4044	3350 4530	3736 4993	3650• 4700•	4129• 5336•	5650• 6843•	3736 4993	714 736	3071 4257	500 543
AKT-50	2000	Manual Electrical	4143 5529	....	5336 6704	....	....	....	5336 6764	1050 1071	4286 5693	537 579
AK-75	2000 or 3000	Manual or Electrical	3729	10279	11137	.....	12636θ	.....	11157	1800	9357	1136
AK-100	4000	Manual or Electrical	12837	14871	17007	.....	17029θ	.....	17007	3129	13739	1857
AK-25 Fused △		Manual Electrical	....	....	....	....	....	....	2596 3156	714 736	1571 2450	471 500
AK-50 Fused △		Manual Electrical	....	....	....	....	....	....	5171 6429	1064 1086	4157 5343	614 643

* 200–1200 amperes continuous current.

△ Furnished with GE CLF Fuses (200,000 rms symmetrical amperes interrupting rating).

ϕ 2-pole breakers = 3-pole price X0.90.

θ Electrical only.

= Breakers are interchangeable with AKD-5 equipment breakers. Refer to Handbook Section 6911, Table 5 for pricing of enclosure-mounted accessories.

NOTE: AK-50, -75 AND -100 ELECTRICALLY OPERATED WILL BE FURNISHED WITH FIVE-CYCLE CLOSING FOR SYNCHRONIZING APPLICATIONS WHEN SPECIFIED ON THE REQUISITION.

A SORIES

Switchgear-P(073)

Breaker Type	★List Price, GO-226: Auxiliary Switch 4 Contacts †	Auxiliary Switch 6 Additional Contacts	Undervoltage Instantaneous ‡	Time Delay Undervoltage Adder (add to instantaneous)	Overcurrent Bell Alarm or Lockout	Reverse Current Device	Shunt Trip †	Front Plate	Selective Trip Per Breaker	Neutral Conn △	Provision for Key Interlock
AK-15	$121	$121	$154	$100	$171	$336	$164	$64	$221	$154	$86
AK-25	121	121	164	100	171	336	164	64	221	154	86
AK-50	121	121	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
AKT-50	121	121	164	100	171	....	154	79	221	....	86
AK-75	121	121	154	100	171	679	154	129	221	421	86
AK-100	121	121	164	100	171	679	164	164	221	421	86

† Included with electrically operated breaker.

‡ Can be interchanged for shunt trip device on electrically operated breakers.

△ Enclosed breakers only.

POWER SENSOR §

Switchgear-P(073)

Description	★List Price, GO-226, Breaker Type: AK-25	AK-50	AKT-50	AK-75	AK-100
POWER SENSOR solid-state trip device, 3-phase; long-time delay, inst. Add per breaker	$429	$543	$700	$336	$950
Short-time-delay selective trip for solid-state unit. Add to base price of POWER SENSOR	229	229	229	229	229
Ground fault protection for solid-state unit; includes current sensors.					
3-wire WYE systems—Add to base of POWER SENSOR	343	343	343	343	343
4-wire WYE systems—Add to 3-wire WYE Adder	271	271	271	271	271
Portable test set for POWER SENSOR	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

§ ademark for solid-state trip device.

MAINTENANCE MANUAL

WBPEVAR9001006

GEK-7303A

PAGE *E8*

Supersedes
GEI-74600 GEH-1798A
GEH-1799 GEH-1823A
GEI-50210A GEI-50211
GEI-50212A GEI-57077
and GEK-7303

LOW-VOLTAGE POWER CIRCUIT BREAKERS

TYPES

AK-2/3/2A/3A-50/50S
AK-2/3/2A/3A-75/75S
AK-2/3/2A/3A-100/100S
AKT-2/3/50/50S
AKU-2/3/2A/3A-50/50S
AKF-2C/2D/2E

SWITCHGEAR PRODUCTS DEPARTMENT
GENERAL ELECTRIC
PHILADELPHIA, PA.

WBFEVAK 9001006

E9

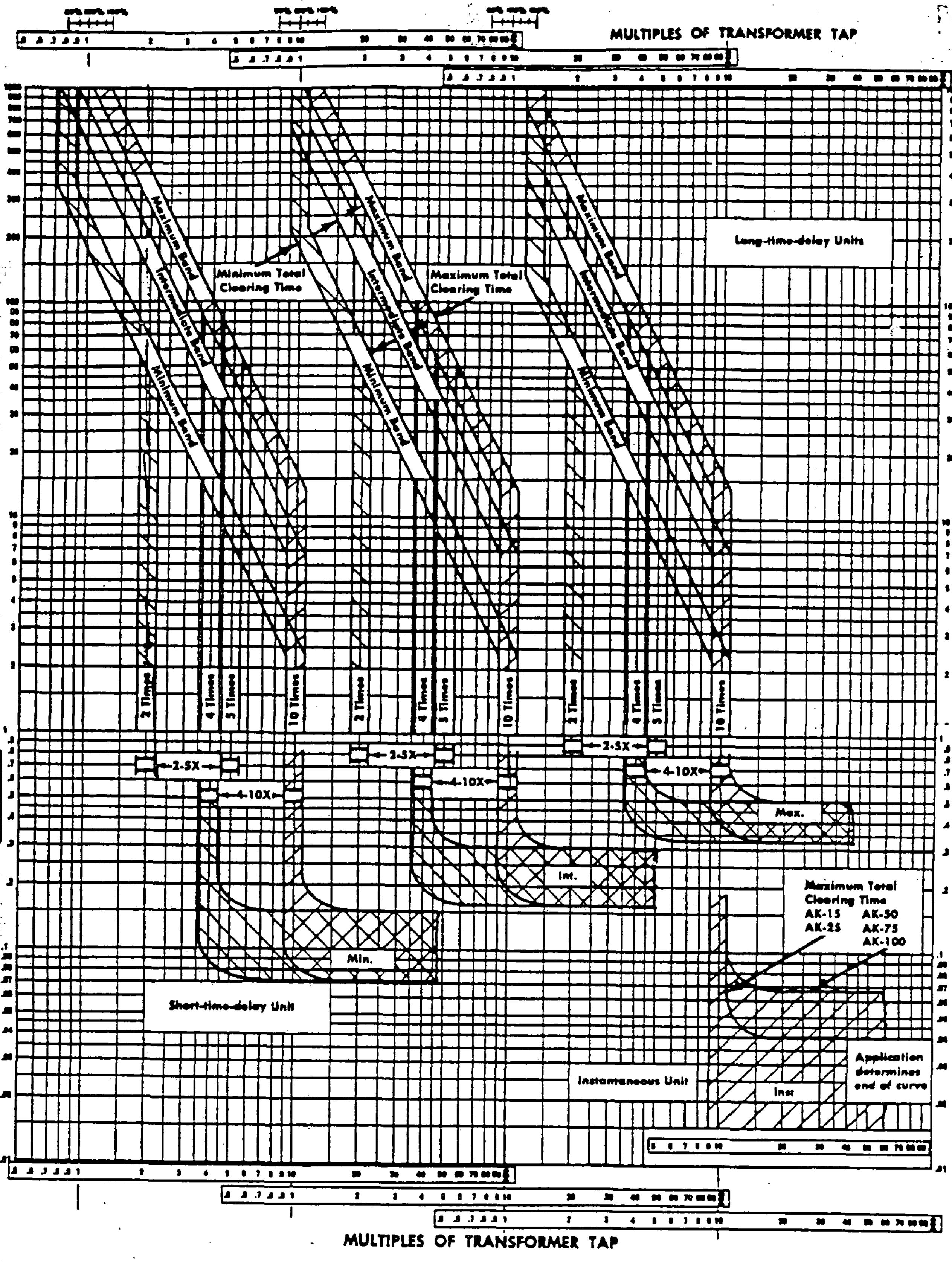


Figure 42A (109HL687) Long-time delay, short-time-delay and instantaneous time current curves for solid-state trip device.

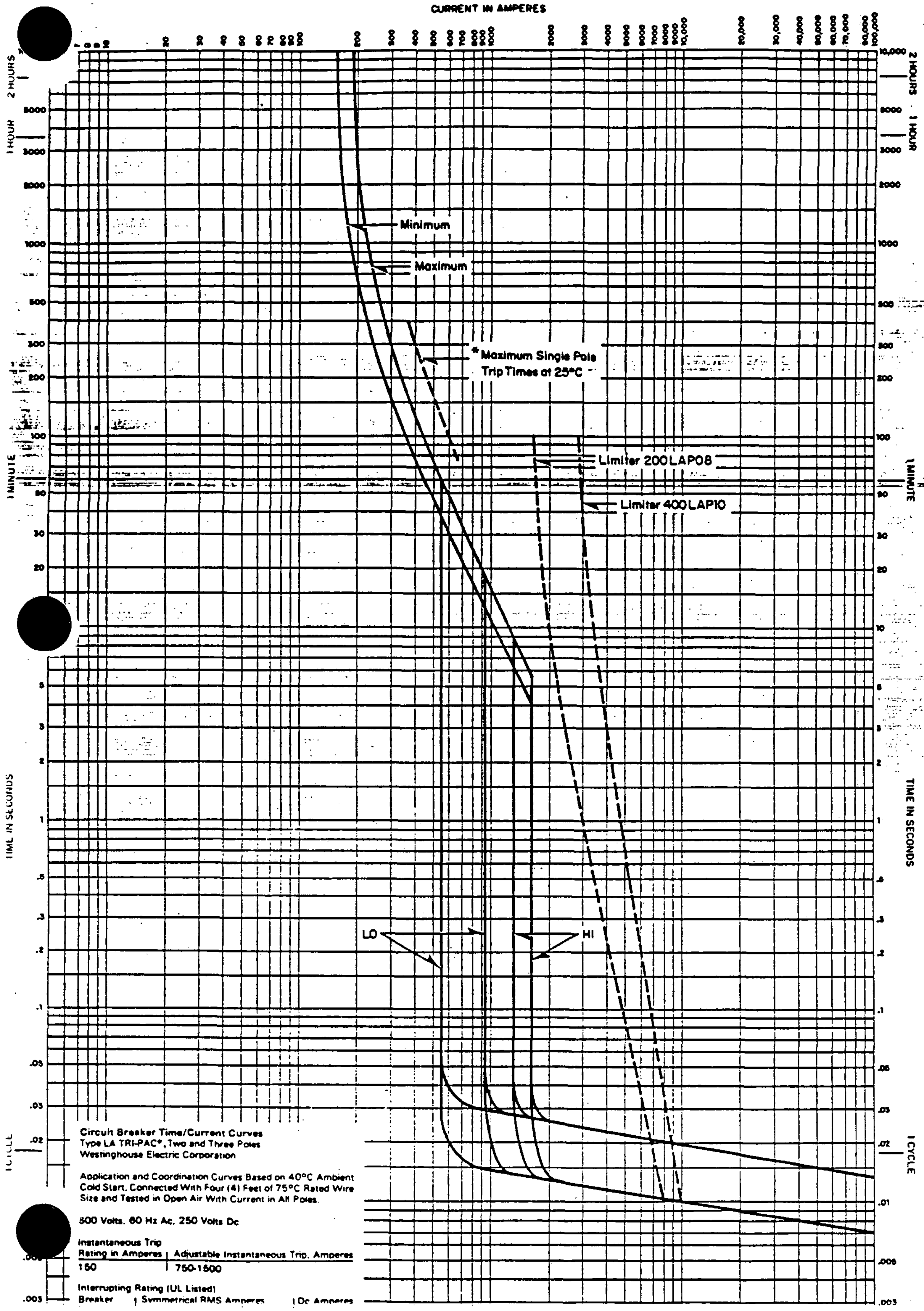
AB DE-ION® CIRCUIT BREAKERS

WBPEVAK 9001006

TRI-PAC® Type LA

PAGE E10

**150 Amperes, 2 and 3 Poles, 600 Volts Ac Max.
250 Volts Dc**



Circuit Breaker Time/Current Curves
Type LA TRI-PAC®, Two and Three Poles
Westinghouse Electric Corporation

Application and Coordination Curves Based on 40°C Ambient Cold Start, Connected With Four (4) Feet of 75°C Rated Wire Size and Tested in Open Air With Current in All Poles.

600 Volts, 60 Hz Ac, 250 Volts Dc

Instantaneous Trip

Rating in Amperes	Adjustable Instantaneous Trip, Amperes
150	750-1600

Interrupting Rating (UL Listed)

Breaker	Symmetrical RMS Amperes	Dc Amperes

WBPEVAR 9001 006

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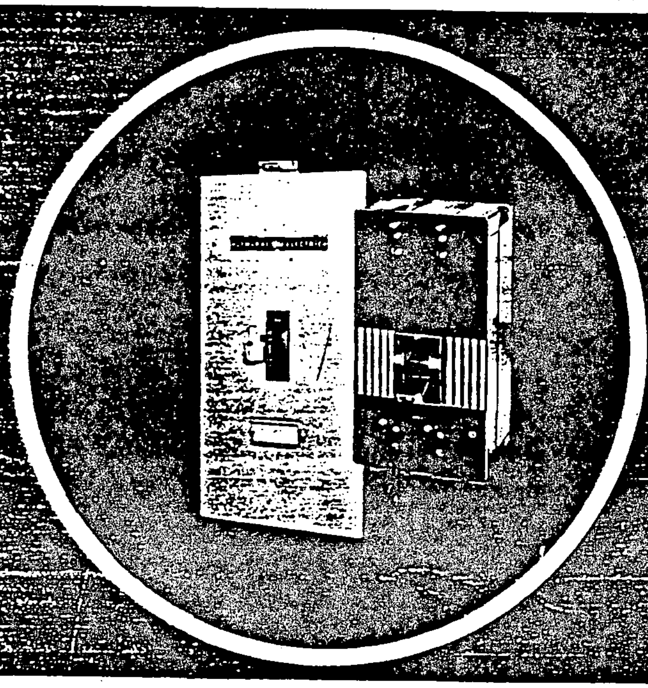
GENERAL
ELECTRIC

application & selection molded case circuit breakers



for industrial & commercial requirements

E100 Line F225 Line
J600 Line K1200 Line

WBPEVAK 9001006

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Interrupting Ratings

Circuit breakers must not only carry the circuit current at all times under normal conditions, and trip open under overload conditions, but must have sufficient interrupting capacity to successfully interrupt the short circuit current that will flow under the worst fault conditions that can occur, when the breaker is applied within its rating.

The following interrupting ratings are Underwriters Laboratories listed except where footnoted.

I/C ratings not Underwriters Laboratories listed are based on tests per NEMA Standard AB1-1969 "Molded-case Circuit Breakers". The basic rating is given in RMS symmetrical amperes, the preferred basis for selection and application. The corresponding asymmetrical rating is also given, for reference. Values for D-c are maximum amperes.

TABLE 1
Quick Selection Guide

Circuit Breaker Type		Ampere Rating	No. Poles	Maximum Voltage Rating		U/L Listed Interrupting Ratings—Symmetrical RMS Amperes						
						AC Voltage					DC Voltage	
				AC	DC	120/240	240	277	480	600	125	250
E 100	TE	•10–100	1	120	125	10,000					5,000*	
	TEB	•10–100	2	240	250		10,000					5,000
			3									
	TED	•10–100	1	277	125			14,000			10,000	
			2	480	250		18,000		14,000			10,000
		•10–100	3	480			18,000		14,000			
		15–100	2,3	600	250		18,000		14,000	14,000		10,000
	THED	15–30	1	277	125			65,000			20,000†	
		15–100	2,3	600	250		65,000		25,000	18,000		20,000†
F 225	TFJ, TFK	70–225	2	600	250		25,000		22,000	22,000		10,000
			3				25,000		22,000	22,000		
	THFK	70–225	2	600	250		42,000‡		25,000	22,000		20,000†
			3				42,000‡		25,000	22,000		
J 600	TJJ, TJK4	125–400	2	600	250		42,000		30,000	22,000		10,000
			3				42,000		30,000	22,000		
	TJK6	250–600	2	600	250		42,000		30,000	22,000		10,000
			3				42,000		30,000	22,000		
	THJK4	125–400	2	600	250		65,000		35,000	25,000		20,000†
			3				65,000		35,000	25,000		
K 1200	TKM8	300–800	2	600	250		42,000		30,000	22,000		10,000
			3				42,000		30,000	22,000		
	TKM12	600–1200	2,3	600			42,000		30,000	22,000		
	THKM8	300–800	2	600	250		65,000		35,000	25,000		20,000†
			3				65,000		35,000	25,000		
	THKM12	600–1200	2,3	600			65,000		35,000	25,000		

† DC Interrupting ratings above 10,000 amperes not U/L listed.

• 10 Amp, not U/L listed.

‡ 70–125 Amp Trip Units — IC Rating 35,000.

* U/L Listing Pending.

Circuit Breaker/Fuse Coordination

For systems having available short-circuit current up to 200,000 symmetrical amperes.

Introduction

Molded-case circuit breakers can be applied where the available short circuit current exceeds the breaker's established interrupting rating by using suitable current limiting fuses in series with the breaker. The ratings of breaker and fuse must be carefully selected to prevent damage to the breaker itself, to eliminate needless fuse melting, and to secure the high short circuit protection required. *See Tables 2 and 3 for coordination based on laboratory tests.*

Explanation of Terms Used

Maximum Fuse-Line Side is the maximum fuse rating that can be used with the circuit breaker. The fuse must be connected on the line side of the circuit breaker.

Appendix E- Attachment E.2

COMPUTED GP DATE 2/1/90
CHECKED WJH DATE 2/2/90

48VDC SYSTEM 45N701-5R4

Battery Bd 0-BD-240-1 contains branch circuit breakers rated 10,000A @ 250VDC

Battery has I_{sc} = 4000 a (45N701-5R4)

Battery Charger is rated 100a, assuming 150% current limit - 150a

Total I_{sc} = 4000A + 150A = 4150A

Breakers are acceptable.

48VDC Electrical Control Board 0-DBD-240-5

This board is supplied by the 48VDC Battery System from board 0-BD-240-1. The breakers are GE type TED rated 10,000AIC at 125VDC - breakers are acceptable

Appendix E - Attachment E.3

COMPUTED GP DATE 2/2/90
CHECKED WJH DATE 2/2/90

120VAC Preferred System

Electrical Control Bd Distr. & Pfd Pwr Bds 1 & 2
45N 707-1 R4, -2R5 ;

Assume Pfd Power Bd on maintenance supply -

Instrument Transformer is 50KVA, 110% Voltage at input
(%Z from DG-E.2.4.6, table 3-2)

$$I_{sc} = \frac{50(1.1)}{0.120(1-0.075)(0.052)} = 9529A$$

The main fuse in the Pfd Bd is a 100A KTN which current limits to 2200A peak let-thru at 10,000A.
The rating of the Heinemann bkrs on the Pfd Bd is 5000AIC @ 120VAC

Electrical Control Board Preferred Distribution Pnls use Heinemann type CF breakers (reference Contract 84612, manual TVA ID 0001) rated 5000AIC @ 120VAC.

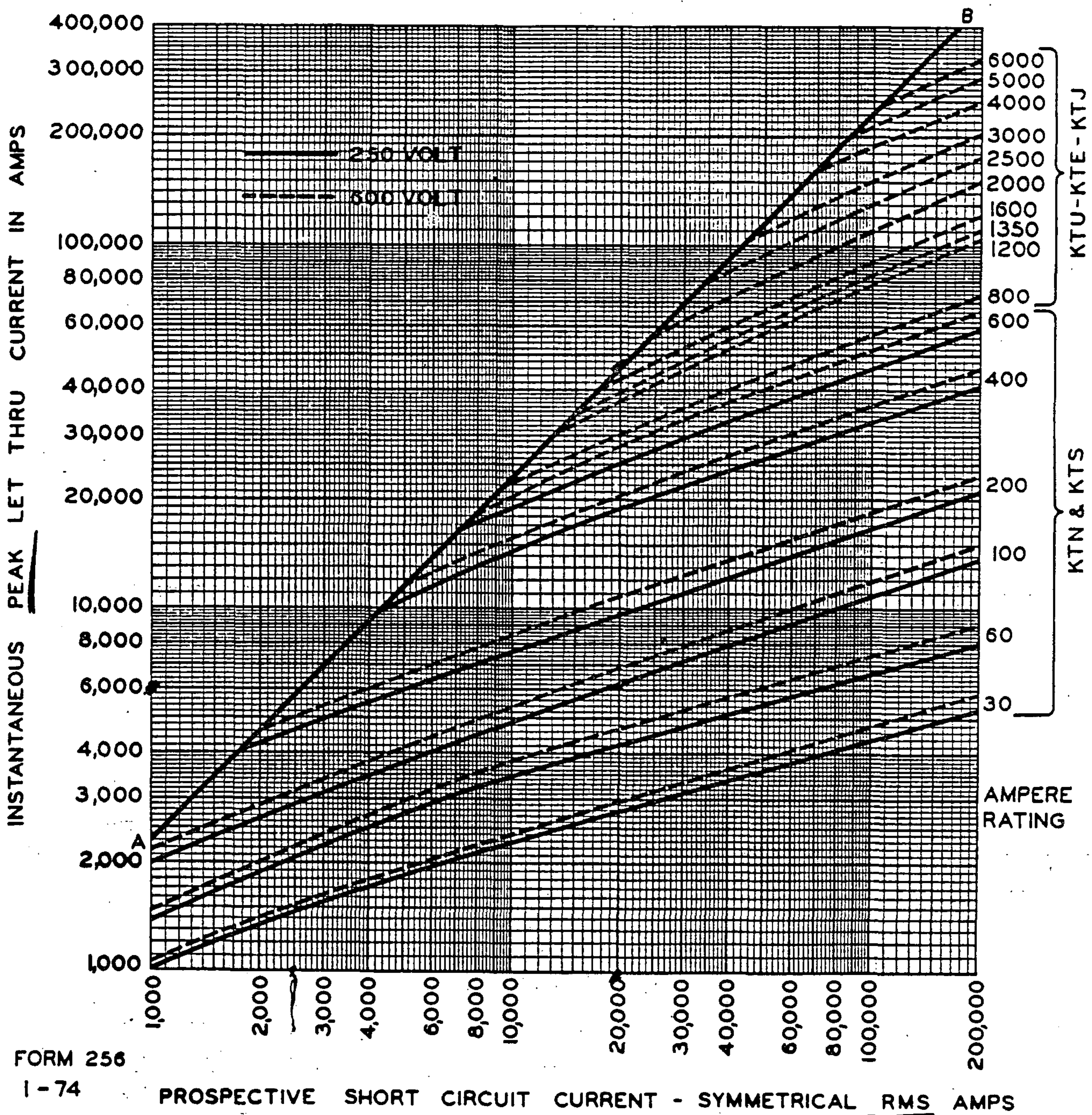
Pfd Pwr Rack - I-M-7

Per 45N 1646-2 R 3, the breakers are Heinemann CF (rated 5000AIC @ 120VAC.)

The main fuses similarly provide current limiting for these breakers.

these breakers are acceptable.

Current Limiting Effect of LIMITRON Fast-Acting Fuses KTN, KTN-R, KTS, KTS-R, and KTU



FORM 256
1 - 74

Prospective current is the symmetrical component of short-circuit current that could flow if not limited by the opening of the fuse. The total value of prospective current consists of the short-circuit current determined from the circuit constants plus any current that motors acting as generators may be able to contribute to the fault.

Low voltage fuses have their interrupting rating expressed in terms of the symmetrical component of short-circuit current. In other words, they are given an rms symmetrical interrupting rating. This means that as long as the symmetrical component of current does not exceed the interrupting rating of the fuse, the fuse can interrupt any asymmetrical current that can accompany the symmetrical component of current.

The line A-B on the chart shows the relationship of the instantaneous peak current to the prospective short-circuit current. Although the chart shows the prospective current in symmetrical amperes, the line A-B represents the instantaneous peak current of the maximum asymmetrical rms current that could be associated with the symmetrical current. This peak current would be attained if the circuit were not protected by a fuse.

The effect of a fuse in the circuit is to limit the instantaneous peak current to a value less than that represented by line A-B.

The curves below the A-B line show the amount of current which will be let through when fuses of the sizes shown are used.

"To illustrate: The rms value of prospective short-circuit current calculated from circuit constants is 100,000 amperes symmetrical. Reading this value on line A-B it is found that the instantaneous peak value is 230,000 amperes. If a 1200 ampere KTU LIMITRON fast-acting fuse is in the circuit, the peak let-thru current would be about 78,000 amperes — or little more than 30% of the current that would flow if the fuse were not protecting the circuit. With a 100 ampere KTS LIMITRON fast-acting fuse in the circuit, the peak let-thru current would be about 12,000 amperes — or barely over 5% of the instantaneous peak available."

WBPEVAR9001006 PAGE E16

Heinemann Circuit Breaker Engineering Guide, Bulletin 202, 1972

Type	Series	Bulletin	Poles	ELECTRICAL RATINGS: Nominal Voltages*	Interrupting Cap. (amp)	Maximum Voltages*	Interrupting Cap. (amp)	Current Ranges (amp)	RESPONSE TIMES: Time-Delay Curves[1] 60 Hz	DC	400 Hz	Non-Time Delay Curve
PANEL MOUNTING	E Frame CD, CF	3104	1 to 6 1 to 6 1 to 6 1 to 6			240 AC 480 AC 240 AC (400~) 125 DC	5,000 6,000 5,000 5,000	0.01 to 100 0.01 to 100 0.15 to 100 0.05 to 100	1, 2, 3, 9	1, 2, 3	1, 2, 3	P
[redacted]												
PANELBOARD	0911 2911	3103	1 2			120/240 AC	5,000	0.05 to 60	1, 2, 3, 9	—	—	P
[redacted]												
	CJ	3111	3			240 AC	10,000	100 to 225	2, 3, 9	—	—	P
	1163	3412	1			250 AC 250 AC (400~) 125 DC	5,000 3,000 5,000	0.01 to 100 0.15 to 65 0.016 to 100	1, 2, 3, 9	1, 2, 3	2, 3	P
[redacted]												
	3363	3412	3			250 AC 125 DC	5,000 5,000	0.01 to 70 0.016 to 60	1, 2, 3, 9	1, 2, 3	—	P
	AM1	3306	1, 2, 3			250 AC 250 AC(400~) 65 DC	1,000 1,000 1,000	0.020 to 100 0.020 to 60 0.020 to 60	2,3, 10	2, 3	1, 2, 3	P
[redacted]												
AM SERIES	AM17	3305	1, 2, 3			208 AC 208 AC (400~) 32 DC	3,500 3,500 3,000	0.10 to 50 0.10 to 50 0.10 to 50	54, 55, 56	54, 55, 56	54, 55, 56	P
	AM1000	3305	1, 2, 3			125 AC 250 AC 125 AC (400~) 250 AC (400~) 32 DC 50 DC 125 DC	2,000 1,500 2,000 1,500 5,000 4,000 2,000	0.01 to 100 0.01 to 70 0.25 to 65 0.15 to 65 0.06 to 150 0.04 to 150 0.015 to 100	1, 2, 3	1, 2, 3	2, 3	P
MINIATURE	Type J	3333	1, 2, 3	125 AC 125 AC (400~)	2,000 2,000	250 AC 250 AC (400~) 32 DC 50 DC 65 DC	1,000 1,000 2,000 2,000 1,000	0.020 to 30 0.020 to 30 0.020 to 30 0.020 to 25 0.020 to 20	2,3,10	2, 3	1, 2, 3	P
SUBMINIATURE	SM	3504	1, 2, 3	120 AC 120 AC (400~) 32 DC	500 500 750	250 AC 250 AC (400~) 50 DC	300 300 500	0.05 to 20 0.05 to 20 0.05 to 20	1, 2	1, 2	1, 2	P

*AC voltages are 60 Hz unless marked with (400~).

NOTES ON TIME-DELAY CURVES

1. For convenience, most time-delay curves are labeled 1, 2, 3, or 9. Usually, Curve 1 is the slow, Curve 2 the medium, Curve 3 the fast, and Curve 9 the slow standard response. In some cases, the characteristics are identical for several breaker series. For instance, Series 0111, 0911, AM1000, E-Frame, and General Purpose breakers employ the same 60 Hz Curves 1, 2, and 3. Often, however, delay characteristics differ from series to series, and only the curve numbers are ...me. For breakers with but two curves, the smaller number is the slow, and ...ger, the fast response.

2. Curve 9 has the same overload response characteristics as Curve 1. However, circuit breakers with Curve 9 do not have an internal check valve in the moveable core of the time-delay element. As described on page 6, the check valve provides rapid restoration of original time-delay characteristics after an overload. Its use is usually not required for most panelboard applications. For equipment applications, the check-valve construction is recommended. See pages 13 through 19 for a graphic presentation of all time-delay curves.

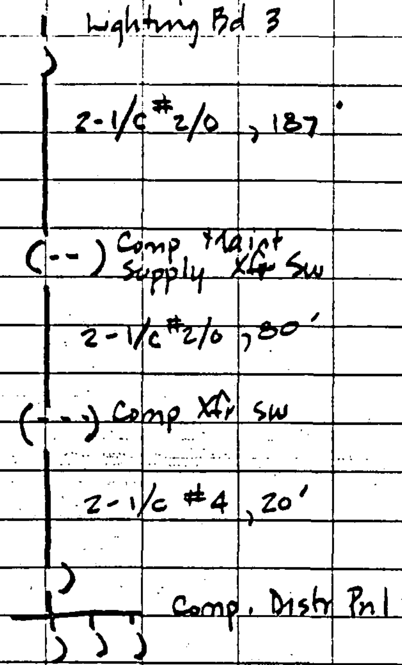
Appendix E- Attachment E.4

COMPUTED lgp DATE 2/2/90
CHECKED WJH DATE 2/2/90

120VAC Computer Distribution Panels 45W709-3 R4

The computer distribution panels are supplied by a current-limited inverter and receive a maintenance supply from lighting board 3.

The lighting board has a max I_{sc} of 18382.
(Reference AC Short Circuit Analysis - App. D)



$$Z_{source} = \frac{120V}{18382A} = 0.0065\ \Omega$$

$$R_{cable/ft} = \frac{0.0812}{1.03} = 0.0788\ \Omega/1000'$$

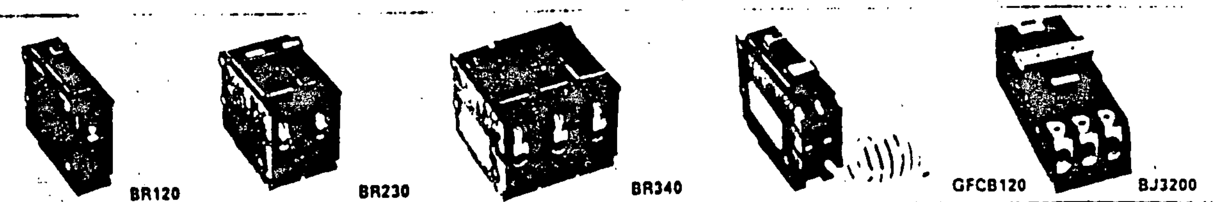
The branch circuit breakers on the Computer Distribution Panel are Bryant type BR rated 10,000AIC @ 120VAC. Breaker type determined by inspection of breakers located in 1-R-103.

$$I_{SC} = \frac{120}{0.0065 + (2)(L)(R_c/ft)} \leq 10,000A$$

$$120 - 65 \leq (2)(L)(0.0788/10^3)(10^4) ; L \geq \frac{55}{1.576} = 34.9\ ft$$

Cables are significantly longer by straight-line distance therefore, breakers are acceptable.

Plug-on Circuit Breakers
1" per pole — Types BR, GFCB, GFEP, BJ Thermal Magnetic 40°C



BR120 BR230 BR340 GFCB120 BJ3200

Type BR Breakers, 1" Per Pole 120/240 or 240 Volts AC, 10,000, 22,000, and 42,000 AIC

Amps	1 Pole 120/240 VAC		2 Pole 120/240 VAC Common Trip			3 Pole 240 VAC Common Trip	
	Requires 1 Space 12 per Shelf Carton; 48 per 14 Lb. Package		Requires 2 Spaces 6 per Shelf Carton, 24 per 16 Lb. Package			Requires 3 Spaces 4 per Shelf Carton; 16 per 17 Lb. Package	
	10,000 AIC	22,000 AIC	10,000 AIC	22,000 AIC	42,000 AIC (6)	10,000 AIC	22,000 AIC
	Cat. No.	Cat. No.	Cat. No. (5)	Cat. No. (5)	Cat. No. (5)	Cat. No. (5)	Cat. No. (5)
10	BR110(1)		BR210(4)				
15	BR115(1)(2)(3)	BRH115	BR215(4)	BRH215		BR315(4)	BRH315
20	BR120(1)(2)(3)	BRH120	BR220(4)	BRH220		BR320(4)	BRH320
25	BR125	BRH125	BR225(4)	BRH225			
30	BR130(1)	BRH130	BR230(4)	BRH230		BR330(4)	BRH330
40	BR140	BRH140	BR240(4)	BRH240		BR340(4)	BRH340
50	BR150	BRH150	BR250(4)	BRH250		BR350(4)	BRH350
60	BR160	BRH160	BR260(4)	BRH260		BR360(4)	BRH360
70	BR170	BRH170	BR270	BRH270		BR370	BRH370
80			BR280				
90			BR290	BRH290		BR390	BRH390
100			BR2100	BRH2100	BRHH2100	BR3100	BRH3100
110			BR2110	BRH2110			
125			BR2125	BRH2125	BRHH2125		

Type GFCB Ground Fault Circuit Breakers
1" Per Pole 120VAC or 120/240VAC, 10,000 and 22,000 AIC
1 Pole for Single Circuit Application, 2 Pole for Multi-Wire and Appliance Circuits.

Amps	1 Pole 120 VAC		2 Pole 120/240 VAC Common Trip	
	Requires 1 Space 1 per Shelf Carton 20 per 10 Lb. Package	1P5MA for single circuit application	Requires 2 Spaces 1 per Shelf Carton 5 per 6 Lb. Package	2P5MA for multi-wire and appliance circuits
	10,000 AIC	22,000 AIC	10,000 AIC	22,000 AIC
	Cat. No.	Cat. No.	Cat. No.	Cat. No.
15	GFCB115	GFCBH115	GFCB215	GFCBH215
20	GFCB120	GFCBH120	GFCB220	GFCBH220
25	GFCB125	GFCBH125	GFCB225	GFCBH225
30	GFCB130	GFCBH130	GFCB230	GFCBH230

Type GFEP Ground Fault Equipment Protectors, 1" per Pole 120VAC or 120/240VAC, 10,000 AIC

Amps	1 Pole 120 VAC	2 Pole 120/240 VAC
	Requires 1 Space 1 per Shelf Carton 20 per 9 Lb. Package 1P30MA for single circuit application	Requires 2 Spaces 1 per Shelf Carton 5 per 5 Lb. Package 2P30MA for multi-wire and appliance circuits
	Cat. No.	Cat. No
15	GFEP115	GFEP215
20	GFEP120	GFEP220
25	GFEP125	GFEP225
30	GFEP130	GFEP230

Type BJ Breakers, 120/240 or 240 Volts AC, 10,000, 22,000, and 42,000 AIC

Amps	2 Pole 120/240 VAC Common Trip			3 Pole 240 VAC Common Trip	
	Requires 4 Spaces 1 per Shelf Carton, 10 per 20 Lb. Package			Requires 6 Spaces 1 per Shelf Carton, 5 per 18 Lb. Package	
	10,000 AIC	22,000 AIC	42,000 AIC (6)	10,000 AIC	22,000 AIC
	Cat. No. (1)	Cat. No. (1)	Cat. No. (5)	Cat. No. (5)	Cat. No. (5)
125	BJ2125	BJH2125		BJ3125	BJH3125
150	BJ2150	BJH2150	BJHH2150	BJ3150	BJH3150
175	BJ2175	BJH2175		BJ3175	BJH3175
200	BJ2200	BJH2200	BJHH2200	BJ3200	BJH3200
225	BJ2225	BJH2225		BJ3225	BJH3225

Circuit Breaker Handle Color Code

Amps	Color	Amps	Color
10	PINK	70	YELLOW
15	MED. BLUE	90	DARK RED
20	MED. RED	100	BLACK
25	IVORY	125	DARK GREEN
30	MED. GREEN	150	BROWN
40	GRAY	175	AMBER
50	LT. BLUE	200	DARK BROWN
60	ORANGE	225	DARK BLUE

Circuit Breaker Case Interrupting Capacity

10,000 A.I.C. Black
22,000 A.I.C. Gray

(1) Switching duty rating.
(2) One pole, 1" per pole breakers are available with high magnetic setting for switching large tungsten lamp loads. Add suffix H to catalog number.
(3) BR 1-pole breakers also carry listing for HACR type. Add HACR suffix to catalog number when ordering.
(4) BR-2-pole and 3-pole breakers are "UL Listed HACR Type" thru 60 amp, and are suitable for use as branch circuit protective devices in multi-motor and combination load installations commonly involved in heating, air conditioning, and refrigeration equipment.
(5) Two-pole and Three Pole Breakers 40 amp and larger are available with MAIN stamped on handle of case. Add suffix "B" to catalog number.
(6) 42,000 AIC BRHH and BJHH breakers are special application breakers for use with OP motor centers only to maintain 42,000 AIC ratings.

Circuit Breaker Ratings and Terminal Data

Type	Amp Rating	Fed Spec	UL Listed Interrupting Capacity RMS SYM Amps		Terminal Data			
		W-C-375b	120/240 VAC	240 VAC	Term Type	Wire Type 60/75°C	No.	AWG Range
BD	15-60	10a, 11a, 12a	10000		Pressure	CU/AL	1	(15-60A) #4-#14 BD, BQ (15-30A) #8-#14BR (40-50A) #4-#10 BR (50-125A) #1/0-#8 BR #2-300 MCM (125&225A) BJ
BQ	15-60	10a, 11a, 12a	10000					
BR	15-125	10a, 11a, 12a	10000					
BRH	15-125	14a, 14b	22000					
BRHH①	15-125	14a, 14b	42000					
BJ	125-225	12a, 12b	10000	10000				
BJH	125-225	14a, 14b	22000	22000				
BJHH①	125-225	14a, 14b	42000	42000				
DK	125-400	21a		65000	TA400K TA350K②	CU/AL	2 1	#3/0-250 MCM 250-500 MCM
LA600	500-600	21a		42000	TA600LA	CU/AL	2	250-500 MCM
MA	600-800	21a		42000	TA800MA2 TA700MA1②	CU/AL	3 2	#3/0-400MCM #1-500 MCM
NB	700-1200	21a		42000	TA1200NB1 TA1201NB1②	CU/AL	4 3	#4/0-500 MCM 500-750 MCM
PB	600-1600	25a		125000	CONNECTOR	CU/AL	4	#1/0-750 MCM
GFCB	15-30	10a, 11a, 12a	10000		Pressure	CU/AL	1	15-20A #8-14
GFCBH	15-30	10a, 11a, 12a	22000					30A #4-14

① BRHH and BJHH breakers are special application breakers for QP motor centers.
② Alternate Terminals available on special order, or order directly for field installation.

Current Carrying Capacities of Conductors

Not more than three conductors in raceway or cable or earth (directly buried), based on ambient temperature of 30°C (86°F)

Ampacities of Insulated Conductors①

Size	Temperature Rating of Conductor, See Table 310-13								Size
	60°C (140°F)	75°C (167°F)	85°C (185°F)	90°C (194°F)	60°C (140°F)	75°C (167°F)	85°C (185°F)	90°C (194°F)	
AWG MCM	TYPES †RUW, †T, †TW, †UF	TYPES †FEPW, †RH, †RHW, †RUH, †THW, †THWN, †XHHW, †USE, †ZW	TYPES V, MI	TYPES TA, TBS, SA, AVB, SIS, †FEP, †FEPB, †RHH, †THHN, †XHHW*	TYPES †RUW, †T, †TW, †UF	TYPES †RH, †RHW, †RUH, †THW, †THWN, †XHHW, †USE	TYPES V, MI	TYPES TA, TBS, SA, AVB, SIS, †RHH, †THHN, †XHHW*	AWG MCM
	Copper				Aluminum or Copper-clad Aluminum				
18	....	....	....	14	....	....	....	....	....
16	....	....	18	18	....	....	....	....	....
14	20†	20†	25	25†	....	....	....	....	....
12	25†	25†	30	30†	20†	20†	25	25†	12
10	30	35†	40	40†	25	30†	30	35†	10
8	40	50	55	55	30	40	40	45	8
6	55	65	70	75	40	50	55	60	6
4	70	85	95	95	55	65	75	75	4
3	85	100	110	110	65	75	85	85	3
2	95	115	125	130	75	90	100	100	2
1	110	130	145	150	85	100	110	115	1
0	125	150	165	170	100	120	130	135	0
00	145	175	190	195	115	135	145	150	00
000	165	200	215	225	130	155	170	175	000
0000	195	230	250	260	150	180	195	205	0000
250	215	255	275	290	170	205	220	230	250
300	240	285	310	320	190	230	250	255	300
350	260	310	340	350	210	250	270	280	350
400	280	335	365	380	225	270	295	305	400
500	320	380	415	430	260	310	335	350	500
600	355	420	460	475	285	340	370	385	600
700	385	460	500	520	310	375	405	420	700
750	400	475	515	535	320	385	420	435	750
800	410	490	535	555	330	395	430	450	800
900	435	520	565	585	355	425	465	480	900
1000	455	545	590	615	375	445	485	500	1000
1250	495	590	640	665	405	485	525	545	1250
1500	520	625	680	705	435	520	565	585	1500
1750	545	650	705	735	455	545	595	615	1750
2000	560	665	725	750	470	560	610	630	2000

Ampacity Correction Factors

Ambient Temp. °C	For ambient temperatures other than 30°C, multiply the ampacities shown above by the appropriate factor shown below.								Ambient Temp. °F
31-40	.82	.88	.90	.91	.82	.88	.90	.91	87-104
41-45	.71	.82	.85	.87	.71	.82	.85	.87	105-113
46-50	.58	.75	.80	.82	.58	.75	.80	.82	114-122
51-60	....	.58	.67	.71	....	.58	.67	.71	123-141
61-70	....	.35	.52	.58	....	.35	.52	.58	142-158
71-80	....	....	.30	.41	....	....	.30	.41	159-176

Exception Table for Ampacity of Conductors

Three-Wire, Single-Phase Dwelling Services.
In dwelling units, conductors, as listed below, shall be permitted to be utilized as three-wire, single-phase, service-entrance conductors and three-wire, single-phase feeder that carries the total current supplied by that service. Grounded service-entrance conductors shall be permitted to be two AWG sizes smaller than the ungrounded conductors provided the requirements of Section 230-42 are met.

Maximum Number of Conductors in Trade Sizes of Conduit or Tubing (Based on Table 1, Chapter 9)

Conduit Trade Size (Inches)		½	¾	1	1¼	1½	2	2½	3	3½	4	5	6
Type Letters	Size AWG, MCM												
TW, T, RUH,	14	9	15	25	44	60	99	142					
RUW,	12	7	12	19	35	47	78	111	171				
XHHW	10	5	9	15	26	36	60	85	131	176			
(14 thru 8)	8	2	4	7	12	17	28	40	62	84	108		
RHW and RHH	14	6	10	16	29	40	65	93	143	192			
(without outer	12	4	8	13	24	32	53	76	117	157			
covering),	10	4	6	11	19	26	43	61	95	127	163		
THW	8	1	3	5	10	13	22	32	49	66	85	133	
TW,	6	1	2	4	7	10	16	23	36	48	62	97	141
T,	4	1	1	3	5	7	12	17	27	36	47	73	106
THW,	3	1	1	2	4	6	10	15	23	31	40	63	91
RUH (6 thru 2),	2	1	1	2	4	5	9	13	20	27	34	54	78
RUW (6 thru 2),	1		1	1	3	4	6	9	14	19	25	39	57
FEPB (6 thru 2),	0		1	1	2	3	5	8	12	16	21	33	49
RHW and	00		1	1	1	3	5	7	10	14	18	29	41
RHH (with-	000		1	1	1	2	4	6	9	12	15	24	35
out outer	0000			1	1	1	3	5	7	10	13	20	29
covering)	250			1	1	1	2	4	6	8	10	16	23
	300			1	1	1	2	3	5	7	9	14	20
	350				1	1	1	3	4	6	8	12	18
	400				1	1	1	2	4	5	7	14	16
	500				1	1	1	1	3	4	6	9	14
	600					1	1	1	3	4	5	7	11
	700					1	1	1	2	3	4	7	10
	750					1	1	1	2	3	4	6	9

†The overcurrent protection for conductor types marked with an obelisk (†) shall not exceed 15 amperes for 14 AWG, 20 amperes for 12 AWG, and 30 amperes, for 10 AWG copper; or 15 amperes for 12 AWG and 25 amperes for 10 AWG aluminum and copper-clad aluminum after any correction factors for ambient temperature and number of conductors have been applied.

*For dry locations only. See 75°C column for wet locations.

① Refer to Exception Table at right for conductor sizes permitted on single phase, three wire residential service.

PREPARED: TM Barker DATE: 5-3-90
VERIFIED: C Nelson DATE: 5/7/90

PURPOSE

The purpose of this Attachment is to evaluate and support modifications to be implemented under DCN P-5297-A.

The modifications involve the addition of two Air Handling Units for the Computer Room HVAC.

The following baseline calculations evaluate the DCN modifications for their impact. Since different aspects of a design modification are evaluated or determined in the calculation controlling that particular feature, interfaces or references between the calculations are necessary. The evaluations for this modification are identified by "ATTACHMENT NO. P5297A" and are included in the following calculations.

BASELINE CALCULATION	CALCULATION NO.
480VAC 1E COORDINATION/PROTECTION	WBN EEB-MS-TI08-0008
AUXILIARY POWER SYSTEM ANALYSES	WBN-EEB-MS-TI06-0002
480V NON-CLASS 1E POWER CABLE ASSOCIATED CIRCUITS	WBN EEB-MS-TI15-0011
REG GUIDE 1.75 ASSOCIATED CIRCUIT and APPENDIX R ANALYSIS for NON-CLASS 1E 120V AC and 250VDC CIRCUITS	WBPEVAR9001006
120V AC CONTROL TRANSFORMER SIZING	WBN EEB-MS-TI02-0019
120V PROTECTION/COORDINATION	WBN EEB-MS-TI07-0018
TELAS	WBN EEB-MS-TI05-0001
CABLE AMPACITY - NV4 and NV5 CABLES in CLASS 1E RACEWAYS	WBPEVAR8909010

PREPARED: T m Barker DATE: 5-3-90
VERIFIED: S Peterson DATE: 5/7/90

1.0 SCOPE

This attachment evaluates and verifies that the proposed design is adequate and meets the guidelines applicable to the baseline calculation.

The loads are proposed as additions to 480V Reactor Vent Boards 1A-A and 2B-B (compartment 11B on both boards).

2.0 ASSUMPTIONS

See "Assumptions" identified in the base calculation (Section 2.0).

3.0 SOURCES OF DESIGN INPUT / REFERENCES

3.1 Walkdown of electrical equipment, (C24880823618 & C24880909602)

3.2 120V AC Control Transformer Sizing, WBN EEB-MS-TI02-0019

4.0 DESIGN INPUT DATA

Cable data is documented in Ref. 3.2

Protective device data was taken from Ref. 3.1

5.0 JUSTIFICATION OF ASSUMPTIONS

See "Justification of Assumptions" in base calculation (Section 5.0).

6.0 METHODOLOGY

The protective device characteristic curve (located in the base calculation) was examined along with the minimum cable size it would protect to determine if the cables are adequately protected from thermal damage.

PREPARED: TMBarker DATE: 5-3-90
VERIFIED: SPeterson DATE: 5/7/90

The cables will be #12, WGC-1 or WGC-2 (minimum).

The protective devices are Shawmut type TRM1, 1.0 Amp fuses.

The time-current curve for this protective device is Curve No. 13.

7.0 GRAPHICS

The graphics for this attachment consist of Curve No. 13 of the base calculation (Appendix C).

8.0 SUMMARY OF RESULTS

The result of this analysis is that the identified protective devices will protect a #12 AWG conductor cable.

9.0 CONCLUSION

The control cables are adequately protected by the existing fuses.

10.0 ATTACHMENTS

Not applicable.

The following Problem Identification Reports (PIR) identified problems with calculations issued prior to initiation of the Electrical Engineering Branch Calculation Program.

The purpose of this Section is to clarify how these concerns were encompassed by the preparation and issuance of the baseline calculation. Refer to the Time current plot on Page F3.

PIRWBNEEB8659

This PIR identified a problem in the evaluation of cable protection where the calculation did not take into consideration that a cable could be routed in an ambient temperature greater than 40C which would in effect shift the cable's thermal characteristic curve towards the left. The concern was that the curve could possibly be shifted to a point where it would be below the cable protective device(s) characteristic curve. The impact of this scenerio on this calculation is that a Non-divisional cable could degrade a safety-related cable by initiating a fire or by damage due to lack of separation.

This analysis takes into account the possibility of an elevated ambient temperature as follows.

Cables and their protective devices in the old calculations were evaluated for Appendix R concerns by ensuring that the cables auto-ignition curve was protected. The method of analysis in this calculation evaluates the adequacy of protection for the cable's thermal damage curve (Curve #4 TH DMG on the attached plot).

Curve #4 AUTOIG on the attached time-current plot depicts the auto-ignition curve for a #4 cable with an insulation temperature rating of 90C. Curve #4 AI HIAM shows the same cable adjusted for an ambient temperature of 60C. The end result is that even when adjusted for a very conservative high ambient temperature the effect is minimal and the cable is still protected from auto-ignition since it lies to the right of the thermal damage curve.

Analysis of cables for Reg Guide 1.75 is to ensure that Non-Class 1E cables will not degrade safety-related cables.

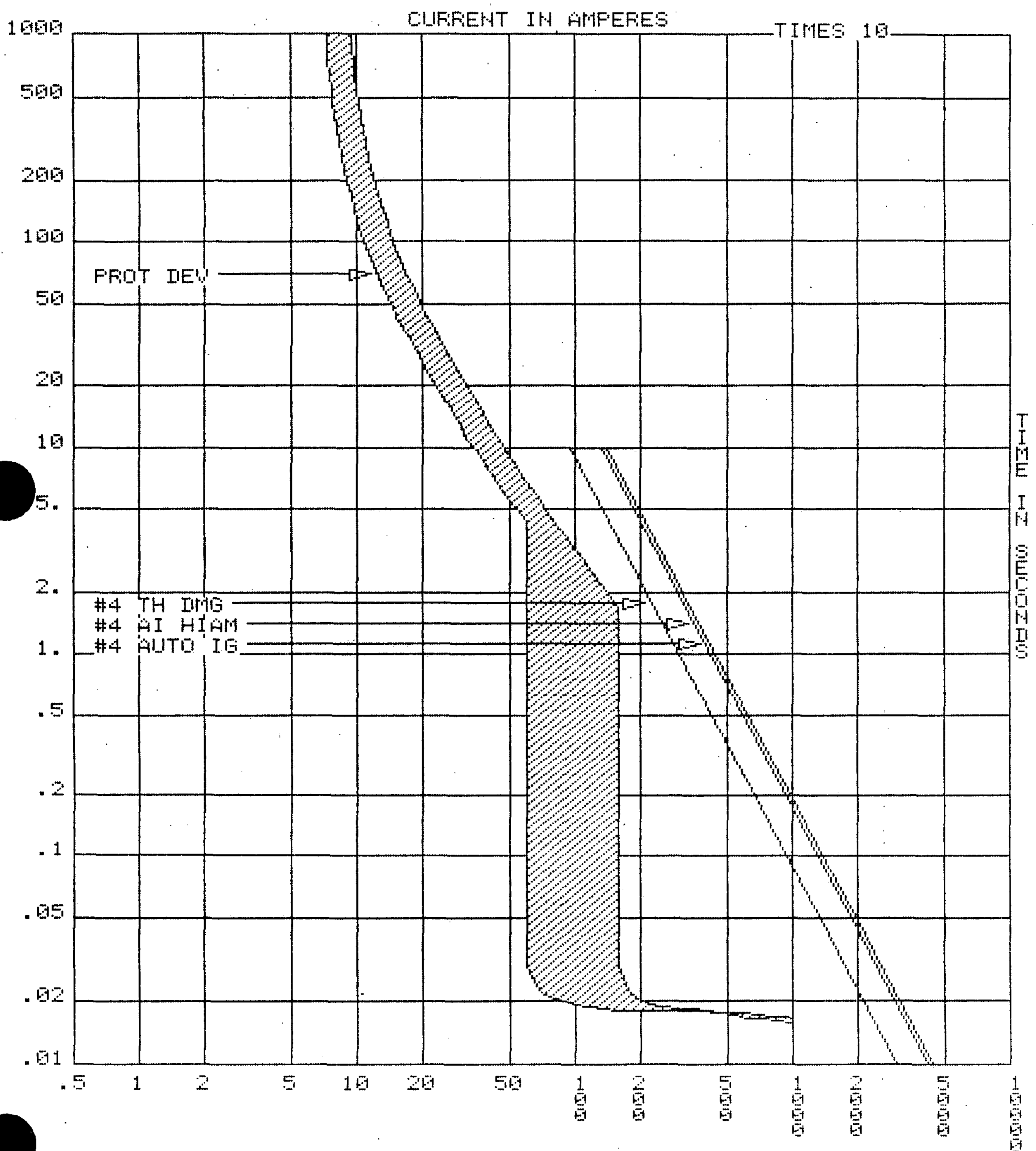
The Watts Bar Ampacity calculation (WBPEVAR8909010) has addressed those Non-Class 1E cables which are routed in Class 1E raceways and concluded that the cables would not exceed their insulation's rated temperature. As a part of this determination, ambient temperature was a consideration. With the cable operating below its rating and the thermal damage curves developed in this calculation based on an ambient temperature of 40C, the results are conservative.

An alternative method for potential impact of safety-related cables is for a Non-Divisional cable to be routed in a non-divisional raceway which is located near a divisional raceway. For this situation, degradation of the divisional cable would require that a fire (auto-ignition) be propagated in the Non-divisional raceway and in turn spread to the divisional raceway. Therefore protection of the cable for auto-ignition is the concern and not thermal damage and this protection has been analyzed as previously stated.

PIRWBNEEB8662

This PIR identified a problem in the evaluation of cable protection where the time-current plots for a short circuit were developed by extending the thermal damage curve from 10 seconds to 1000 seconds by using an IPCEA temperature and formula that is defined in TVA Electrical Design Standard DG-E12.6.2 as only valid for a short circuit not exceeding 10 seconds.

The methodology utilized in this analysis evaluates cable damage protection for short circuits from 0.01 to 10 seconds based on the proper thermal damage temperatures.



DRAWING AMB TEMP PLOT ELL: 120 SCALE: 10^1

Attachment No. P05833A
CALC NO. WBPEVAR9001006

PREPARED: ________ DATE: 9/6/90
VERIFIED: ________ DATE: 9-6-90

1.0 PURPOSE

The purpose of this attachment is to evaluate the power feeder to the ultrasonic level measurement system under DCN P-5833-A.

The modifications involve the addition of RHR Midloop Ultrasonic Monitoring.

An additional calculation is required to support this modification, "Control Loop Voltage Drop" WBPE0689008002, R0. No other baseline calculations are impacted.

2.0 SCOPE

This attachment evaluates and verifies that the proposed design is adequate and meets the guidelines applicable to the baseline calculation.

The loads are proposed as additions to 120 volt AC Preferred Power Board 1 (1-BD-238-1) and connected to Breaker #105 which is a spare at present.

3.0 ASSUMPTIONS

None

4.0 SOURCES OF DESIGN INPUT / REFERENCES

4.1 Calculation No WBPE0689008002 ~~R0~~. RS 9/6/90 JAN 9-6-90

4.2 CCRS Data for Cable 1PM 5814.

5.0 DESIGN INPUT DATA

Cable data is documented in Ref. 4.2

Protective device data was taken from sheet C-42

6.0 JUSTIFICATION OF ASSUMPTIONS

NONE

7.0 Methodology

The protective device characteristic curve (located in the base calculation) was examined along with the minimum cable size it would protect to determine if the cables are adequately protected from thermal damage.

THIS SHEET ADDED BY REV 4

RS 9/6/90 JAJ 9-6-90

Attachment No. P05833A
CALC NO. WBPEVAR9001006

PREPARED: [signature] DATE: 9/6/90
VERIFIED: [signature] DATE: 9-6-90

The cables will be 2/c #8, WFA-10.

The protective device is Heineman type KU-793, CF, 2 Pole, 15 AMP.

The time-current curve for this protective device is Curve No. 39 (Sheet C-42).

8.0 GRAPHICS

The graphics for this attachment consist of Curve No. 39 of the base calculation (Sheet C-42).

9.0 SUMMARY OF RESULTS

Heineman 15 AMP circuit breaker with Time Current Curve No 39 will protect conductor size #14 and larger with 90°C insulation. Therefore, Circuit Breaker #105 in Board 1-BD-238-1 will protect a #8 AWG conductor cable.

10.0 CONCLUSION

The cable 1PM5814 is adequately protected by the existing spare Circuit Breaker #105 on Board 1-BD-238-1.

11.0 ATTACHMENTS

Not applicable

THIS SHEET ADDED BY R.. 4

PAGE B49

[illegible] RO: COMPUTED [illegible] DATE 1-31-
CHECKED [illegible] DATE 2-1-9[illegible]

BOARD: 1. 5C-33B-7 2. ______ 3. ______
4. ______ 5. ______ 6. ______

BOARD REF #	CURVE NO.	COMPT/BKR #/FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/REF.
	*	101	1M3	WDJ	2/0	✓	✓	95N707-1(R4) (BKRS ARE IDENTIFIED AS 'CF' ON DWG & REVISED WALKDOWN DATA) (see REF. 3.4)
1	*	102	2M4	WDJ	2/0	✓	✓	
1	*	103	M1	WDG	2	✓	✓	
1	*	104	T1120	WDE	6	✓	✓	Added by DCN P-5833-A
1	**	105	~~SPARE~~ [illegible]	NFA-1C	8	✓	-	
1	**	106	B109	WHB	14	✓	✓	
1	**	107	B195	WGB	12	✓	✓	
1	**	108	1G149	WGB-1	12	✓	✓	
1	**	109	1M1262	WGB	12	✓	✓	R3
1	**	110	1G860	WGB	12	✓	✓	
1	**	111	M191	WGB-1	12	✓	✓	
1	**	112	M190	WGB	12	✓	✓	
1	**	113	1M1572	WGB-2	12	✓	✓	
1	**	114	1M1560	WGB-1	12	✓	✓	
1	**	115	1M1566	WGB-1	12	✓	✓	
1	**	116	1M3479	WFB-1	10	✓	✓	
1	**	117	1M3[illegible]	WGB-1	12	✓	✓	
1	**	118	1M3459	WGB-1	12	✓	✓	
1	**	119	1M3035	WGB-1	12	✓	✓	
1	**	120	1M3036	WGB-1	12	✓	✓	
1	—	121	SPARE					
1	—	122	"					
1	—	123	"					
1	—	124	"					

*HEINEMAN TYPE KJ-793 'CF'
2 POLE, 60 AMP
CURVE NO. 109

2-POLE, 60 AMP

** HEINEMAN
TYPE KJ-793 CF
2 POLE, 15 AMP
CURVE NO. 39

THIS SHEET ADDED BY REV 4

ATTACHMENT NO. MP E110007
CALC. NO. WBPEVAR9001006

PREPARED: WMH DATE: 8-26-91
VERIFIED: [signature] DATE: 08-26-91

PURPOSE

The purpose of this Attachment is to evaluate and support modifications to be implemented under ECN Mod Package No. E110007. The modifications involve the addition of an AMSAC panel.

This attachment documents the non class 1E cables in the ECN Mod Package No. E110007 (Attachment C-4-3) which effects the baseline calculation shown below. The attachment is tailored to the specific baseline calculation shown in the heading above.

BASELINE CALCULATION	CALCULATION NO.
REG GUIDE 1.75 ASSOCIATED CIRCUIT AND APPENDIX R ANALYSIS FOR NON-CLASS 1E 120V AC AND 250VDC CIRCUITS	WBPEVAR9001006
120V AC SHORT CIRCUIT (1E), COORDINATION STUDY AND PROTECTION*	WBN EEB-MS-TI07-0018

* The short circuit currents of 120V AC vital boards are analyzed in Section 8 on page 26 of the calculation No. WBN EEB-MS-TI07-0018 and attachments P-02939-A and M-09836-A.

PREPARED: WJH DATE: 8-26-91
VERIFIED: [signature] DATE: 08-26-91

1.0 SCOPE

ECN Modification Package No. MP E110007 Ref. 3.11 requires the addition of an Anticipated Transient Without Scram Mitigation System Actuation Circuitry (AMSAC) Panel. Thirteen new cables, all of which are non-class 1E, are required for the interconnection of the AMSAC Panel.

Five of these cables are V3 control; out of these five, three are associated cables and two are non-associated. Balance of eight cables are V2 signal, of which four are associated and four are non-associated.

The associated cables are deemed as such because they terminate at a Class 1E enclosure which contains Class 1E devices from only one safety train. Refer to table below for status of all cables covered by this attachment.

Cable No.	V2 Associated	V2 Non-Assoc.	V3 Associated	V3 Non-Assoc.	From: Panel	To: Panel
1A6690		X			1-M-21	AMSAC
1A6691		X			1-M-21	
1PM5575	X				1-L-381 *	PANEL
1PM5576	X				1-L-381 *	
1PM5577	X				1-L-381 *	1-R-178
1PM5578	X				1-L-381 *	
1PM5579		X			1-L-109	
1PM5580		X			1-L-110	
1M3645				X	120V AC Preferred Power Bd 1	
1M3646			X		1-R-74 *	
1M3647			X		1-R-70 *	
1M3648			X		1-R-77 *	
1M3649				X	1-M-3	

* Class 1E Panel

PREPARED: WJH DATE: 8-26-91
VERIFIED: [signature] DATE: 08-26-91

The scope of this attachment is to:

1.1 Analyze the adequacy of the protective devices associated with V3 cables in the preceeding table.

1.2 Analyze the V3 associated cable in the preceeding table to demonstrate that these are adequately protected and their insulation temperature will not attain thermal damage and compromise the integrity and independence of class 1E cables.

NOTE: V2 associated cables shall not be analyzed since they pose no challenge to Class 1E cables per FSAR Section 8.3.1.4.3. No protection analysis is required for V2 cables per Ref. 3.10.

2.0 ASSUMPTIONS

See "Assumptions" identified in the base calculation (Section 2.0).

3.0 SOURCES OF DESIGN INPUT/REFERENCES

3.1 TVA Dwg. #1-45W706-1 R3
3.2 TVA Dwg. #1-45W706-2 R1
3.3 TVA Dwg. #45N1688-4 RLL
3.4 TVA Dwg. #45N1689-1 R13
3.5 TVA Dwg. #45N1689-4 R15
3.6 TVA Dwg. #45N1693-4 R23
3.7 TVA Dwg. #45N1692-4 R18
3.8 WBNP Cable Sechedule Summary Report dated 11-17-90.
3.9 Calculation No. WBPE EEB-MS-TI07-0018
3.10 Calculation No. WBPEVAR8803001 R1
3.11 ECN MP E110007 R0 (Attach C-4-3)
3.12 TVA Dwg. #1-45W707-1 R0
3.13 TVA Dwg. #1-45W70)-1 R0
3.14 TVA Dwg. #1-45N1635-2 R0
3.15 TVA Dwg. #45N704-2 R8
3.16 TVA Desogn Guide DG-E2.4.6, R0

4.0 DESIGN INPUT DATA

Cable data is documented in Ref. 3.8.

Cables #1M3646 and #1M3648 are #12, WGB-1. Cable #3645 is #10 WFB-2.
Cable #1M3649 is #12, WGK-1.

All circuit breakers are Heinemann 15 Amp Series CF breakers.(Ref. 3.1, 3.2 and 3.12). The time-current characteristics for these are shown in curve No. 39 of the base calculation (Appendix C).

The 250V dc cable #1M3647 type WGD-1, # 12 AWG is protected by a MIS-5 d.c. fuse. The time-current for the device is attached.
MIS-5 data: 300 VDC, 20,000 A.I.C.(Appendix B).

PREPARED: WMt DATE: 8-26-91
VERIFIED: [signature] DATE: 08-26-91

5.0 JUSTIFICATION OF ASSUMPTIONS

See "Justification of Assumptions" in base calculation (Section 5.0).

6.0 ANALYSIS

6.1 Cables 1M3646 and 1M3648 are adequately protected and prevented from reaching thermal damage by FLAS 5A fuses, as shown on curve 108 of the baseline calculation. This satisfies Criteria-4 of the same (Section 1.0). The adequacy of the short circuit ratings and coordination of FLAS 5A fuse has been addressed in calculation WBN EEB-MS-TI07-0018 attachment P-02939-A and M-09836-A.

6.2 The cables 1M3645 and 1M3649 are adequately protected and prevented from reaching thermal damage by a Heinemann 15 A Type CF breaker at the 120V AC Prefered PWR BD1-I (see curve #39 of baseline calculation.) This satisfies Criteria-1 of the baseline calculation. The adequacy of the breaker has been adressed in Attachment E page E14 of the baseline calculation.

6.3 For simplicity and to obtain conservative results, the available short circuit current at the Relay Panel I-R-70 is calculated as follows:

a. Cable B105, R1: WDN, 3-1/C, 300 MCM, 30 ft, 0.0362 ohms/1,000 ft
Sources: References 3.8, 3.16

$$R1 = 30' \times \frac{0.0362}{1{,}000'} \times \frac{1}{3} = 0.000362 \text{ ohms}$$

b. Cable B106, R2: WDN, 3-1/C, 300 MCM, 40 ft, 0.0362 ohms/1,000 ft
Source: Reference 3.8, 3.16

$$R2 = 40' \times \frac{0.0362}{1{,}000'} \times \frac{1}{3} = 0.0004826 \text{ ohms}$$

c. Cable IB332, R3 and R4: WFB, 1-2/C, #10 AWG, 10 ft, 1.04 ohms/1,000 ft
Sources: Reference 3.8, 3.16

$$R3 = R4 = 10' \times \frac{1.04}{1{,}000'} = 0.0104 \text{ ohms}$$

PREPARED: WJH DATE: 8-26-91
VERIFIED: [signature] DATE: 08-26-91

d. Cable IG201B, R5 and R6: WGB, 1-2/C, #12 AWG, 373 ft, 1.65 ohms/1,000 ft
Source: Reference 3.8, 3.16

$$R5 = R6 = 373' \times \frac{1.65}{1,000'} = 0.61545 \text{ ohms}$$

e. Total Resistance R_{TOTAL}:

$$R_{TOTAL} = R1 + R2 + R3 + R4 + R5 + R6$$

$$= 0.000362 + 0.0004826 + 0.0104 + 0.0104 + 0.61545 + 0.61545$$

$$= 1.25 \text{ ohms}$$

f. Therefore, the maximum short circuit available is:

$$I = \frac{V_{BATTERY}}{R_{TOTAL}} + \frac{250VDC}{1.25} = 200 \text{ AMPS}$$

The adequacy of the short circuit rating of the MIS-5 fuse is 20,000 Amps (Appendix B). Thus, the cable #1M3647 is adequately protected by MIS-5 dc fuse as showwn in Appendix A. This satisfies Criteria-4 of the baseline calculation.

7.0 GRAPHICS

The graphics for this attachment consist of Curves No. 39 and No. 108 of the base calculation (Appendix C), and Appendix A, of this attachment.

8.0 SUMMARY OF RESULTS

The result of this analysis is that the identified protective devices will protect a #10 or a #12 AWG conductor cable.

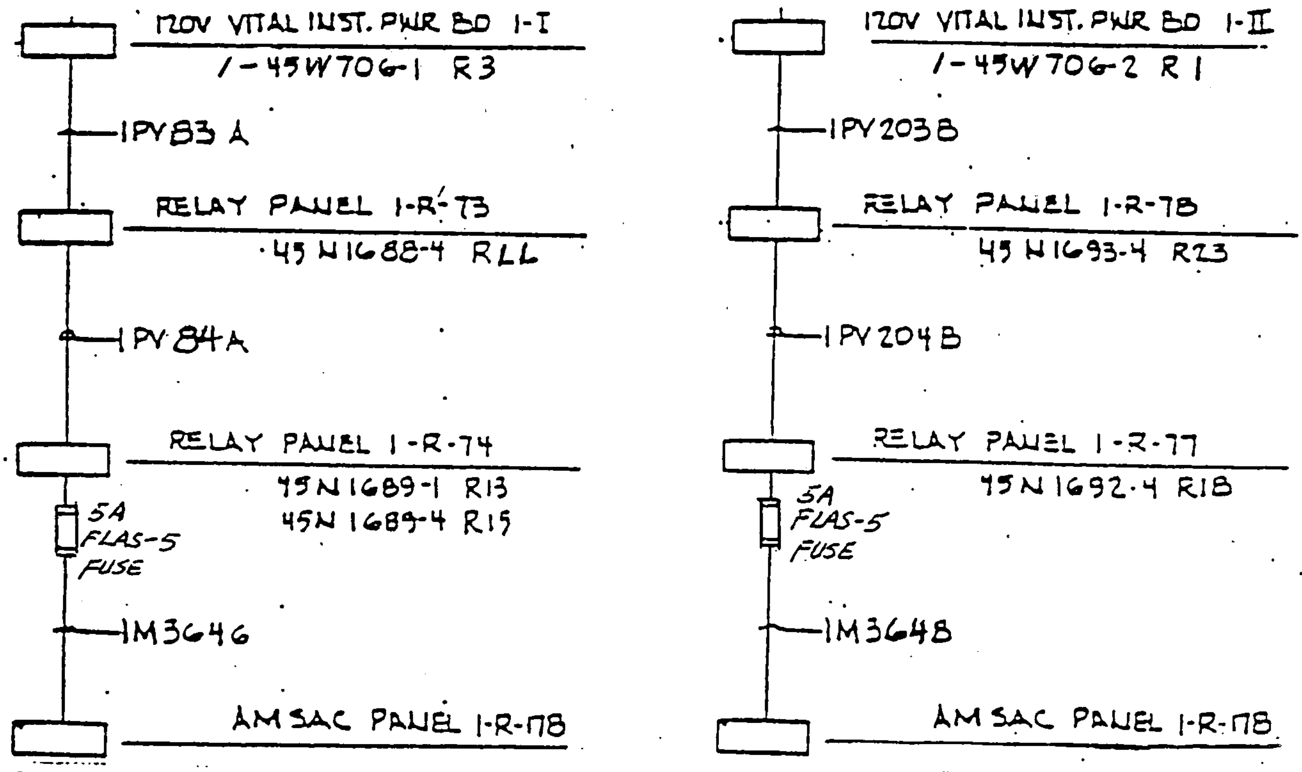
9.0 CONCLUSION

The control cables are adequately protected by the existing protective devices.

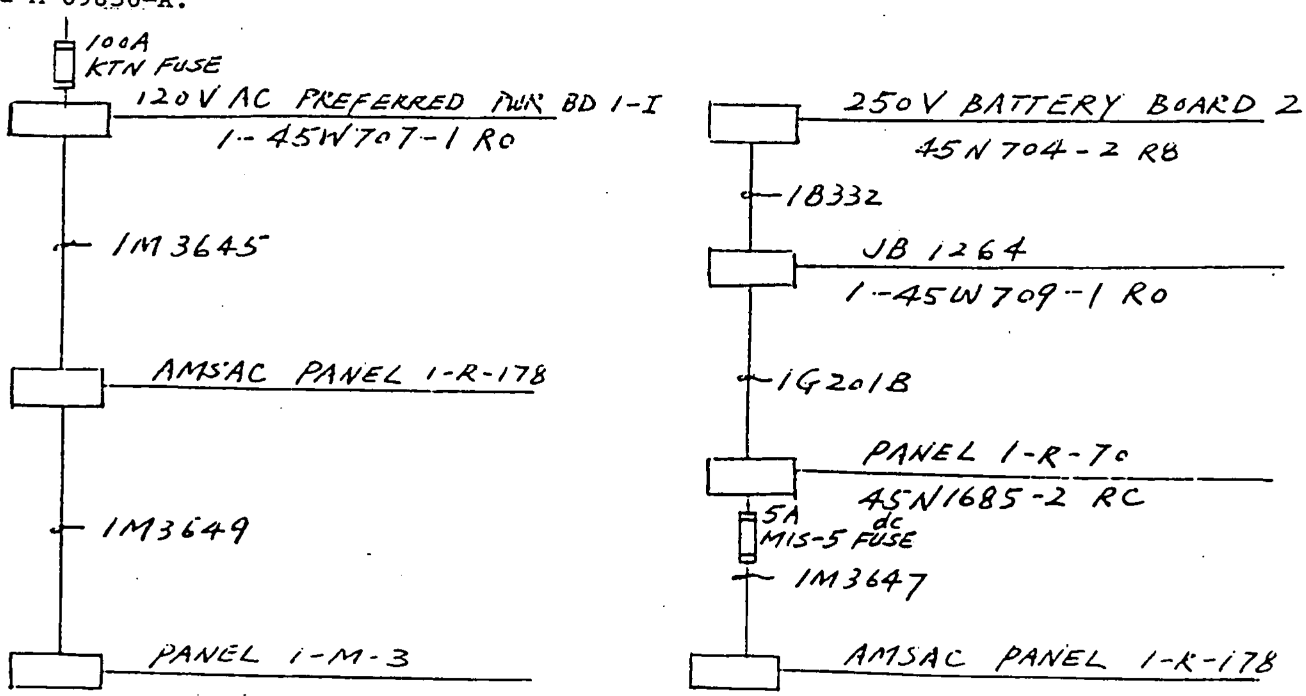
10.0 APPENDIX A - MIS-5 d.c. time-current curve and short circuit characteristics of #12 AWG cable.

APPENDIX B - Letter from Bussman Mfg. Co. to TVA regarding electrical rating of Bussman MIS-5 d.c. fuses.

PREPARED: WJH DATE: 8-26-91
VERIFIED: [signature] DATE: 08-26-91

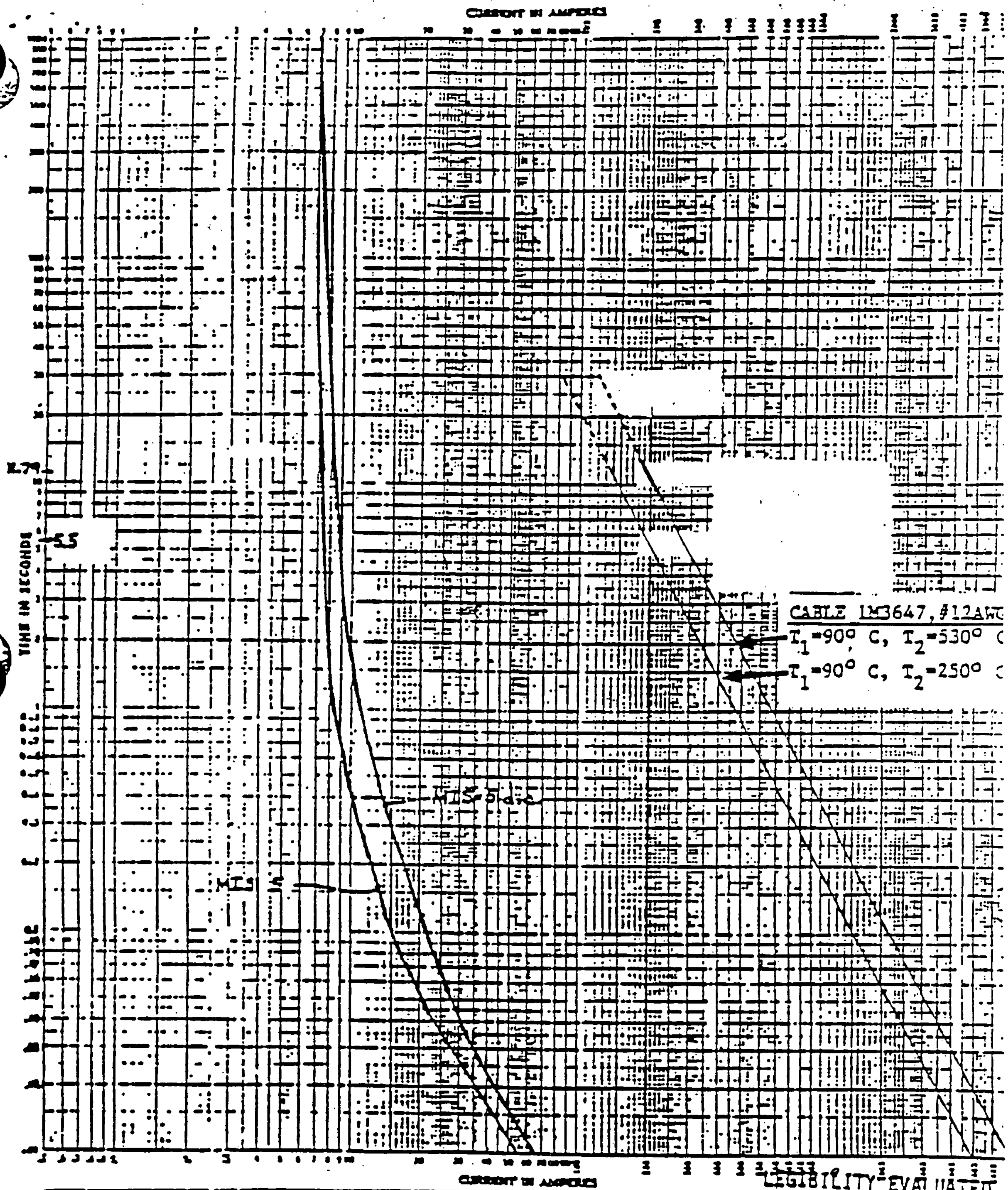


Above 120V AC vital panels short circuit protection are analysis in calculation No. WBN EEB-MS-TI07-0018 R0 Section 8, and Attachments P-02939-A and M-09836-A.



See sheet E14 of Attachment E of Calculation No. WBPEVAR9001006 for short circuit protection
2661x

ATTACHMENT NO. MP E110007
CALC. NO. WBPEVAR 9001006 APPENDIX A Sheet 1 of 1



TIME-CURRENT CHARACTERISTIC CURVES

BASIS FOR DATA

LEGIBILITY EVALUATED
ACCEPTED for issue.

CCL 7/12/89

Signature Date

ATTACHMENT NO. MP E110007 Sh. 8
CALC. NO. WBPEVAR 9001006

APPENDIX B
SHEET 1 OF 1

BUSSMANN

June 8, 1987

Mr. Francis Rosenzwig
Tennessee Valley Authority
400 West Summit Hill Dr.
Knoxville, Tennessee 37901

Re: Bussmann MIS Indicating Fuse

Dear Mr. Rosenzwig:

Over the past six months we have been working to resolve the problems encountered by TVA with Bussmann's MIS-5 fuse. During that time period, we were asked by Nutherm International if our redesigned MIS-5 would function at 300 volts D.C. This request apparently was originated by Ron Jenkins of TVA. Upon completion of our redesign, we tested the MIS-5 at 300 volts D.C. and found it capable of interrupting fault currents to 20,000 amperes.

We have supplied 100 of these fuses rated for 20,000 A.I.C. at 300 volts to Nutherm for TVA, and have received an order for 170 additional units. These fuses are differentiated from the old MIS-5 by not having a label and imprinting MIS-5 D.C. in the ferrule.

Bussmann has completed testing of the redesigned MIS-5 which will have the following ratings:

600 volts A.C.	300 volts D.C.
200,000 A.I.C.	20,000 A.I.C.

We have made a proposal to Nutherm International covering the new design. They will in turn make a proposal to TVA. TVA's response will determine whether Bussmann begins production of the new design.

I hope this information is helpful. If you have any questions or need additional information, please contact your local Bussmann engineer, Doug Aldredge.

Sincerely,

Thomas P. Speas, Jr.
Marketing Manager, Electrical

TPS:jj

cc: Doug Aldredge

PO Box 14460
St. Louis, Missouri 63178
(314) 394-2877 Telex 44-841

PREPARED BY Mac Roopani DATE 9/18/91

CHECKED BY [signature] DATE 09-18-91

1.0 PURPOSE & SCOPE

The purpose of this attachment is to delete cable #1M3544 from calculation #WBPEVAR9001006 per DCN M-14174-A. The subject cable is part of the experimental HTRCS CRUD Sample Station which was removed per DCR #P-765. The following calculation is affected:

CALCULATION	CALCULATION NO.
Reg. Guide 1.75 Associated Circuits and APP. R Analysis for Non-Class 1E 120 VAC and 250 VDC Circuits.	WBPEVAR9001006

This attachment deletes cable #1M3544 from calculation #WBPEVAR9001006 only.

ATTACHMENT M14174A
CALCULATION WBPEVAR9001006

PREPARED BY *Mac Roxpan* DATE *9/18/91*

CHECKED BY *[signature]* DATE *09-18-91*

2.0 ASSUMPTIONS

See Baseline Calculation

3.0 SOURCES OF DESIGN INPUT/REFERENCES

3.1 DCN No. M-14174-A

4.0 DESIGN INPUT DATA

Cable #1M3544 shall be deleted per Reference 3.1.

5.0 JUSTIFICATION OF ASSUMPTIONS

None

6.0 METHODOLOGY

Cable #1M3544 was evaluated on Sheet B35 of calculation #WBPEVAR9001006 only. Thus, it is called out to initiate deletion as shown in Appendix 1.

7.0 GRAPHICS

Not applicable

8.0 SUMMARY OF RESULTS

Cable #1M3544 is deleted from page B35 of calculation #WBPEVAR9001006 (See Appendix 1).

9.0 CONCLUSION

Cable #1M3544 is deleted from calculation #WBPEVAR9001006. Conclusions of previous revisions remain unchanged.

10.0 APPENDIXES AND ATTACHMENTS

Appendix 1, Sheet B35 of Calculation #WBPEVAR9001006.

WBPEVAR9001006
ATTACHMENT # M14174A

APPENDIX 1

SHEET ~~B75~~ M.R. 9/16/91
PREPARED W A Lambert DATE 1-31-90
CHECKED JC Butler DATE 2-1-90

PAGE 3

BOARD: 1. 1-B0-237-A 2. ______ 3. ______
4. ______ 5. ______ 6. ______

BOARD REF #	CURVE NO.	COMPT/ BKR #/ FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/REF.
1	27	1	1M8	WDK	4/0	X		45N1646-1 R5
	27	2	1M12	WDK	4/0	X		"
	26	3	1PV2	WDH	1/0	X		45N706-1 R20
	26	4	2PV2	WDH	1/0	X		"
	25	5	1M2	WDJ	2/0	X		45N707-1 R4
	25	6	N/A SPARE					
	24	7	1RR994	WDF	4	X		45N1624-1 R1
			1RR997	WDE	6	X		45N1624-2 R0
			1RR1015	WDE	6	X		45N1624-3 R0
			1RR1042	WDE	6	X		45N1624-5 R0
			1RR1092	WDE	6	X		45N1624-4 R0
			1RR1233	WDE	6	X		45N1624-6 R1
	23	8	T1600	WDE-1	6	X		55N1303
	22	9	N/A SPARE					
	22	10	N/A SPARE					
	21	11	1PV3	WGB	12	X		45N709-4 R3
	21	12	2PV3	WGB	12	X		"
	21	13	1M5	WGB-1	12	X		45N709-1 R6
	~~21~~	~~14~~	~~1M3544~~	~~WGB-1~~	~~12~~	~~X~~		~~45N1635-103 R1 L-376A~~
	21	15	1V7980	WGB	12	X		45N1641-10 R10 1-M-2
			1V7982	WGD	12	X		45N1670-6 R1 JB1299
			1V7983	WGB	12	X		
			1V7984	WGB	12	X		
			1V7985	WGB	12	X		
			1V8012	WGD	12	X		45N1630-5 R1
			1V8013	WGB	12	X		
			1V8014	WGB	12	X		
			1V8015	WGB	12	X		
			1V7992	WGD	12	X		45N1630-7 R1
			1V7993	WGB	12	X		
			1V7994	WGB	12	X		
			1V7995	WGB	12	X		
			(BKR 15 CONTINUED)					

DELETE PER DCN # M-14174-A

M.R. 9/16

09-16-9

Prepared by Jontern Date 10-02-91

Checked by B. Fitzgerald Date 10-2-91

1.0 PURPOSE AND SCOPE

1.1 Purpose

The purpose of this attachment is to evaluate and support the modifications to be implemented under DCN P-01219-D. Cable 1M1572 termination is transferred from board 1-BD-238-1 to board 1-BD-237-A.

This attachment documents the hardware change (voltage drop and protection calculations are documented in mini calculation No. WBPE0708809011), which affects the baseline calculation shown below. This attachment is tailored to the specific baseline calculation shown in the heading above.

Baseline Calculation	Calculation No.
Reg. Guide 1.75 Associated Circuits and Appendix R Analysis of Non-Class 1E 120VAC & 250 VDC Circuits	WBPEVAR9001006

1.2 Scope

The scope of this attachment is to modify pages B36 and B48 of the Baseline Calculation to reflect implementation of DCN No. P-01219-D.

2.0 ASSUMPTIONS

See Baseline Calculation.

3.0 SOURCES OF DESIGN INPUT/REFERENCES

3.1 DCN No. P-01219-D

3.2 Baseline Calculation

3.3 Department Guidelines for Electrical Mini Calculation Roll-up, Elec-004. (dated 04/30/91)

4.0 DESIGN INPUT DATA

See Section 3.0

5.0 JUSTIFICATION OF ASSUMPTIONS

See Baseline Calculation

6.0 METHODOLOGY

Same as Baseline Calculation

7.0 GRAPHICS

Not applicable

8.0 SUMMARY OF RESULTS

Termination of cable 1M1572 is transferred from board 1-BD-238-1 to board 1-BD-237-A.

9.0 CONCLUSIONS

The transfer of termination of cable 1M1572 from board 1-BD-238-1 to board 1-BD-237-A is adequate.

10.0 APPENDICES

Appendix A	Page B36 of Baseline Calculation
Appendix B	Page B48 of Baseline Calculation

WBPEVAR9001006
Attachment P-01219-D

Page 3
Appendix A

SHEET B36 J.I.H. 10-02-91 BF 10-2-91
RO: PREPARED W B Lambert DATE 1-31-90
CHECKED J C Butler DATE 2-1-90

BOARD: 1. 1-BD-237-A (CONT.) 2. ______ 3. ______
4. ______ 5. ______ 6. ______

BOARD REF #	CURVE NO.	COMPT/BKR #/FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/REF.
1	21	15	(BKR 15 CONT)					
			1V8002	WGD	12	X		45N1630-7 R1
			1V8003	WGB	12	X		
			1V8004	WGB	12	X		
			1V8005	WGB	12	X		
			1V8022	WGD	12	X		45N1630-5 R1
			1V8023	WGB	12	X		
			1V8024	WGB	12	X		
			1V8025	WGB	12	X		
			1V8032	WGD	12	X		45N1630-6 R1
			1V8033	WGB	12	X		
			1V8034	WGB	12	X		
			1V8035	WGB	12	X		
	21	16*	1SG280	WGB	12	X		45N1632-9 R3 * SEE ADDNL CABLES AT END
			1SG281	WGC	12	X		
			1SG282	WGB-1	12	X		
	21	17	~~N/A SPARE~~					J.I.H. 10-02-91 BF 10-2-91 DCN P-01219-D
	21	18	1M1572 ~~N/A SPARE~~	WGB-2	12	X		
	21	19	M180	WGB	12	X		45N1635-48 R30
			~~M181~~	~~WHB~~	~~14~~		X	FURTHER EVALUATION REVEALS THAT CABLES DO NOT ENTER A CAT. I STRUCTURE R3
			~~M182~~	~~WHB~~	~~14~~		X	
			~~M183~~	~~WHB~~	~~14~~		X	
			~~M184~~	~~WHB~~	~~14~~		X	
			~~M185~~	~~WHB~~	~~14~~		X	
	21	20	A1580	WGB	12	X		45N1636-3 R1 50-C-4C
			A1581	WGB	12	X		45N1636-5 R4
	21	21	1G980	WGB	12	X		45N1686-3 R13
			1G981	WGB	12	X		
			1G982	WGB-1	12	X		
			1G983	WGD	12	X		
			1G984	WGB-1	12	X		
			1G985	WGB	12	X		
			1G987	WGB	12	X		

WBPEVAR9001006 Page 4
Attachment P-01219-D Appendix B

J.I.H. 10-02-91 ~~PAGE B48~~ BF 10-2-91

RO: COMPUTED Wom DATE 1-31-90
CHECKED JCButler DATE 2-1-90

BOARD: 1. 1-BD-238-1 2. ______ 3. ______
4. ______ 5. ______ 6. ______

BOARD REF #	CURVE NO.	COMPT/BKR #/FUSE	CABLE NO.	MK #	SIZE	PASS	FAIL	NOTES/REF.
1	*	101	1M3	WDJ	2/0	✓	✓	95N707-1(R4) (BKRS ARE IDENTIFIED AS 'CF' ON DWG & REVISED WALKDOWN DATA) (see REF. 3.4)
1	*	102	2M4	WDJ	2/0	✓	✓	
1	*	103	1M1	WDG	2	✓	✓	
1	*	104	T1120	WDE	6	✓	✓	
1		105	SPARE?	-	-	-	-	
1	**	106	B109	WHB	14	✓	✓	
1	**	107	B195	WGB	12	✓	✓	
1	**	108	1G149	WGB-1	12	✓	✓	
1	**	109	1M1262	WGB	12	✓	✓	
1	**	110	1G860	WGB	12	✓	✓	R3
1	**	111	M191	WGB-1	12	✓	✓	
1	**	112	M190	WGB	12	✓	✓	
1	**	113	SPARE ~~1M1572~~	~~WGB-2~~	~~12~~	~~✓~~	~~✓~~	J.I.H. 10-02-91 DCN BF 10-2-91 P-01219-D
1	**	114	1M1560	WGB-1	12	✓	✓	
1	**	115	1M1566	WGB-1	12	✓	✓	
1	**	116	1M3479	WFB-1	10	✓	✓	
1	**	117	1M3458	WGB-1	12	✓	✓	
1	**	118	1M3459	WGB-1	12	✓	✓	
1	**	119	1M3035	WGB-1	12	✓	✓	
1	**	120	1M3036	WGB-1	12	✓	✓	
1		121	SPARE					
1		122	"					
1		123	"					
1		124	"					

*HEINEMAN TYPE KU-793
2 POLE, 60 AMP 'CF'. R3
CURVE NO. 109

2-POLE, 60 AMP

**HEINEMAN
TYPE KU-793, CF R3
2 POLE, 15 AMP
CURVE NO. 39

Calculation WBPEVAR9001006
Attachment M16428A
Failed Cables Analysis

Prepared by: GRG Date: 11-25-91
Checked by: DK Date: 12/11/91

1.0 PURPOSE & SCOPE

The purpose of this analysis is to evaluate the circuits containing cables identified as "fail" in Appendix B of this Calculation.

2.0 ASSUMPTIONS

See baseline calculation.

3.0 SOURCES OF DESIGN INPUT/REFERENCES

3.1 Baseline Calculation.
3.2 TVA Procurement Specification SS-E25.013.
3.3 Westinghouse Electric Corporation Time/Current Characteristic Curve No. SC-4559-89.
3.4 Walkdown Data for Non-Class IE Equipment (RIMS B26900201400).

4.0 DESIGN INPUT DATA

4.1 Appendix B provides the list of circuits identified as "fail".
4.2 Cable 1PL136, type WHG with an insulation temperature rating of 75 degrees C.
4.3 Time/current plot curve for Westinghouse Bryant BR type breakers.
4.4 Data collected to identify the manufacturer, size and type of breakers and fuses in equipments.

5.0 JUSTIFICATION OF ASSUMPTIONS

See baseline calculation.

6.0 METHODOLOGY

Attachment 1 lists the circuits identified as "fail" in Appendix B, along with the associated reason for failure. For circuits identified as missing vendor data, manufacturers were contacted in order to obtain this data. Data that was received was used where applicable (Ref. Curve 113). If vendor data could not be located, the protective device was replaced.

For circuits identified as containing an undersized cable, a review was performed to determine if the undersized cable was located in a non-1E structure. This included reviewing the CCRS to determine the "to" and "from" end points. If both were in a non-1E structure, no further evaluation was performed since the failure of these cables will not degrade Class 1E safety-related cables. For undersized cables located in Class 1E structures, either the protective device was replaced or the cable was resized.

Protective device replacement/cable replacement is documented in Attachment 2.

7.0 GRAPHICS

See baseline calculation.

8.0 SUMMARY OF RESULTS

The review of Appendix B identified 43 circuits listed as "FAIL". Of these 43 circuits, 4 were eliminated upon receipt of vendor data, 20 were eliminated due to location of undersized cable in non-1E structure, 1 was eliminated based on walkdown data, and 18 were identified in Attachment 2 as requiring correction action.

NOTE: DCN M-16428-A has been assigned to address the corrective action for these circuits.

9.0 CONCLUSION

After implementation of DCN M-16428-A, the protective devices will provide adequate cable protection, with respect to thermal damage, for the circuits listed in Appendix B.

10.0 APPENDIXES AND ATTACHMENTS

Attachment 1, pages G3 and G4.
Attachment 2, pages G5 and G6.
Attachment 3, page G7.

ATTACHMENT M16428A (PAGE 3)
~~APPENDIX G (PAGE G3)~~ DJL 12/11/91

CALC WBPEVAR9001006 ATTACHMENT 1

PAGE	BOARD	CIRCUIT	REASON FOR FAILURE	JUSTIFICATION/EVALUATION
B08	0-MCC-220-1	5C4	CABLE SIZE	NON-1E STRUCTURE
B09	0-MCC-222-HS	B8	NO VENDOR DATA	REPLACE PROT DEVICE
B09	0-MCC-222-HS	B9	NO VENDOR DATA	REPLACE PROT DEVICE
B09	0-MCC-222-HS	B10	NO VENDOR DATA	REPLACE PROT DEVICE
B09	0-MCC-222-HS	B11	NO VENDOR DATA	REPLACE PROT DEVICE
B09	0-MCC-222-HS	B12	NO VENDOR DATA	REPLACE PROT DEVICE
B12	0-BD-228-3	2C1	CABLE SIZE	REPLACE CABLE
B13	0-BD-227-3	1D2	CABLE SIZE	NON 1E STRUCTURE
B13	0-BD-227-4	1D2	CABLE SIZE	NON 1E STRUCTURE
B14	1-BD-203-A	A71	CABLE SIZE	REPLACE PROT DEVICE
[illegible]5	0-LAC-228-131	1	CABLE SIZE	WALKDOWN DATA - PASS
B35	1-BD-237-A	11	CABLE SIZE	REPLACE CABLE
B35	1-BD-237-A	12	CABLE SIZE	REPLACE CABLE
B36	1-BD-237-A	19	CABLE SIZE	NON 1E STRUCTURE
B37	1-BD-237-A	26	CABLE SIZE	NON 1E STRUCTURE
B38	1-BD-237-B	10	CABLE SIZE	NON 1E STRUCTURE
B39	1-BD-237-B	11	CABLE SIZE	REPLACE CABLE
B39	1-BD-237-B	12	CABLE SIZE	REPLACE CABLE
B42	2-BD-237-A	11	CABLE SIZE	REPLACE CABLE
B42	2-BD-237-A	26	CABLE SIZE	NON 1E STRUCTURE
B43	2-BD-237-B	11	CABLE SIZE	REPLACE CABLE
B43	2-BD-237-B	12	CABLE SIZE	REPLACE CABLE
B43	2-BD-237-B	22	CABLE SIZE	NON 1E STRUCTURE
B44	1-BD-237-M7-A	13	CABLE SIZE	NON 1E STRUCTURE
B44	1-BD-237-M7-A	22	CABLE SIZE	NON 1E STRUCTURE

ATTACHMENT M16428A (PAGE 4)
~~APPENDIX G (PAGE G4)~~ DJK 12/11/91

CALC WBPEVAR9001006 ATTACHMENT 1

PAGE	BOARD	CIRCUIT	REASON FOR FAILURE	JUSTIFICATION/EVALUATION
B44	1-BD-237-M7-A	24	CABLE SIZE	REPLACE CABLE
B44	1-BD-237-M7-A	25	CABLE SIZE	NON 1E STRUCTURE
B45	1-BD-237-M7-B	4	CABLE SIZE	NON 1E STRUCTURE
B45	1-BD-237-M7-B	6	CABLE SIZE	NON 1E STRUCTURE
B45	1-BD-237-M7-B	24	CABLE SIZE	NON 1E STRUCTURE
B46	2-BD-237-M7-B	25	CABLE SIZE	NON 1E STRUCTURE
B53	0-DBD-239-6	8	CABLE SIZE	REPLACE PROT DEVICE
B53	0-DBD-239-6	9	CABLE SIZE	REPLACE PROT DEVICE
B53	0-DBD-239-6	17	CABLE SIZE	REPLACE PROT DEVICE
B54	0-BD-239-1	202	CABLE SIZE	NON 1E STRUCTURE
B54	0-BD-239-1	211	CABLE SIZE	NON 1E STRUCTURE
B54	0-BD-239-1	212	CABLE SIZE	NON 1E STRUCTURE
B56	0-DPL-239-2	202	CABLE SIZE	NON 1E STRUCTURE
B65	1-BD-242-1	B2	CABLE SIZE	VENDOR DATA DJK 12/11/91
B66	2-BD-242-1	B2	CABLE SIZE	VENDOR DATA
B71	1-CMPT-261-R10		VENDOR DATA	DATA REC'D - PASS
B71	2-CMPT-261-R10		VENDOR DATA	DATA REC'D - PASS
B75	2-BD-201-C	2C7	CABLE SIZE	NON 1E STRUCTURE

ATTACHMENT M16428A (PAGE 5)
~~APPENDIX G (PAGE G5)~~ DJC 12/11/91

CALC WBPEVAR9001006 ATTACHMENT 2

PAGE	BOARD	CIRCUIT	CORRECTIVE ACTION
B09	0-MCC-222-HS	B8	REPLACE BKR #8 (WESTINGHOUSE DB1-W1015) WITH WESTINGHOUSE EDB15
B09	0-MCC-222-HS	B9	REPLACE BKR #9 (WESTINGHOUSE DB1-W1015) WITH WESTINGHOUSE EDB15
B09	0-MCC-222-HS	B10	REPLACE BKR #10 (WESTINGHOUSE DB1-W1015) WITH WESTINGHOUSE EDB15
B09	0-MCC-222-HS	B11	REPLACE BKR#11 (WESTINGHOUSE DB1-W1015) WITH WESTINGHOUSE EDB15
B09	0-MCC-222-HS	B12	REPLACE BKR#12 (WESTINGHOUSE DB1-W1015) WITH WESTINGHOUSE EDB15
B12	0-BD-228-3	2C1	REPLACE CABLES M29 AND M39 WITH A MIN. 2/0 CABLE
B14	1-BD-203-A	A71	FOR CABLE 1PL139 REPLACE BUSSMAN TYPE KLC30 WITH BUSSMAN TYPE KTK20
B35	1-BD-237-A	11	REPLACE CABLE 1PV4 WITH A #14 RATED @ 90°C OR BETTER
B35	1-BD-237-A	12	REPLACE CABLE 2PV4 WITH A #14 RATED @ 90°C OR BETTER
B39	1-BD-237-B	11	REPLACE CABLE 1PV123 WITH A #14 RATED @ 90°C OR BETTER
B39	1-BD-237-B	12	REPLACE CABLE 2PV12 WITH A #14 RATED @ 90°C OR BETTER
B42	2-BD-237-A	11	REPLACE CABLE 1PV243 WITH A #14 RATED @ 90°C OR BETTER
B43	2-BD-237-B	11	REPLACE CABLE 1PV363 WITH A #14 RATED @ 90°C OR BETTER
B43	2-BD-237-B	12	REPLACE CABLE 2PV363 WITH A #14 RATED @ 90°C OR BETTER
B44	1-BD-237-M7-A	24	REPLACE CABLE 1PM4712 WITH A #12 OR BETTER
B53	0-DBD-239-6	8	FOR CABLES J59, J60, J64 & J172 REPLACE ~~FUSE~~ BKR WITH A GETHED15 (DJC 12/11/91)
B53	0-DBD-239-6	9	FOR CABLES J46, J47, & J50 REPLACE ~~FUSE~~ BKR WITH A GETHED15 (DJC 12/11/91)

ATTACHMENT M16428A (PAGE 6)
~~APPENDIX B (PAGE G6)~~ DJC 12/11/91

CALC WBPEVAR9001006 ATTACHMENT 2

PAGE	BOARD	CIRCUIT	CORRECTIVE ACTION
B53	0-DBD-239-6	17	FOR CABLE J43 REPLACE FUSE WITH A GETHED15

ATTACHMENT M16428A
CALCULATION WBPEVAR9001006 PAGE 42 ~~PAGE G9 G4~~ GRG 11/20/91 ~~G7~~
11/1/91

ATTACHMENT ~~2~~ 3
GRG 11/20/91

WALKDOWN DATA

BOARD /LIGHTING CABINET 0-LAC-228-131

COMPARTMENT NO. /CIRCUIT NO. 1

SINGLE LINE DRAWING REFERENCE /CIRCUIT SCHEDULE 55B411-2

A. CIRCUIT BREAKER

1. Manufacturer: FEDERAL PACIFIC
2. Model/Catalog No. N/A
3. Type 3 POLE
4. Continuous Current Rating 20A
5. Instantaneous Setting (For Adjustable Breakers) N/A

B. FUSE

1. Manufacturer
2. Model/Catalog No.
3. Type
4. Size

GRG 10/21/91 RB 21 OCT 91

C. OL HEATER NO.

D. Field Verification Data at the Device

	Cable #1	Cable #2	Cable #3
Cable ID	N/A	N/A	
Contract No.	N/A	N/A	
Mark No.	N/A	N/A	
Footage Marker	N/A	N/A	
Other Data	TYPE THHN	TYPE THHN or THWN	
*No. of Conductors	1	1	
*Size	#12	#12 **	

GRG 10/21/91 RB 21 OCT 91

*If mark number not available, determine and record this data.

** PWC N.A. GASOLINE & OIL RESISTANCE

FIRST PARTY VERIFIER: [signature] DATE 10/21/91 SECOND PARTY VERIFIER: [signature] DATE 21 OCT 91

Calculation No. WBPEVAR9001006
Attachment No. M12051C

Prepared by L. J. McC— Date 03-09-92

Checked by P. [illegible] Date 3/11/92

Sheet 1

TABLE OF CONTENTS

ATTACHMENT No. M-12051-C

1.0	PURPOSE AND SCOPE	2, 3
2.0	ASSUMPTIONS	3
3.0	REFERENCES	3
4.0	DESIGN INPUT DATA	3
5.0	JUSTIFICATION OF ASSUMPTIONS	3
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9.0	SUMMARY OF RESULTS	5
10.0	CONCLUSION	5
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A - DCN M-12051-C, Cable Sheet (8 pages)
B - DCN M-12051-C, Drawings (2 pages)
C - Sketch No. FJM 030992 (1 page)
D - GES 8110 and 8111 (2 pages)
E - Chase Shawmut Curve (1 page)
F - Verification Worksheet (1 page)
G - RECORD OF TELEPHONE CONV. (1 PAGE)

This sheet added by Rev. 8

1.0 PURPOSE AND SCOPE

1.1 Purpose

The purpose of this attachment is to verify the adequacy of the potential transformer circuits for the CSST C and D load tap changer as identified in DCN M-12051-C.

This attachment is tailored to the specific baseline calculations shown below.

BASELINE CALCULATION	CALCULATION NO.
125V DC Voltage Analysis	WBN EEB-MS-TI11-0004
125V DC Vital Battery and Charger Capacity Evaluation	WBN EEB-MS-TI11-0003
Reg. Guide-1.75 Associated Circuits and Appendix R Analysis for Non-class 1E 120V AC & 250V DC Circuits	WBPEVAR9001006

1.2 Scope

The cables added by this attachment are as follows:

SS576P	SS569R
SS577P	SS570R

These cables will be connecting the potential transformer secondaries from the 6900 volt Shutdown Boards to the load tap changer control board on each transormer secondary winding. CSST-C and D both have two load tap changer associated with secondary windings X and Y.

Each potential circuit will have two (2) fuses mounted at the switchgear to provide isolation and protection for the Class 1E potential transformers.

The adequacy of these fuse will be determined.

2.0 ASSUMPTIONS

See Baseline Calculation. No new assumptions, and no unverified assumptions this attahcment.

3.0 REFERENCES

3.1 DCN M-12051-C

3.2 Fuse characteristics as follows:

a) Chase-Shawmut Co. Class K-5 one-time fuse melting time-current data from Catalog No. OT-6, Appendix E. Fuse is rated 250 Volts and has 50000 Amp interrupting capacity.
b) General Electric Co. Class EJ-1 fuse minimum melting time and maximum total clearance time, GES-8110 and GES-8111, Appendix D. Rating is 14.4kV, 80,000 AMPS I.C. f.j.m 03-13-92

3.3 ABB Power Instruction Manual (ABB #MNM 5695-12), TVA #2795, RIMS [B26 910909 606]

3.4 DS-E12.6.3, Revision 2, "Auxiliary and Control Power Cable Sizing up to 15000 Volts," TVA - Electrical Design Standard

3.5 TVA Branch Instruction EEB-TI-08, Rev. 0.

4.0 DESIGN INPUT DATA

4.1 Cables shall be added per Reference 3.1

4.2 Fuses and fuse mounting shall be added by Reference 3.1

5.0 JUSTIFICATION OF ASSUMPTIONS

None

Calculation No. WBPEVAR9001006
Attachment No. M12051C

Prepared by [signature] Date 03-13-92

Checked by [signature] Date 3/13/92

Sheet 4

6.0 METHODOLOGY

6.1 Determine adequacy of cable size by reference to ABB Instruction Manual

6.2 Show coordination curves and adequacy of protection of potential transformer circuit

7.0 ANALYSIS

7.1 ABB Load TAP Changer required input is 6 volt-amps at 120 volts AC.

$$I_{LTC} = \frac{6 \text{ volt-amps}}{120 \text{ volts}} = 0.05 \text{ amps}$$

Cable ampacity in NV-3 tray = 29 amps per DS-E-12.6.3, Reference number 3.4

$$29 \text{ amps} \gg 0.05 \text{ amps}$$

Fuse Rating is 250 Volts, 50,000 Amps interrupting capacity.

7.2 Cable withstand for No. 8 AWG is calculated from following formula:

$$\left[\frac{I_w}{A}\right]^2 t = .0297 \log\left[\frac{250 + 234}{90 + 234}\right] \quad *$$

$$I_w^2 t = .00518\ A^2 = 1.412 \times 10^6$$

where A = 16510 circular mils (#8 AWG)

@ 10 sec. $I_w = \sqrt{.1412 \times 10^6} = 376$ Amps

@ 1 sec. $I_w = \sqrt{1.\cancel{1}412 \times 10^6} = 1188$ Amps

3-13-92

* from Reference 3.5

7.3 Potential Transformer Impedance (GE Type J~~MV~~ VM)* 03-13-92

$Z = 0.3$ ohms $\angle 41°$ @ 120 Volts

For Bolted Fault at secondary terminals,

$$I_{sc} = \frac{120 \angle 0°}{0.3 \angle 41°} = 400 \text{ AMPS } \angle -41°$$

* Per General Electric Co.
Somersworth, N.H.
SEE APPENDIX G

This sheet added by Rev. 8

Calculation No. WBPEVAR9001006
Attachment No. M12051C

Prepared by F.J. Le Cam Date 03-13-92

Checked by P. Kleinschmidt Date 3/13/92

Sheet 5

8.0 GRAPHICS

8.1 See Reference 3.1

8.2 Attached coordination curves - Sketch Number FJM 030992, REV. 1 F.J. 3-13-92

9.0 SUMMARY OF RESULTS

Cables SS576P, SS577P, SS569R, and SS570R are listed and fuses are identified on Sketch Number FJM 030992 and protect the cable and are coordinated to prevent loss of 1E ckt..

9.1

Cable	Size	Max. Cable Ampacity	10 Sec Thermal Damage	Load Current	Allowed A	Pass Fail	P.T. Max S.C.
SS576P	#8AWG	29 amps	376AMPS	0.05 amps	6.0 amps	P	400AMPS
SS577P	#8AWG	29 amps	376AMPS	0.05 amps	6.0 amps	P	400AMPS
SS569R	#8AWG	29 amps	376AMPS	0.05 amps	6.0 amps	P	400AMPS
SS570R	#8AWG	29 amps	376AMPS	0.05 amps	6.0 amps	P	400AMPS

9.2 Fuses

A - Chase Shawmut - Cat. OT-6
B - General Electric - Type EJ-1 - 2E

10.0 CONCLUSION

The cables are adequately sized and protected for their intended use.

11.0 APPENDICES

A - DCN M-12051-C, Cable Installation Sheets (8 pages)

B - DCN M-12051-C, Drawings (2 pages)

C - Sketch Number FJM 030992, Rev. 1

D - GES-8110 and 8111 - General Electric Company

E - Chase Shawmut Company Catelog Number OT-6 Curve 0716

F - Verification Worksheet

G - RECORD OF TELEPHONE CONVERSATION

CALCULATION No. WBPEVAR 9001006

APPENDIX A

DCN NO. M-12051-C
Page____

ATTACHMENT No. M-12051-C

WATTS BAR CABLE ROUTING SYSTEM

CABLE INSTALLATION SHEET

CONST ID: 0-3SS-200-0576-P REVISION: R01

CABLE ID		SEP	SET	REV	NV	SYS	FNODE	TNODE	U2/U1	APX-R	50.49
SS	576	P	1*2	R01	3	200	3169	2157		P	

CABLETYP	#CA	#CO	MCM/AWG	PULL RAD	TRAIN RAD	CONTRACT
WFA-10	1	2C	8	0.000		75670A-1

FROM ID: 0-0XF-200-D LOC/ELEV: A2TX /728 DWG: 75W510-2
TO ID: 1-BD-211-B/17-B LOC/ELEV: A11R /757 DWG: 012604542-2

FOR: LTC X POTENTIAL XFMR (BKR 1812) ECN: DCN: M12051

DSGN LENGTH	N/R LNGTH	TRAY LENGTH	COND LENGTH	VERIF DATE
1106	4	927	175	920305

CONDUITS: TYE486P, SS806P
SS122P

TRAY NODES: 3169 3170 3171 3172 3173 3174 3175 3176 3177 3178 3179 3045
3091 3092 3093 1585 1586 1614 1669 218 325 253 327 328 9014 329 238
370 369 342 829 2188 2155 2156 2157

DESIGNER: [signature] DATE: 03-06-92 CHECKER: [signature] DATE: 030692

THIS SHEET ADDED BY REV 8

APPENDIX A SHEET 2 OF 8

DCN NO. M-12051-C
Page

CALCULATION No. WBPEVAR 9001006
ATTACHMENT NO. M-12051-C

WATTS BAR CABLE ROUTING SYSTEM

CABLE INSTALLATION SHEET

CONST ID: 0-3SS-200-0576-P REVISION: R01

CABLE ID	SEP	SET	REV	NV	SYS	FNODE	TNODE	U2/U1	APX-R	50.49
SS 576	P	2*2	R01	3	200	2160	2496		P	

CABLETYP	#CA	#CO	MCM/AWG	PULL RAD	TRAIN RAD	CONTRACT
WFA-10	1	2C	8	0.000		75670A-1

FROM ID: 0-0XF-200-D LOC/ELEV: A2TX /728 DWG: 75W510-2
TO ID: 1-BD-211-B/17-B LOC/ELEV: A11R /757 DWG: 0126D4542-2

FOR: LTC X POTENTIAL XFMR (BKR 1812) ECN: DCN: M12051

DSGN LENGTH	N/R LNGTH	TRAY LENGTH	COND LENGTH	VERIF DATE
91	4	57	30	920305

CONDUITS:
SS123P

TRAY NODES: 2160 2183 2495 2496

DESIGNER: ______ DATE: 03-06-92 CHECKER: ______ DATE: 030692

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CALCULATION NO. WBPEVAR 9001006
ATTACHMENT NO. M-12051-C

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SHEET 3 OF 8

DCN NO. M-12051-C
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WATTS BAR CABLE ROUTING SYSTEM

CABLE INSTALLATION SHEET

CONST ID: 0-3SS-200-0577-P REVISION: R01

CABLE ID	SEP	SET	REV	NV	SYS	FNODE	TNODE	U2/U1	APX-R	50.49
SS 577	P	1*2	R01	3	200	3169	2157		P	

CABLETYP	#CA	#CO	MCM/AWG	PULL RAD	TRAIN RAD	CONTRACT
WFA-10	1	2C	8	0.000		75670A-1

FROM ID: 0-0XF-200-D LOC/ELEV: A2TX /728 DWG: 75W510-2
TO ID: 2-BD-211-B/17-B LOC/ELEV: A11S /757 DWG: 012604499-6

FOR: LTC Y POTENTIAL XFMR (BKR 2814) ECN: DCN: M12051

DSGN LENGTH	N/R LNGTH	TRAY LENGTH	COND LENGTH	VERIF DATE
1106	4	927	175	920305

CONDUITS: TYE479P, SS806P
SS122P

TRAY NODES: 3169 3170 3171 3172 3173 3174 3175 3176 3177 3178 3179 3045
3091 3092 3093 1585 1586 1614 1669 218 325 253 327 328 9014 329 238
370 369 342 829 2188 2155 2156 2157

DESIGNER: [signature] DATE: 03-06-92 CHECKER: [signature] DATE: 030692

SHEET 1 OF 2 DATE: 03/05/92

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ATTACHMENT NO. M-12051-C

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WATTS BAR CABLE ROUTING SYSTEM

CABLE INSTALLATION SHEET

CONST ID: 0-3SS-200-0577-P   REVISION: R01

CABLE ID	SEP	SET	REV	NV	SYS	FNODE	TNODE	U2/U1	APX-R	50.49
SS 577	P	2*2	R01	3	200	2160	2496		P	

CABLETYP	#CA	#CO	MCM/AWG	PULL RAD	TRAIN RAD	CONTRACT
WFA 10	1	2C	8	0.000		75670A-1

FROM ID: 0-0XF-200-D   LOC/ELEV: A2TX /728   DWG: 75W510-2
TO ID: 2-BD-211-B/17-B   LOC/ELEV: A11S /757   DWG: 012604499-6

FOR: LTC Y POTENTIAL XFMR (BKR 2814)   ECN: DCN: M12051

DSGN LENGTH	N/R LNGTH	TRAY LENGTH	COND LENGTH	VERIF DATE
96	4	57	35	920305

CONDUITS:
SS124P

TRAY NODES: 2160 2183 2495 2496

DESIGNER: [signature] DATE: 03-06-92 CHECKER: [signature] DATE: 030692

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ATTACHMENT NO' M-12051-C SHEET 5 OF 8

DCN NO. M-12051-C
Page

WATTS BAR CABLE ROUTING SYSTEM

CABLE INSTALLATION SHEET

CONST ID: 0-3SS-200-0569-R REVISION: R01

CABLE ID		SEP	SET	REV	NV	SYS	FNODE	TNODE	U2/U1	APX-R	50.49
SS	569	R	1*2	R01	3	200	3180	2251		P	

CABLETYP	#CA	#CO	MCM/AWG	PULL RAD	TRAIN RAD	CONTRACT
WFA-10	1	2C	8	0.000		75670A-1

FROM ID: 0-0XF-200-C LOC/ELEV: A3TX /728 DWG: 75W510-1
TO ID: 2-BD-211-A/17-A LOC/ELEV: A5R /757 DWG: 012604462-6

FOR: LTC X POTENTIAL XFMR (BKR 1712) ECN: DCN: M12051

DSGN LENGTH	N/R LNGTH	TRAY LENGTH	COND LENGTH	VERIF DATE
1128	4	989	135	920306

CONDUITS: TYE472R,SS805R
SS127R

TRAY NODES: 3180 3181 3182 3183 3184 3185 3186 3187 3188 3189 3190 3068
3069 1680 1681 1682 1685 408 484 443 486 488 9019 489 428 392 391
508 879 2253 2237 2236 2235 2234 2251

DESIGNER: [signature] DATE: 03 06 92 CHECKER: [signature] DATE: 030692

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CALCULATION NO. WBPEVAR 9001006
ATTACHMENT NO. M-12051-C

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Page

WATTS BAR CABLE ROUTING SYSTEM

CABLE INSTALLATION SHEET

CONST ID: 0-3SS-200-0569-R   REVISION: R01

CABLE ID		SEP	SET	REV	NV	SYS	FNODE	TNODE	U2/U1	APX-R	50.49
SS	569	R	2*2	R01	3	200	2316	2319		P	

CABLETYP	#CA	#CO	MCM/AWG	PULL RAD	TRAIN RAD	CONTRACT
WFA-10	1	2C	8	0.000		75670A-1

FROM ID: 0-0XF-200-C   LOC/ELEV: A3TX /728   DWG: 75W510-1
TO ID: 2-BD-211-A/17-A   LOC/ELEV: A5R /757   DWG: 0126D4462-6

FOR: LTC X POTENTIAL XFMR (BKR 1712)   ECN: DCN: M12051

DSGN LENGTH	N/R LNGTH	TRAY LENGTH	COND LENGTH	VERIF DATE
46	4	37	5	920306

CONDUITS:
SS125R

TRAY NODES: 2316 2317 2318 2319

DESIGNER: [signature] DATE: 03-06-92 CHECKER: [signature] DATE: 030692

SHEET 2 OF 2   DATE: 03/06/92

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WATTS BAR CABLE ROUTING SYSTEM

CABLE INSTALLATION SHEET

CONST ID: 0-3SS-200-0570-R REVISION: R01

CABLE ID		SEP	SET	REV	NV	SYS	FNODE	TNODE	U2/U1	APX-R	50.49
SS	570	R	1*2	R01	3	200	3180	2251		P	

CABLETYP	#CA	#CO	MCM/AWG	PULL RAD	TRAIN RAD	CONTRACT
WFA-10	1	2C	8	0.000		75670A-1

FROM ID: 0-0XF-200-C LOC/ELEV: A3TX /728 DWG: 75W510-1
TO ID: 1-BD-211-A/17-A LOC/ELEV: A4T /757 DWG: 0123D4593-2

FOR: LTC Y POTENTIAL XFMR (BKR 2714) ECN: DCN: M12051

DSGN LENGTH	N/R LNGTH	TRAY LENGTH	COND LENGTH	VERIF DATE
1128	4	989	135	920306

CONDUITS: TYE462R,SS805R
SS127R

TRAY NODES: 3180 3181 3182 3183 3184 3185 3186 3187 3188 3189 3190 3068
3069 1680 1681 1682 1685 408 484 443 486 488 9019 489 428 392 391
508 879 2253 2237 2236 2235 2234 2251

DESIGNER: [signature] DATE: 03-06-92 CHECKER: [signature] DATE: 030692

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CALCULATION NO. WBPEVAR 9001 006
ATTACHMENT NO. M-12051-C

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DCN NO. M-12051-C
Page

WATTS BAR CABLE ROUTING SYSTEM

CABLE INSTALLATION SHEET

CONST ID: 0-3SS-200-0570-R REVISION: R01

CABLE ID	SEP	SET	REV	NV	SYS	FNODE	TNODE	U2/U1	APX-R	50.49
SS 570	R	2*2	R01	3	200	2316	2319		P	

CABLETYP	#CA	#CO	MCM/AWG	PULL RAD	TRAIN RAD	CONTRACT
WFA-10	1	2C	8	0.000		75670A-1

FROM ID: 0-0XF-200-C LOC/ELEV: A3TX /728 DWG: 75W510-1
TO ID: 1-BD-211-A/17-A LOC/ELEV: A4T /757 DWG: 012D4593-2

FOR: LTC Y POTENTIAL XFMR (BKR 2714) ECN: DCN: M12051

DSGN LENGTH	N/R LNGTH	TRAY LENGTH	COND LENGTH	VERIF DATE
76	4	37	35	920306

CONDUITS:
SS126R

TRAY NODES: 2316 2317 2318 2319

DESIGNER: [signature] DATE: 03-06-92 CHECKER: [signature] DATE: 030692

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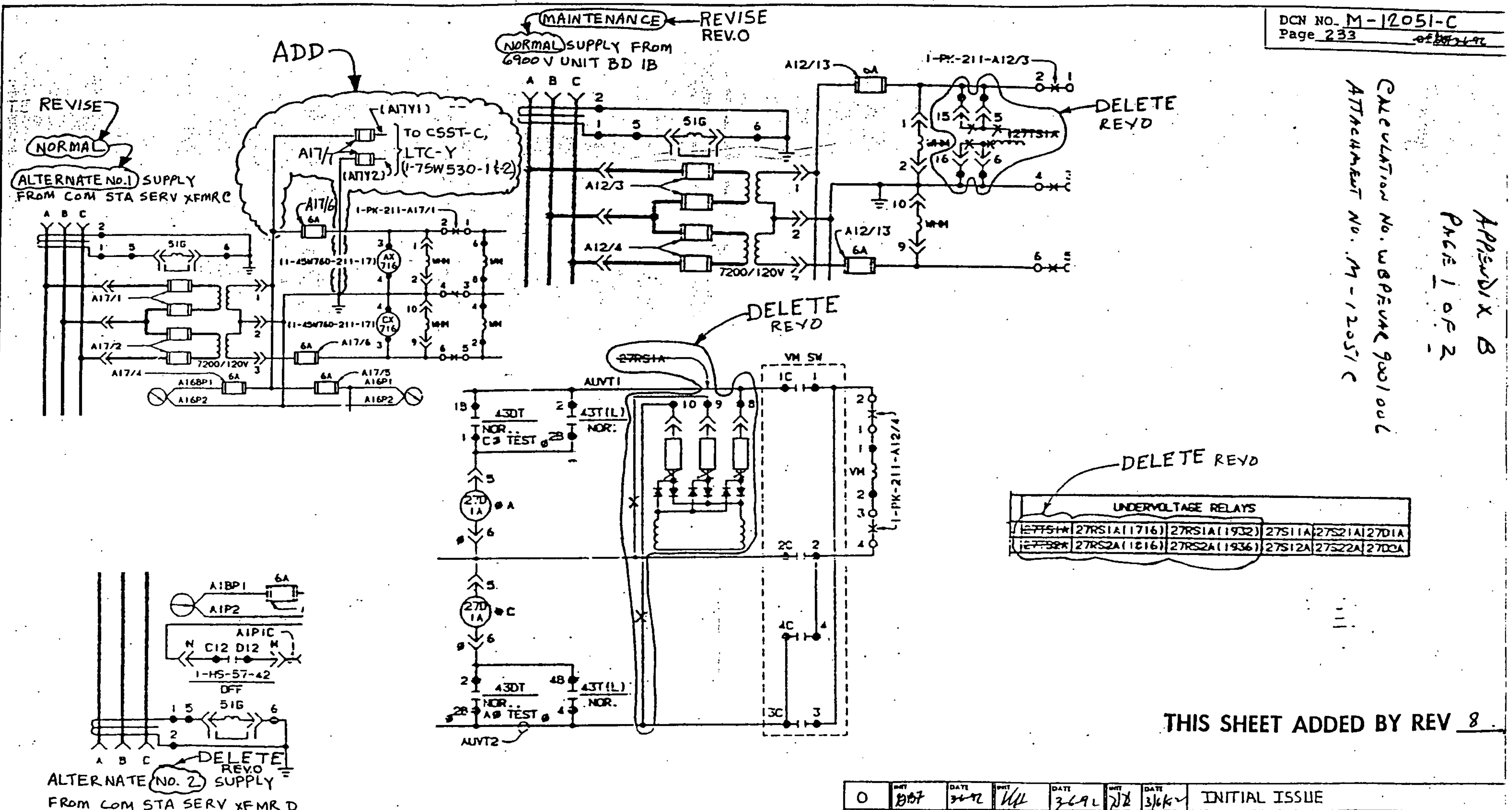
CALCULATION NO. WBPEVAR 9001006
ATTACHMENT NO. M-12051-C

APPENDIX B
PAGE 1 OF 2

DRAWING CHANGE AUTHORIZATION (DCA)

REPLACED

DCN NO. M-12051-C
Page 233 ~~of~~



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REV	PREPARER		TE		DV		REASON FOR CHANGE

WATTS BAR NUCLEAR PLANT UNIT NO. 1
TITLE WIRING DIA. 6900V SHUTDOWN POWER-TRAIN A SCHEM. DIAGRAM
DCA- M-12051-235

AFFECTED DOCUMENTS/DRAWINGS
NO. 1-45W760-211 SHT. 6 REV 0

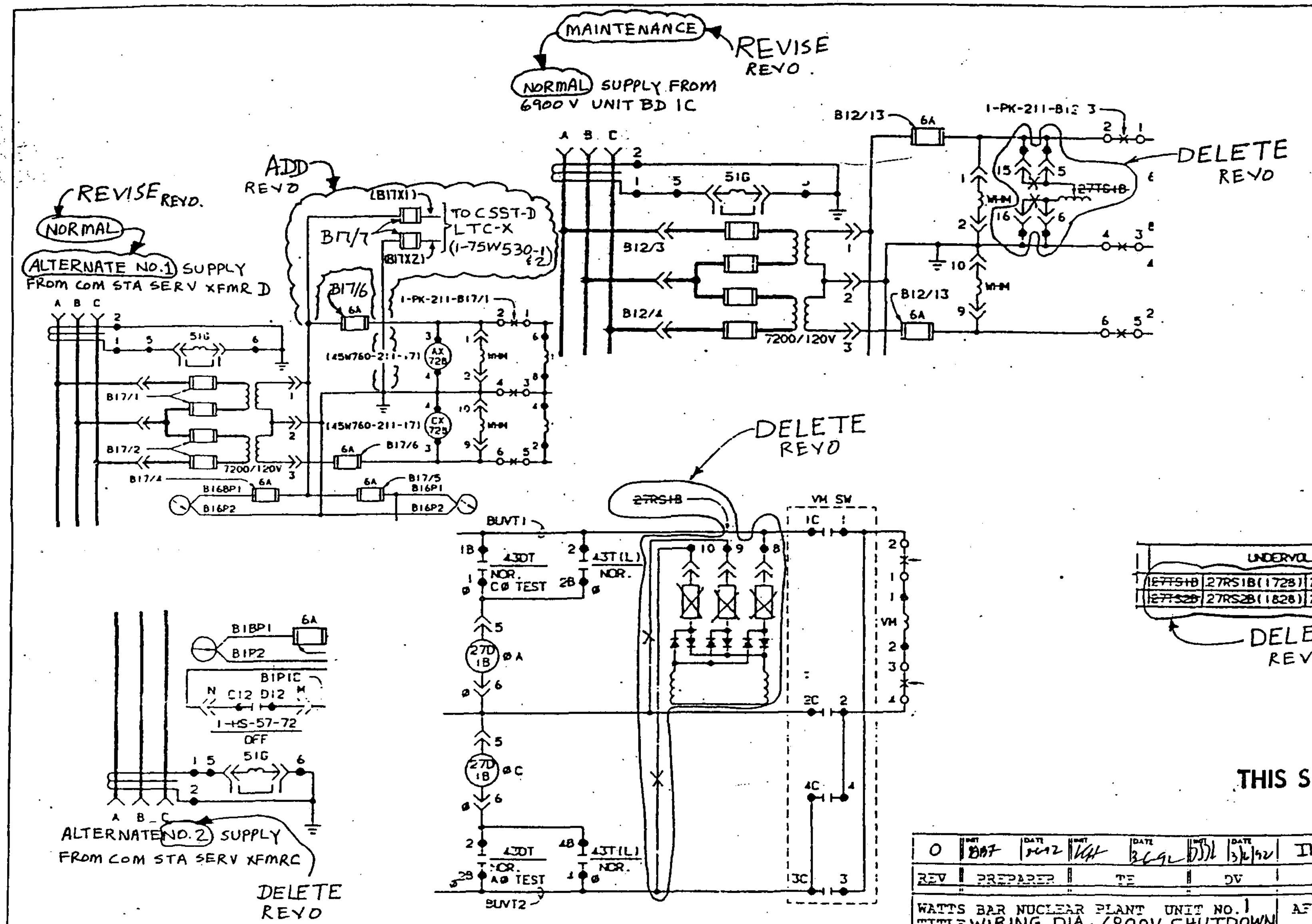
CALCULATION NO. WBPEVAR9001006
ATTACHMENT NO. M-12051-C

APPENDIX B
PAGE 2 OF 2

DRAWING CHANGE AUTHORIZATION (DCA)

REPLACED

DCN NO. M-12051-C
Page 234 ~~of~~



UNDERVOLTAGE RELAYS					
~~27TS1B~~	27RS1B(1728)	27RS1B(1934)	27S11B	27S21B	27D1B
~~27TS2B~~	27RS2B(1828)	27RS2B(1938)	27S12B	27S22B	27D2B

DELETE
REV0

THIS SHEET ADDED BY REV 8

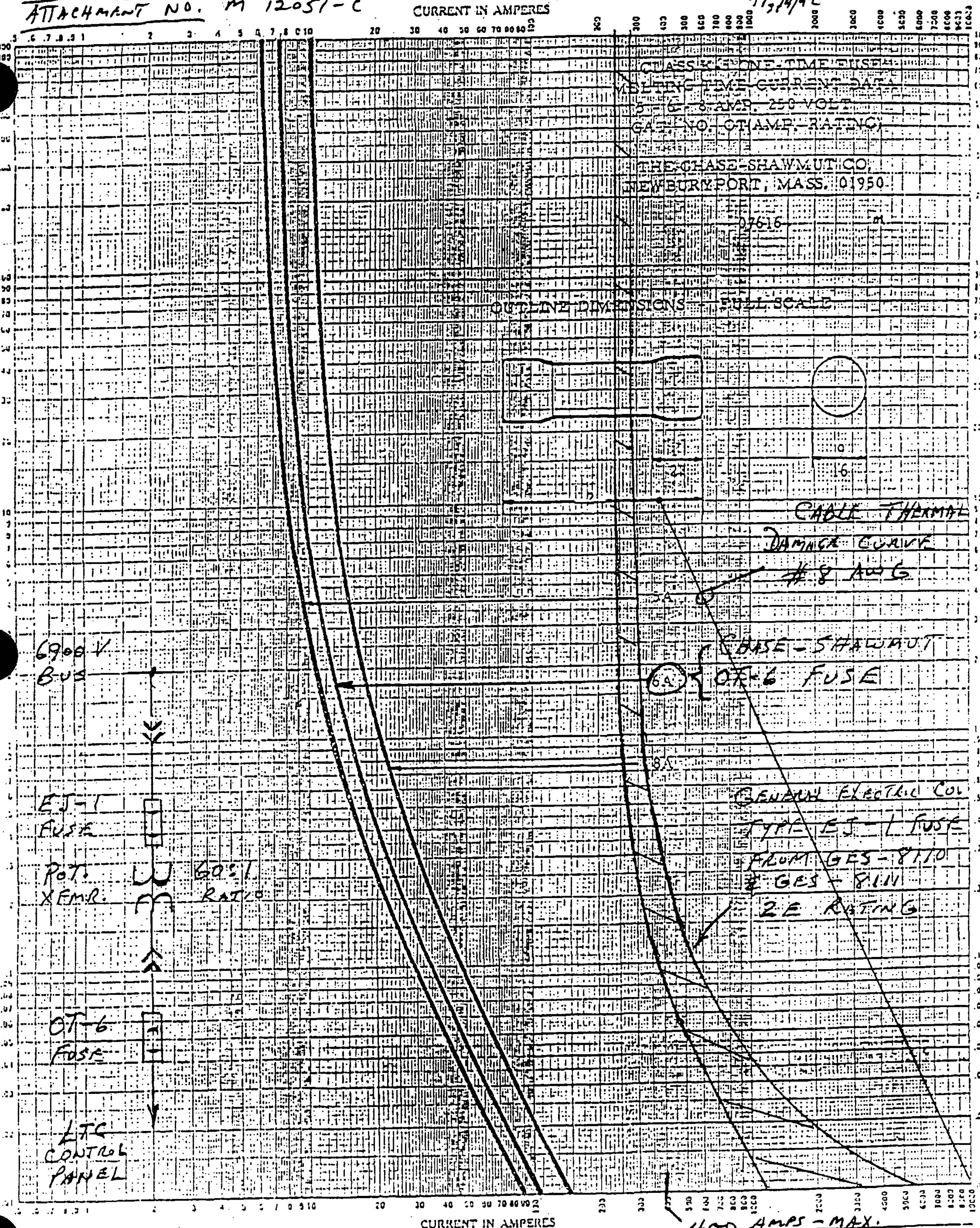
REV	PREPARER		TE		DV		REASON FOR CHANGE
0	BAF	7-12	[illegible]	3-6-92	[illegible]	3/6/92	INITIAL ISSUE

WATTS BAR NUCLEAR PLANT UNIT NO. 1
TITLE WIRING DIA. 6900V SHUTDOWN POWER-TRAIN B SCHEMATIC DIA.
DCA- M-12051-236

AFFECTED DOCUMENTS/DRAWINGS
NO. 1-45W760-211 SHT. 7 REV 0

CALCULATION NO. WBPEVAR 9001 006 APPENDIX C SHEET 1 OF 1

ATTACHMENT NO. M 12051-C



400 AMPS - MAX.

@ 120 VOLTS a.c. S.C. CURRENT @ 120V

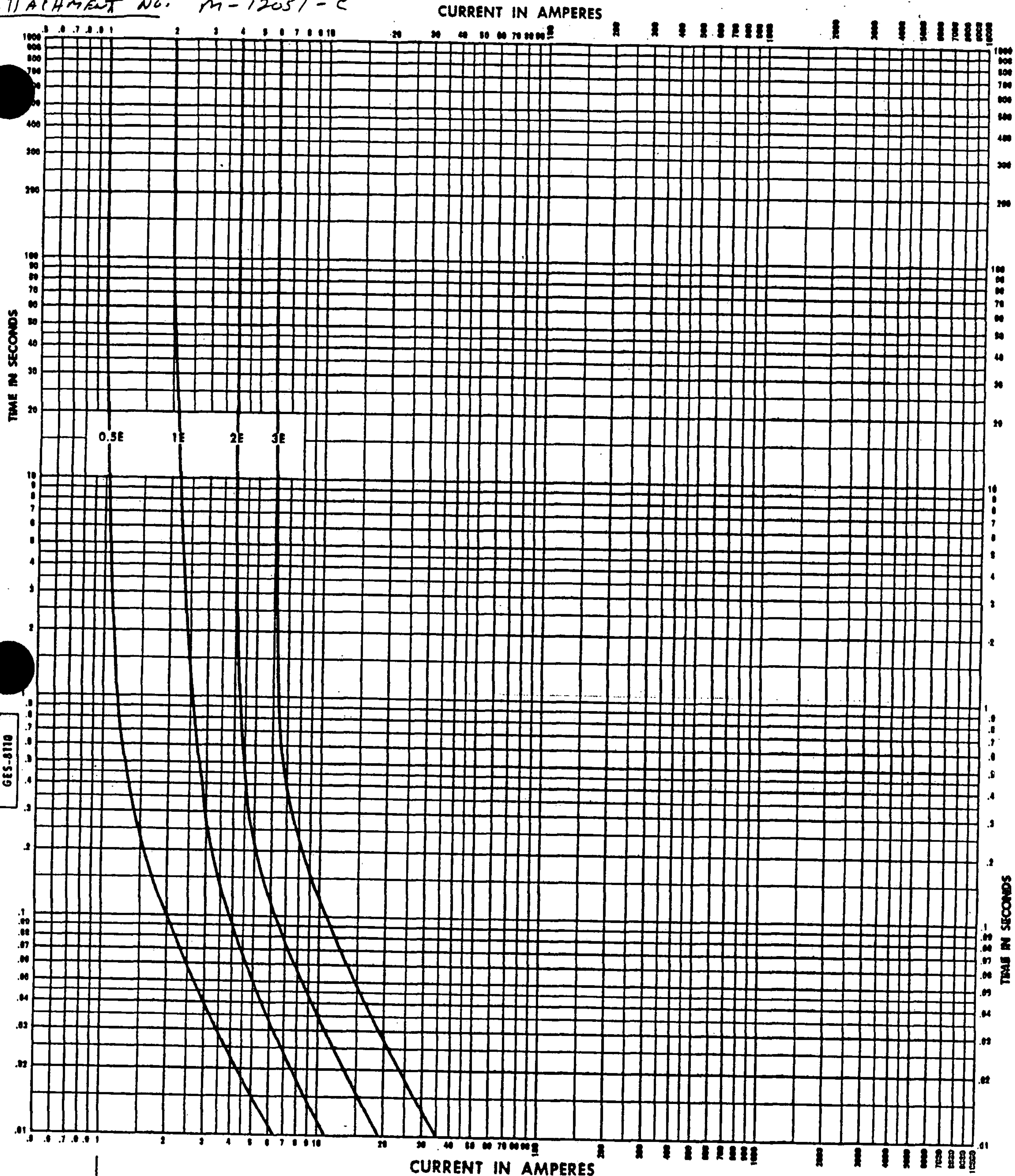
THIS SHEET ADDED BY REV 8

SKETCH No. FJM 030992

REV. #1 3-13-92

CALCULATION NO. WBPEVAR 9001006 APPENDIX D SHEET 1 OF 2

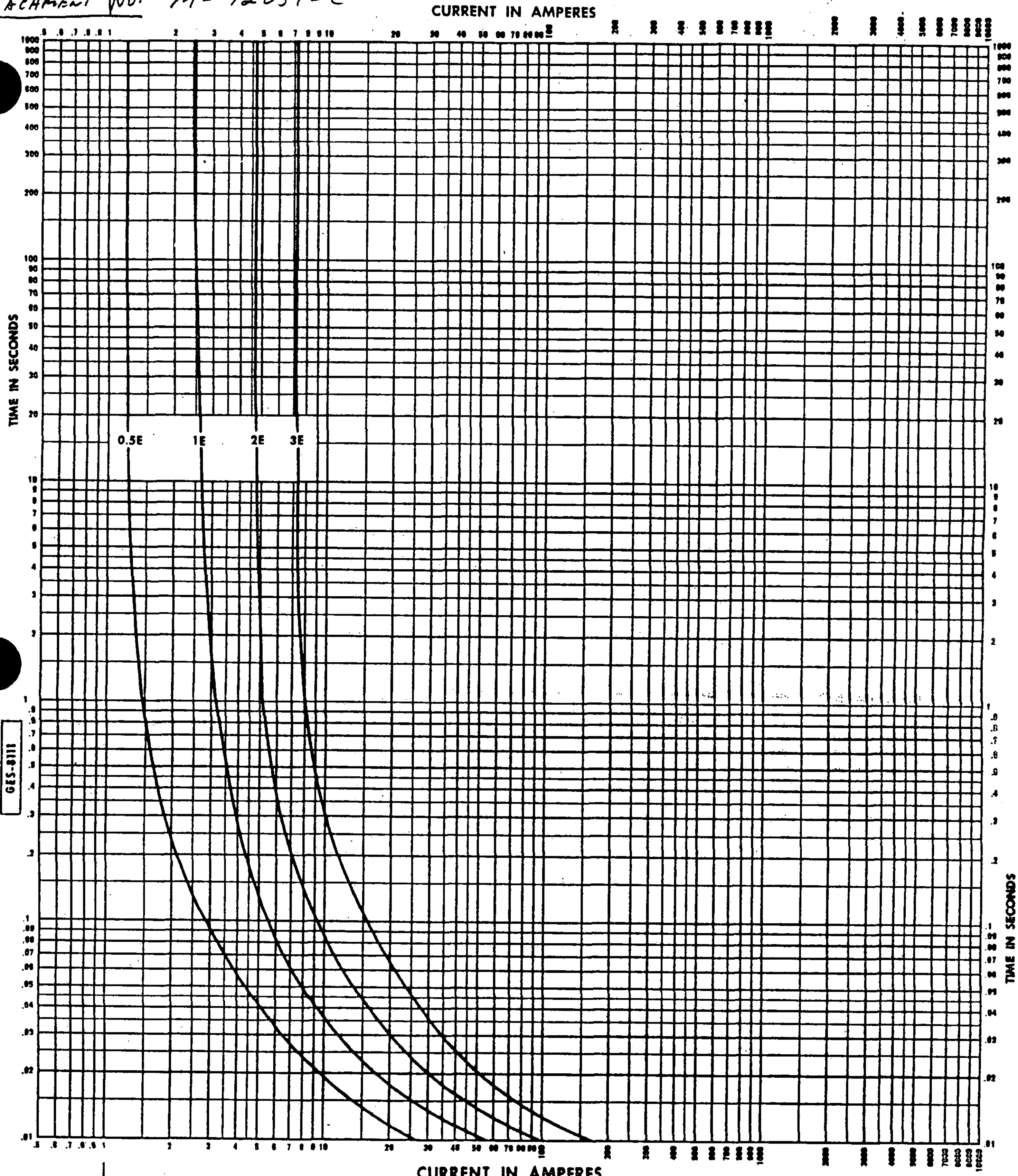
ATTACHMENT NO. M-12051-C



THIS SHEET ADDED BY REV 8

GENERAL ELECTRIC	CURRENT-LIMITING POWER FUSE **EJ-1 2.4 & 14.4 KV**	GES-8110 Formerly GET-1851
Current Ratings 0.5E, 1E, 2E, 3E Amperes Frequency Ratings 25 to 60 Cycles	Size B Minimum Melting Time-current Curves (At 25 C ambient with no initial load)	

CALCULATION NO. WBPEVAR9001006 APPENDIX D SHEET 2 OF 2
ATTACHMENT NO. M-12051-C



THIS SHEET ADDED BY REV 8

GENERAL ELECTRIC	CURRENT-LIMITING POWER FUSE **EJ-1 2.4 & 14.4 KV**	GES-8111 Formerly GET-2745

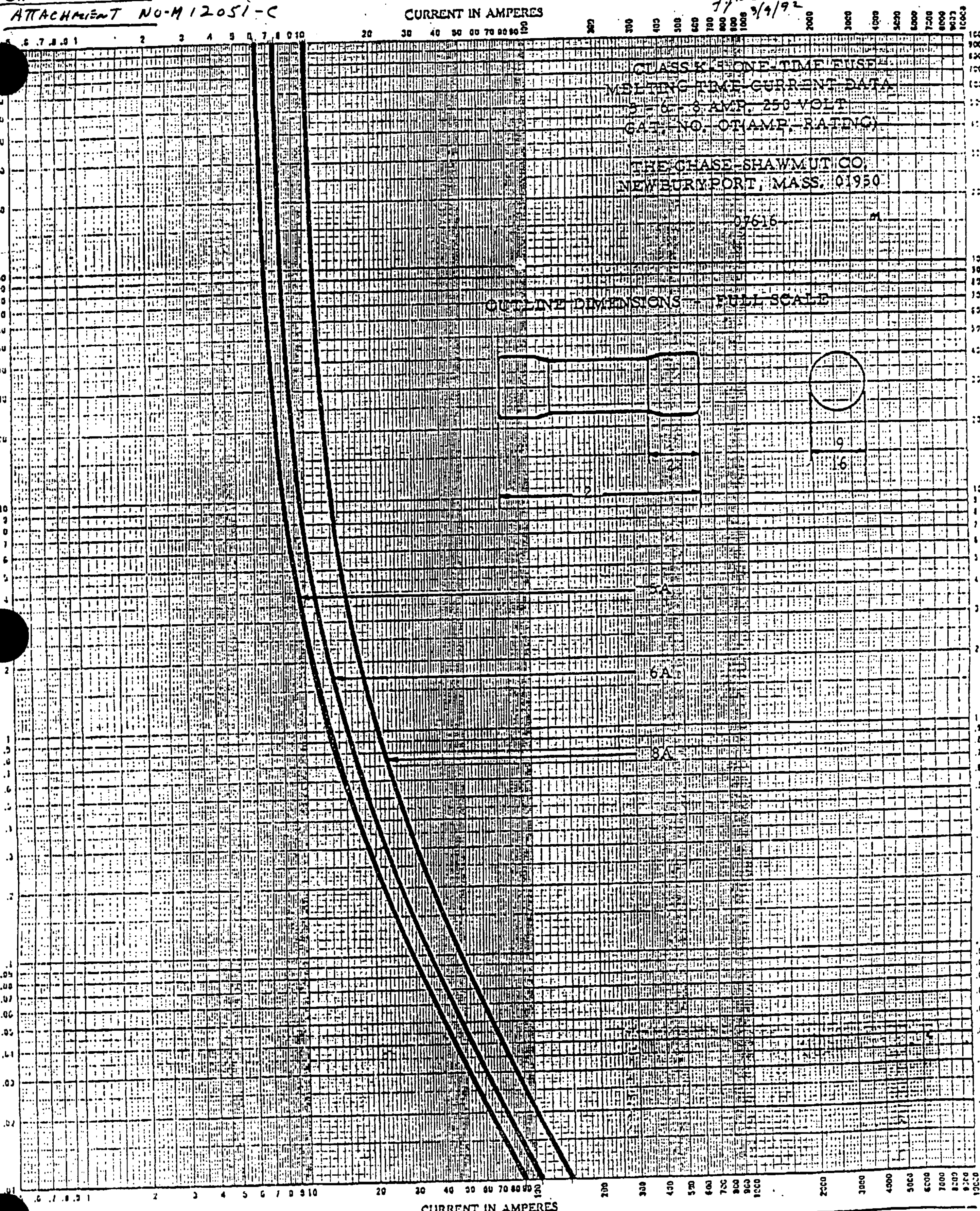
Current Ratings
0.5E, 1E, 2E, 3E Amperes

Size B
Maximum Total-clearing Time-current Curves

(At 60 cycles and 25 C ambient with no initial load)

CALCULATION NO. WBPEVAR 9001006 APPENDIX E SHEET 1 OF 1

ATTACHMENT NO-M12051-C



THIS SHEET ADDED BY REV 8

VERIFICATION WORKSHEET
FOR CALCULATIONS

~~Attachment A~~ APPENDIX F

Task No. ______
Document No. WBPEVAR 9001006
Revision 8

Title ATTACHMENT NO. M-12051-C

QUESTIONS TO BE ADDRESSED

1	Were the inputs correctly selected at the correct revision level, and incorporated into the design? Yes
2	Are the assumptions necessary to perform the design activity adequately described and reasonable? Where necessary, are assumptions identified for subsequent reverification after the detailed design activities are completed? Yes
3a	Are the appropriate quality requirements specified?
3b	Are the appropriate quality assurance requirements specified?
4	Are the applicable codes, standards, and regulatory requirements including issue and addenda properly identified, and are their requirements for design met? Yes
5	Have applicable construction and operating experience been considered?
6	Have the design interface requirements been satisfied? Yes
7	Was an appropriate design method used? Yes
8	Is the output reasonable compared to inputs? Yes
9	Are the specified parts, equipment, and processes suitable for the required application? Are all applicable construction specifications referenced on the drawing(s)?
10	Are the specified materials compatible with each other and with the design environmental conditions to which the materials will be exposed?
11	Have adequate maintenance features and requirements been specified?
12	Are accessibility and other design provisions adequate for performing needed maintenance and repair?
13	Has adequate accessibility been provided to perform the inservice inspection expected to be required during the plantlife?
14	Has the design properly considered radiation exposure to the public and plant personnel?
15	Is the acceptance criteria incorporated in the design document sufficient to allow verification that design requirements have been satisfactorily accomplished? Yes
16	Have adequate preoperational and subsequent periodic test requirements been appropriately specified?
17	Are adequate handling, storage, cleaning and shipping requirements specified?
18	Are adequate identification requirements specified?
19	Are requirements for record preparation review, approval, retention, etc., adequately specified?

For Calculations, only questions 1, 2, 4, 6, 7, 8 and 15 are considered applicable.

Independent Verifier P. Kleinschmidt P. Kleinschmidt   3/11/92
Print/Sign   Date

6107x - p0

THIS SHEET ADDED BY REV 8

CALCULATION NO. WBPEVAR900100C

APPENDIX G SHEET 1 OF 1

11046/3-88

ATTACHMENT NO. M-12051-C

RECORD OF TELEPHONE CONVERSATION

DATE 03-13-92

TO GENERAL ELECTRIC CO. SOMERSWORTH, N.H. - (603) 749-8452
NAME/FILE NO.

FROM EBASCO SERVICES INC. WATTS BAR, TN. - (615) 365-1018

CLIENT/PROJECT TVA / CALCULATION - REVISION 8 WBPEVAR900100C

SUBJECT POTENTIAL TRANSFORMER IMPEDANCE

CHARGE: DEPT. NO. 909 CLIENT SYMBOL TVA OFS NO. ______

DISCUSSION WITH

MR. WAYNE RAUTIO
GENERAL ELECTRIC CO.
SOMERSWORTH, N.H.

SUBJECT: IMPEDANCE OF "JVM" POTENTIAL TRANSFORMER USED IN GE SWITCHGEAR TO DETERMINE SHORT CIRCUIT CURRENT.

REPLY: $Z_{s.c.} = 0.3 \text{ ohm} \angle 41^\circ$ BASED ON REFERENCE TO S.C. TEST ON SIMILAR UNIT. @ 120 VOLTS

COMMENTS

THIS WILL BE USED TO CALCULATE THE SHORT CIRCUIT CURRENT AT THE POTENTIAL TRANSFORMER SECONDARY.

BY FRANK J. McCANN / FJM
NAME

CONSULTING ENGR
TITLE

909
DEPT. NO.

CC:

Calculation No. WBPEVAR9001006
Attachment No. M16428A-1
Failed Cable Analysis

Prepared by [signature] Date 4-16-92
Checked by [signature] Date 4-16-92

Sheet 1

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Total number of pages this Attachment 20

1.0 PURPOSE

To review and analyze the 18 circuits with failed cables, identified in Rev. 7 of this calculation, Attachment M16428A pages 5 & 6.

2.0 CRITERIA

2.1 If cables are portected against thermal damage by a circuit breaker or fuse, these will be considered adequate.

2.2 If cable routing is done in its entirety through non Class 1E areas and no safety related circuits are affected, cables will be considered adequate.

3.0 APPLICABLE CODES AND STANDARDS

3.1 TVA Electrical Design Standard DS-E12.1.13 Rev. 2 dated April 15, 1986.

Used to determine characteristics of cables whose Mark No. is not listed on Ref. 3.2.

3.2 TVA Electrical Desi~~ng~~gn RS 4-17-92 Standard DS-E12.6.3 Rev. 2.

Used to determine characteristics of cables and to select replace~~mnet~~ment cables RS 4-17-92

3.3 Watts Bar Design Criteria WB-DC-30-13, Rev. 2.

Used to obtain cable insulation temperature damage values.

3.4 Insulated Cable Engineers Association, Inc. (ICEA) Publication P-32-382 Revised March 1962, Reprinted 1987.

Used to obtain formula to determine points to plot graphs for cable thermal damage.

3.5 ANSI/NFPA 70 National Electrical Code - 1990.

Used to determine conductor physical characteristics.

4.0 METHODOLOGY

4.1 Identify cables and sizes that failed from table in pages 5 & 6 of Attachment M16428A.

4.2 Determine if any cables are entirely routed through non Class 1E areas (see Section 7.1).

4.3 Determine what effect, if any, the failure of any of the cables under consideration will have on any safety related components.

4.4 Determine the effect of DCN's on cables under consideration. (see Section 7.3).

4.5 For control cables the initial conductor temperature is considered to be the maximum ambient temperature for acceptance in accordance with criteria for thermal damage to insulation under short circuit conditions.

5.0 ASSUMPTIONS

Justified

See assumptions identified in Baseline Calculation (Section 2.0)

Unverified

None for this attachment or Baseline Calculation (Section 2.0)

6.0 REFERENCES

6.1 Baseline Calculation

6.2 Attachment M16428A to Baseline Calculation (Rev. 7)

6.3 Watts Bar Nuclear Plant Cable Routing System ID-Y9894, System Version 6 effective date 8/29/89.

6.4 DCN S-16523-A

6.5 TVA Memorandum EEB 790312929 from R H Dunham, to H S Fox dated March 12, 1979

6.6 Westinghouse Electric Corp., Low Voltage Breaker Division, Curve No. SC-340-70, Application Data 29-60-A.

6.7 American Circuit Breaker Corporation, Molded Case Circuit Breakers, Model Type NE Curve.

6.8 Dwg. No. 47E235, Sh. 3, R 3; Sh. 7, R3; Sh. 45, R4

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Sheet 3a

6.0 REFERENCES (Cont'd)

6.9 Walkdowns

6.9.1 Walkdown Identification No. WBPEVAR9001006, Walkdown Title: 480V Unit BD 1A (1-BD-203-A), Compartment #5, RIMS No. T80 920413 832.

6.9.2 Walkdown Identification No. WBPEVAR9001006 RJE, Walkdown Title: 250 DC Control Fuses in MRB6, 22 and 23. RIMS No. T80 920413 833.

6.9.3 Walkdown Identification No. Calculation WBPEVAR9001006 GSR, Walkdown Title: 250V DC Control Fuses in Panel 0-PCBX-245-5024/CC in PCB2024, EL 728, M2E, RIMS No. T80 920416 966.

6.10 Drawings

6.10.1	55W716-6	Rev. 0
6.10.2	55W642-1	Rev. H
6.10.3	55W642-2	Rev. G
6.10.4	55W643-1	Rev. J
6.10.5	55W643-2	Rev. F
6.10.6	55W626-1	Rev. G
6.10.7	55W633-2	Rev. F
6.10.8	1-75W1562	Rev. ~~J~~ Q RS 4-17-92
6.10.9	RS 4/17/92 ~~1-75W1521-3~~	~~Rev. G~~ RS 4-17-92
6.10.10	55W669	Rev. D
6.10.11	75W1521-1	Rev. F
6.10.12	75W1521-1	Rev. 5

THIS SHEET ADDED BY REVISION 9

7.0 CALCULATIONS

7.1 The following cables are entirely routed in Non 1E structures, and their failure will not affect safety related components.

Therefore, it is not necessary to replace these cables:

PLS4132, PLS4152, PLS4155, PLS4158, PLS4161 & PLS4121

Ref. 6.1 Appendix B Page B9 and Sheet B9A
Ref. 6.2 Page 5, Board 0-MCC-222-HS
Ref. Appendix A of this revision

7.2 Cables M29 and M39 are protected by Westinghouse breaker JA3 125A located in Auxiliary Building Lighting Board 3. Instantaneous trip is set in HI position. At this setting the possibility exists that the cables may suffer thermal damage. Changing the instantaneous trip setting of the breakers from HI to LO will protect cables M29 and M39 from thermal damage.

Ref. 6.1 Appendix B, Sheet B12A and
Appendix C, Sheet C86, curve 83
Ref. 6.2 Page 5, Board 0-BD-228-3,
Compartment 2C1

7.3 Cable 1PL139 is protected by a Bussmann KLC10 fuse which is adequate (Ref. 6.9).

Ref. 6.1, Appendix A, Sheet A25, Appendix B, Sheet B14 and Appendix C, Sheet C37
Ref. 6.4
Ref. 6.2 Page 5, Board 1-BD-203-A

7.4 The following control cables operate at a normal ambient temperature of 70°F (21.11°C). The maximum ambient temperature for the locations where the cables are located is 40°C.

Based on the curve in section 7.4.2 (developed for operation at 40°C) the cables will not suffer thermal damage, therefore, cables 1PV4, 2PV4, 1PV123, 2PV123, 1PV243, 1PV363 and 2PV363 will not have to be replaced. PS 4/17/92

Ref. 3.2
Ref. 3.3
Ref. 6.2 Page 5, Boards:
1-BD-237-A
1-BD-237-B
2-BD-237-A
2-BD-237-B
Ref. 6.7
Ref. 6.8

7.4.1 Thermal damage (points to plot graph 7.4.2) Cable Mark # WHB
The following information was obtained from Attachment M-16428-A and other references as indicated.

DATA		REFERENCES
Board	Cable	
1-BD-237-A	1PV4	Ref. 6.1 Appendix B Sht, B35A
1-BD-237-A	2PV4	Ref. 6.1 Appendix B Sht, B35B
1-BD-237-B	1PV123	Ref. 6.1 Appendix B Sht, B39A
1-BD-237-B	2PV123	Ref. 6.1 Appendix B Sht, B35B
2-BD-237-A	1PV243	Ref. 6.1 Appendix B Sht, B42B
2-BD-237-B	1PV363	Ref. 6.1 Appendix B Sht, B43C
2-BD-237-B	2PV363	Ref. 6.1 Appendix B Sht, B43D
Curve		Ref. 6.7
Cable Mark No. WHB		Ref. 6.1
Conductor size - #14 AWG		Ref. 6.1
Cable type PJJ or PNJ		Ref. 3.2
Insulation type PE		Ref. 6.5
(T1) Max Ambient Temp 40°C equals Initial conductor temp.		Ref. 6.8
(T2) Cable insulation damage temp:	150°C	Ref. 3.3
(A) Conductor area Circular Mils:	4110	Ref. 3.5

$$\left[\frac{I}{A}\right]^2 \times t = 0.0297 \log \left[\frac{T2 + 234}{T1 + 234}\right]$$ Ref. 3.4

$$t = 0.0297 \left[\frac{A}{I}\right]^2 \log \left[\frac{T2 + 234}{T1 + 234}\right]$$

for I = 3000 Amps $$t = 0.0297 \left[\frac{4110}{3000}\right]^2 \log \left[\frac{150 + 234}{40 + 234}\right]$$

I = 3000 Amps	t = 0.00817 sec
I = 1500 Amps	t = 0.03268 sec
I = 1200 Amps	t = 0.05107 sec
I = 900 Amps	t = 0.09079 sec
I = 600 Amps	t = 0.20427 sec
I = 300 Amps	t = 0.81708 sec
I = 90 Amps	t = 9.07687 sec

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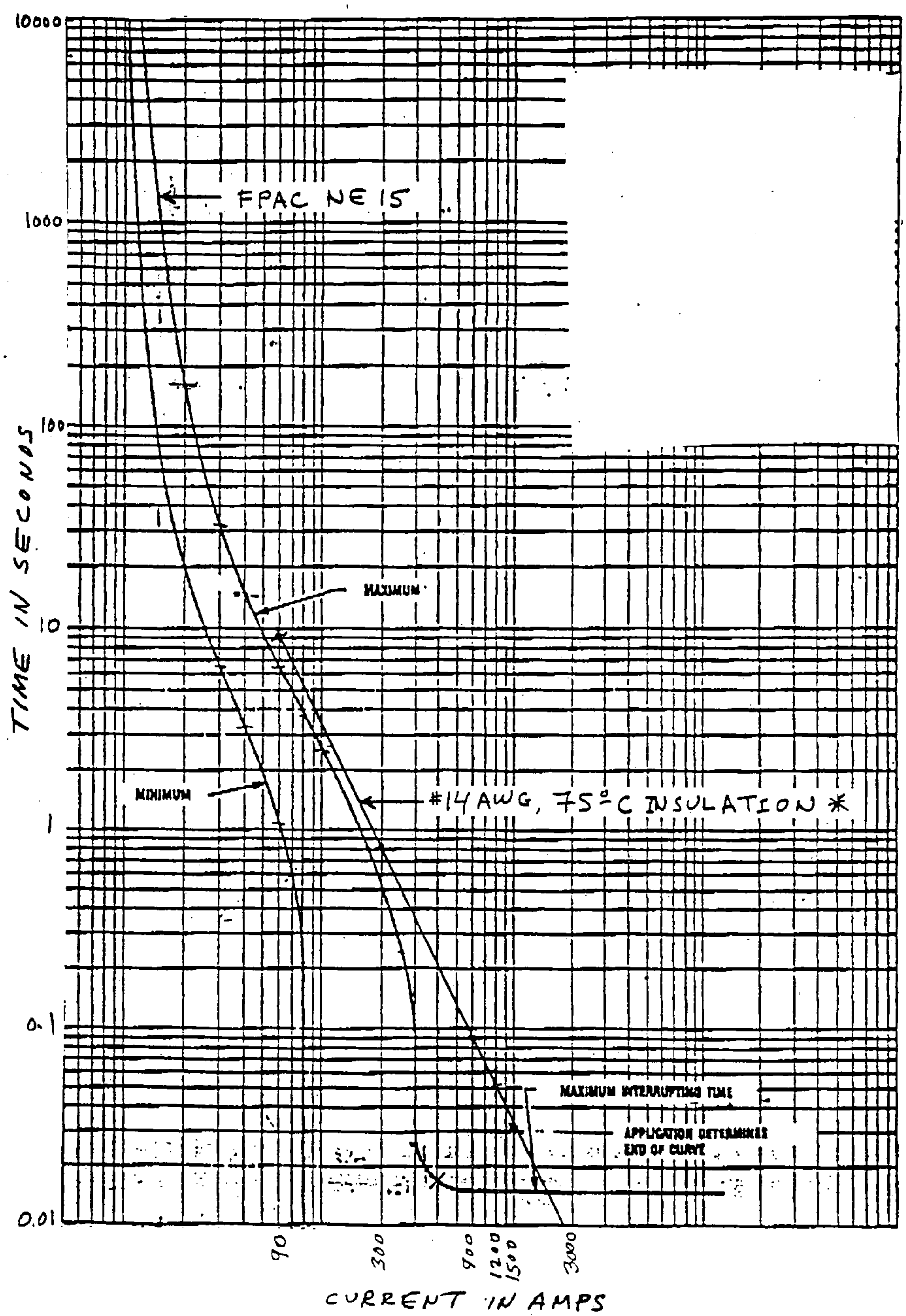
Sheet 6

7.4.2



* BASED ON MAXIMUM AMBIENT TEMPERATURE OF 40°C AS THE STARTING TEMPERATURE FOR THE FAULT

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Sheet 7

7.5 Cable 1PM4712 (4/C #14 rated at 75°C) operates at a normal ambient temperature of 70°F (21.11°C). The maximum ambient temperature for the locations where the cable is routed is 120°F (48.89°C).

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Based on the curve 7.5.2 (developed for operation at 48.89°C) this cable will not suffer thermal damage and therefore it will not have to be replaced.

Ref. 6.1 Appendix A, page A60, Appendix B, Sheet B44k, Appendix C, Sheet C13
Ref. 3.2
Ref. 6.2, Page 5, Board 1-BD-237-M7-A
Ref. 6.6
Ref. 6.8

7.5.1 Thermal damage (points to plot graph 7.5.2) Cable Mark # WHD

Board No. 1-BD-237-M7-A	Ref. 6.2
Cable 1PM4712, Circuit No. 24	Ref. 6.1 Appendix B, Sheet B44K
Curve	Ref. 6.6
Cable Mark No. WHD	Ref. 6.1, Appendix B, Sheet B44K
Conductor Size: # 14 AWG	Ref. 6.1, Appendix B, Sheet B44K
Cable Type PJJ or PNJ	Ref. 3.1
Insulation type - PE	Ref. 6.5
(T1) Maximum Ambient temperature 48.89°C = Initial Conductor Temp.	Ref. 6.5
(T2) Cable Insulation - Damage Temp. 150°C	Ref. 3.3
(A) Conductor Area - Circular Mils 4110	Ref. 3.5

$$\left[\frac{I}{A}\right]^2 \times t = 0.0297 \log \left[\frac{T_2 + 234}{T_1 + 234}\right]$$ Ref. 3.4

$$t = 0.0297 \left[\frac{A}{I}\right]^2 \log \left[\frac{T_2 + 234}{T_1 + 234}\right]$$

For I = 3000 Amp $$t = 0.0297 \left[\frac{4110}{3000}\right]^2 \log \left[\frac{150 + 234}{48.89 + 234}\right]$$

I = 3000 Amps	t = 0.007398	sec
I = 1500 Amps	t = 0.029592	sec
I = 1200 Amps	t = 0.046238	sec
I = 900 Amps	t = 0.082201	sec
I = 600 Amps	t = 0.184952	sec
I = 300 Amps	t = 0.739808	sec
I = 90 Amps	t = 8.220083	sec

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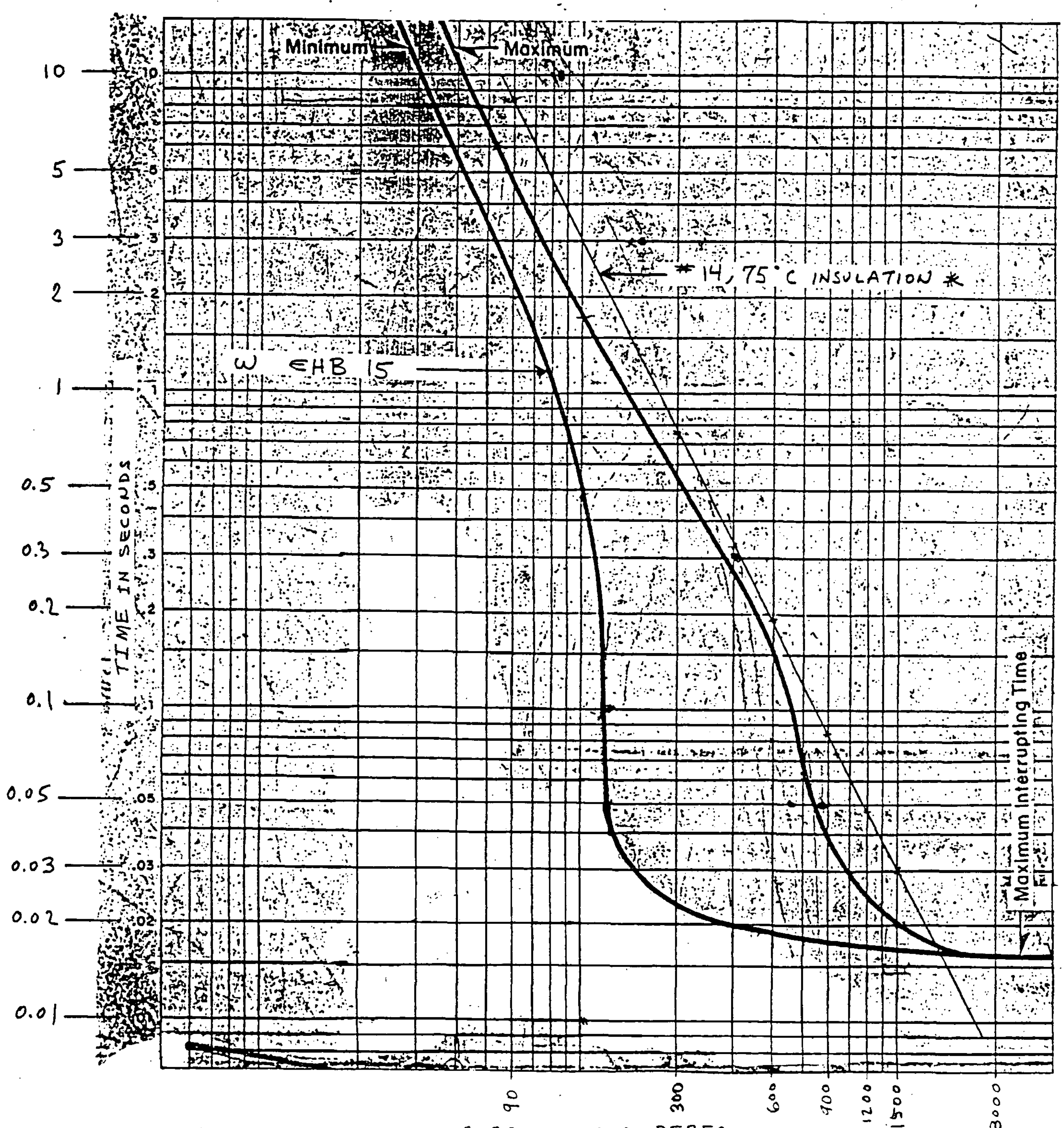
Sheet 8

7.5.2



* BASED ON MAXIMUM AMBIENT TEMPERATURE OF 48.89°C AS A STARTING TEMPERATURE FOR THE FAULT

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Sheet 9

7.6 Cables J50 & J60 (3/C #12 AWG rated at 90°C) are protected with English Electric Fuses types BR-15. The attached curves 7.6.2 (Sheet 10) & 7.6.4 (Sheet 12) show that the fuses coordinate with the breakers (GE-THED 30) and that the cable will not suffer thermal damage.

Ref. 6.2, Page 5, Board 0-DBD-239-6

7.6.1 Thermal damage (points to plot graph 7.6.2) Cable Type WGC-1 & WLC.

Board No. 0-DBO-239-6	Ref. 6.2
Cables J50 & J60	Ref. 6.1 Appendix B, Sheets B53C & B53D
Curve No. 37	Ref. 6.1, Appendix B, Sheets B53C & B53D
Circuit Nos.8 & 9	Ref. 6.1, Appendix B, Sheets B53C & B53D
Mark Nos. WGC-1 & WLC	Ref. 6.1, Appendix B, Sheets B53C & B53D
Conductor Size: # 12 AWG	Ref. 6.1, Appendix B, Sheets B53C & B53D
Cable Type PXMJ & CPJJ	Ref. 3.2
Insulation type - XLPE and EPR	Ref. 6.5
(T1) Temperature Rating; 90°C	Ref. 6.5
(T2) Cable insulation damage temp: 250°C	Ref. 3.3
(A) Conductor area Circular Mils: 6530	Ref. 3.5

$$\left[\frac{I}{A}\right]^2 t = 0.0297 \log \left[\frac{T_2 + 234}{T_1 + 234}\right]$$ Ref. 3.4

$$t = 0.0297 \left[\frac{6530}{2000}\right]^2 \log \left[\frac{250 + 234}{90 + 234}\right]$$

I = 2000 Amps	t = 0.0552 sec
I = 1000 Amps	t = 0.2207 sec
I = 500 Amps	t = 0.8830 sec
I = 200 Amps	t = 5.5185 sec
I = 100 Amps	t = 22.074 sec
I = 50 Amps	t = 88.296 sec

Calculation No. WBPEVAR9001006
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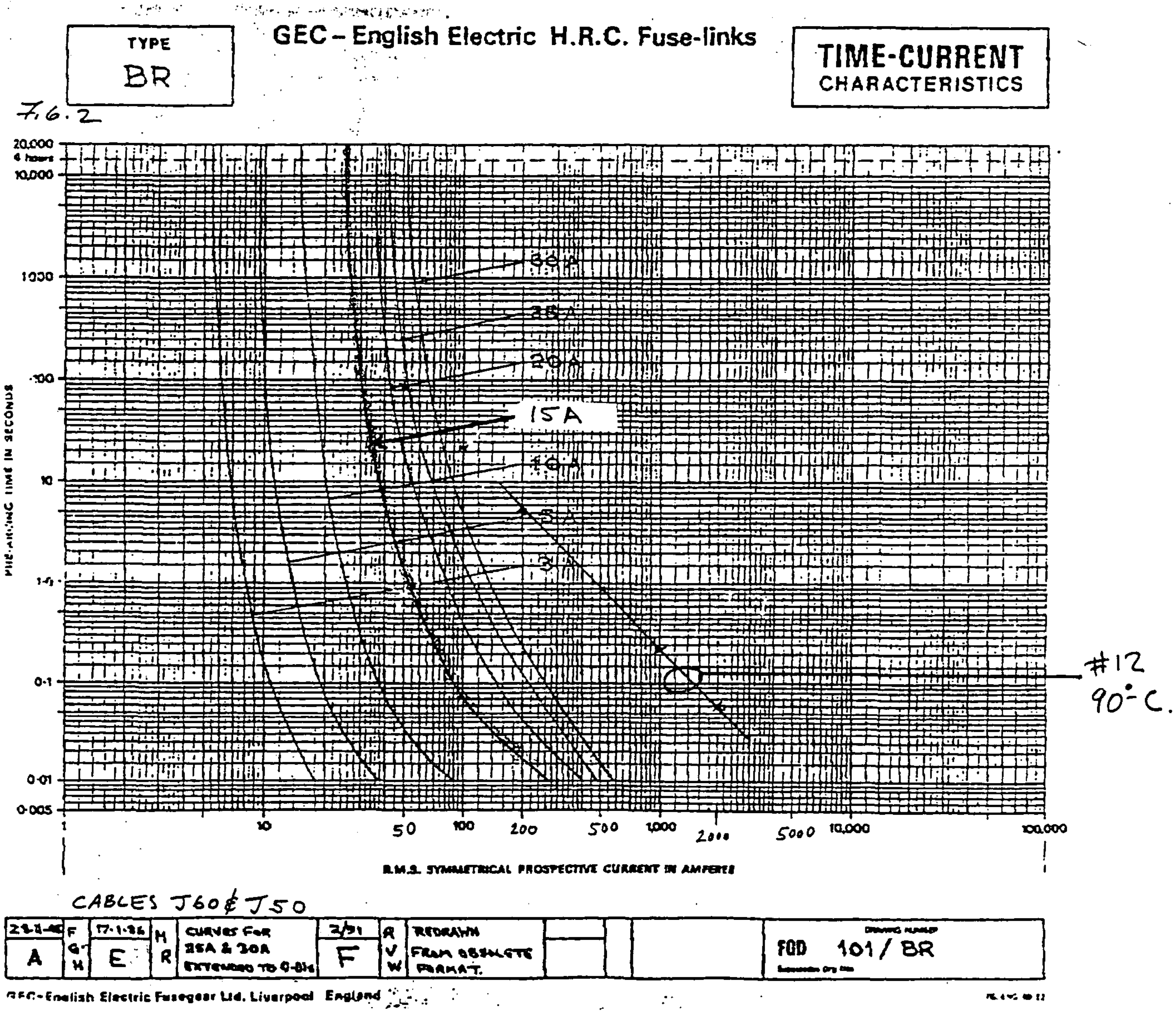
Sheet 10

7.6.2



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7.6.3 Tabulation of values used to transfer English Electric curve for fuse BR-15 shown in graph 7.6.2 to curve 37 shown in graph 7.6.4 (Attachment B, Sheet C40 of Ref. 6.1).

t = 0.01 sec	I = 258.52 Amps
t = 0.1	I = 89.12 Amps
t = 1.0	I = 51.58 Amps
t = 10.0	I = 37.583 Amps
t = 100.0	I = 29.85 Amps
t = 1000.0	I = 26.60 Amps
t = 10000.0	I = 25.11 Amps

The curves for English Electric Fuse BR-15 and thermal damage characteristic for cables type PXMJ or CPJJ # 12 conductor, 90°C was plotted on the curve Ref.6.1 Attachment C sheet C40. The plots show that cables will not suffer thermal damage.

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Failed Cable Analysis

Prepared by [signature] Date 4-14-92
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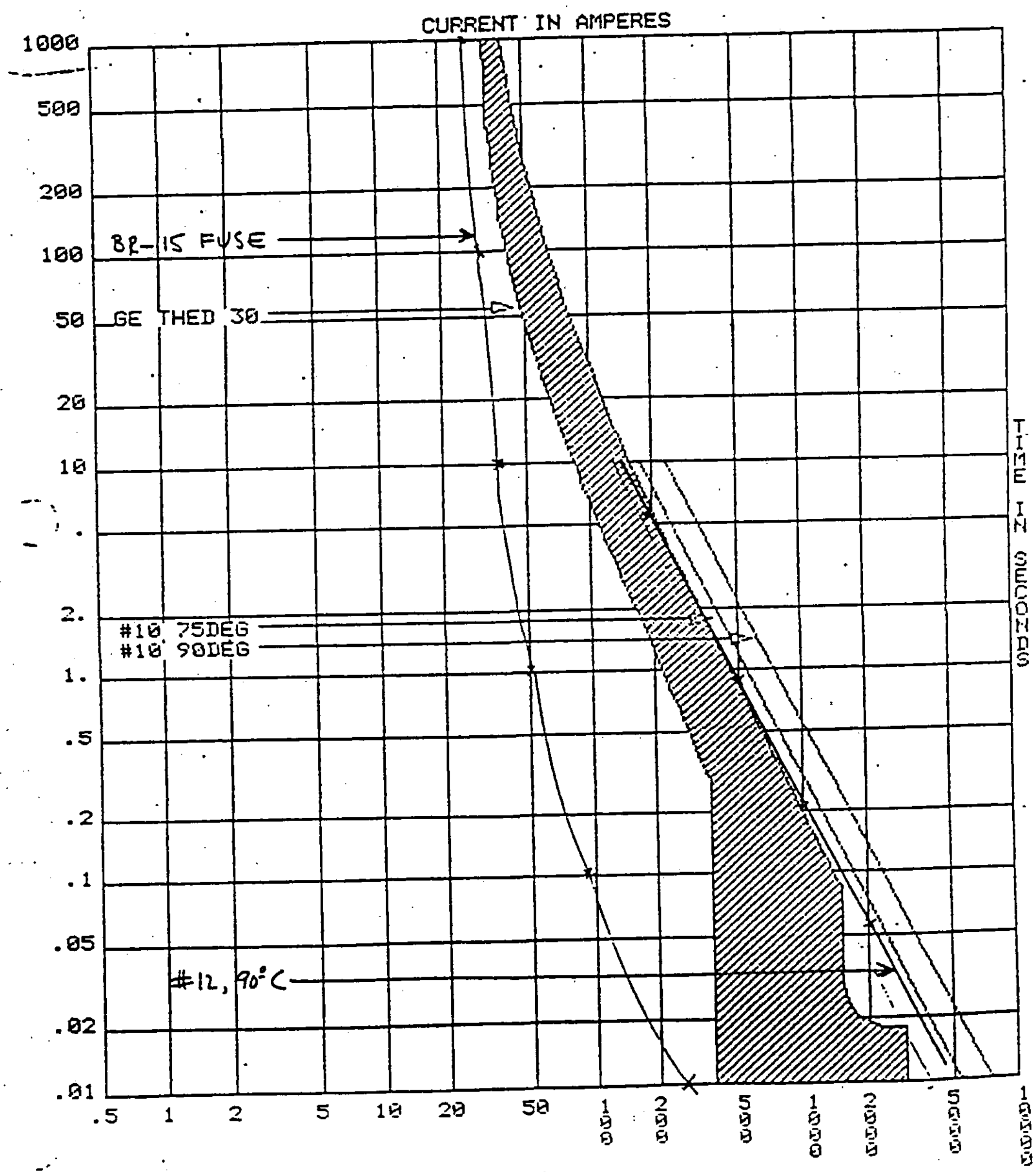
7.6.4 Cables J50 & J60

SHEET ~~C39~~ C10 70B 11/1/[illegible]
PREPARED [illegible] DATE 1-31-90
CHECKED GCP DATE 2-1-90



DRAWING CURVE37 PLOT ELL: 120 SCALE: 10^0

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7.7 Cables J59 (1-9C #12), J64 (1-19C #12), J172 (1-4C #12), J46 (1-9C #12), J47 (1-19C #12), and J43 (1-16C #12) all with insulation rated at 75°C are protected by English Electric fuses type BR-15. The graphs 7.7.2 and 7.7.3 show that the fuses coordinate with the circuit breaker, and the fuses protect the cable against thermal damage.

Ref. 6.2, Pages 5 & 6 Board 0-DBD-239-6

7.7.1 Thermal damage (points to plot graph, WGH, WGN, WGD & WGM)

The following information was obtained from attachment M-16428A and other references as indicated.

Board No. 0-DBO-239-6	Ref. 6.2
Cables J59, J64, J172, J46, J47, J43, Circuits 8, 9, & 10	Ref. 6.1 Appendix B, Sheets B53D, B53E & B53C
Curve No. 37	Ref. 6.1, Appendix B, Sheets B53D, B53E & B53C
Mark Nos. WGH, WGN, WGD & WGM	Ref. 6.1, Appendix B, Sheets B53D, B53E & B53C
Conductor Size: # 12 AWG	Ref. 6.1, Appendix B, Sheets B53D, B53E & B53C
Cable Type PJJ	Ref. 3.1
Insulation type - PE	Ref. 6.5
(T1) Temperature rating: 75°C	Ref. 6.5
(T2) Cable insulation damage temp: 150°C	Ref. 3.3
(A) Conductor area Circular Mils: 6530	Ref. 3.5

$$\left[\frac{I}{A}\right]^2 t = 0.0297 \log \left[\frac{T_2 + 234}{T_1 + 234}\right]$$ Ref. 3.4

$$t = 0.0297 \left[\frac{A}{I}\right]^2 \log \left[\frac{T_2 + 234}{T_1 + 234}\right]$$

For I = 2000 Amp $$t = 0.0297 \left[\frac{6530}{2000}\right]^2 \log \left[\frac{150 + 234}{75 + 234}\right]$$

I = 2000 Amps	t = 0.0299 sec
I = 1000 Amps	t = 0.1195 sec
I = 500 Amps	t = 0.4781 sec
I = 200 Amps	t = 2.9879 sec
I = 100 Amps	t = 11.9517 sec

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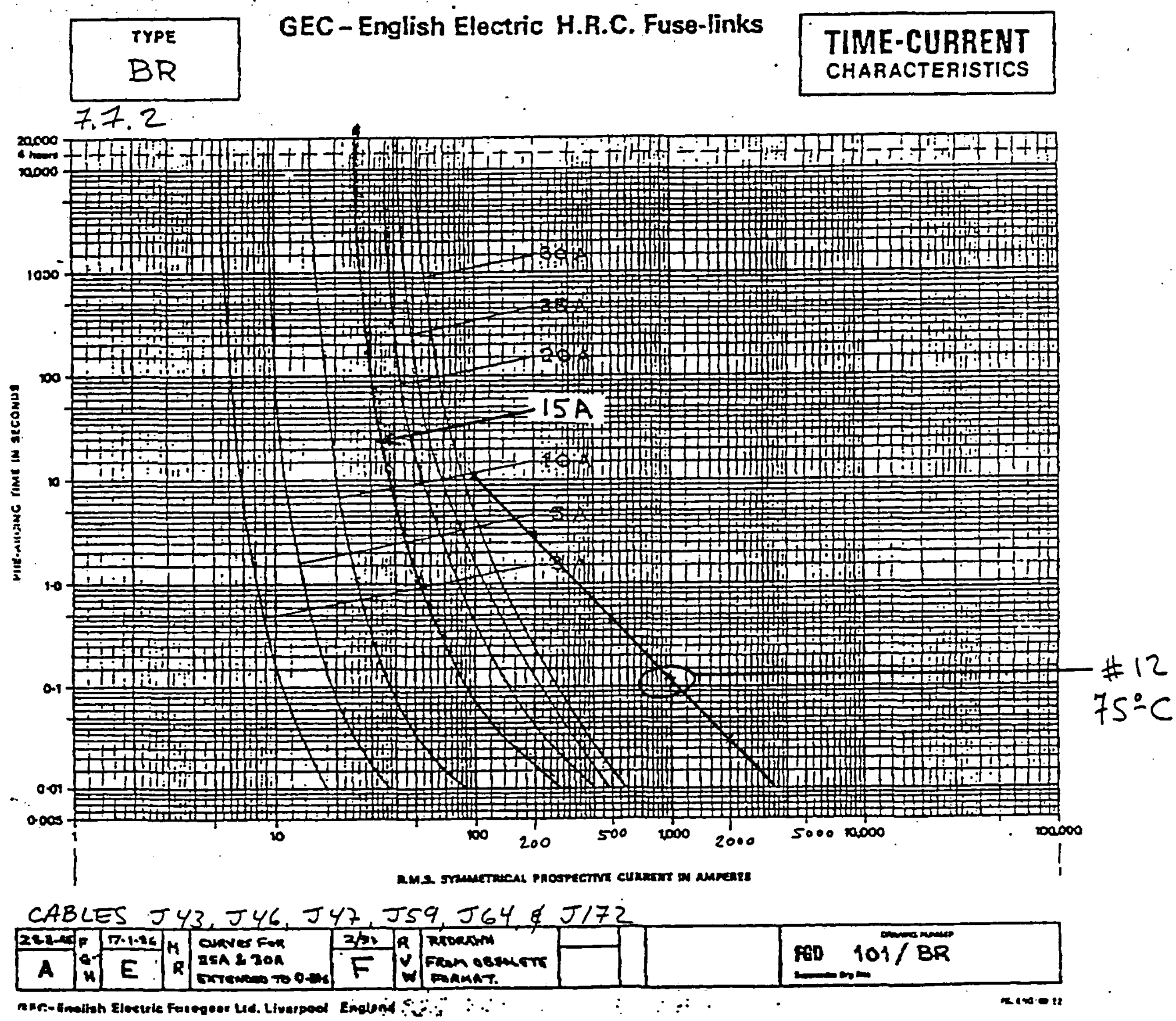
Sheet 14

7.7.2



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Calculation No. WBPEVAR9001006
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Failed Cable Analysis

Prepared by [signature] Date 4-14-92
Checked by [signature] Date 4-16-92
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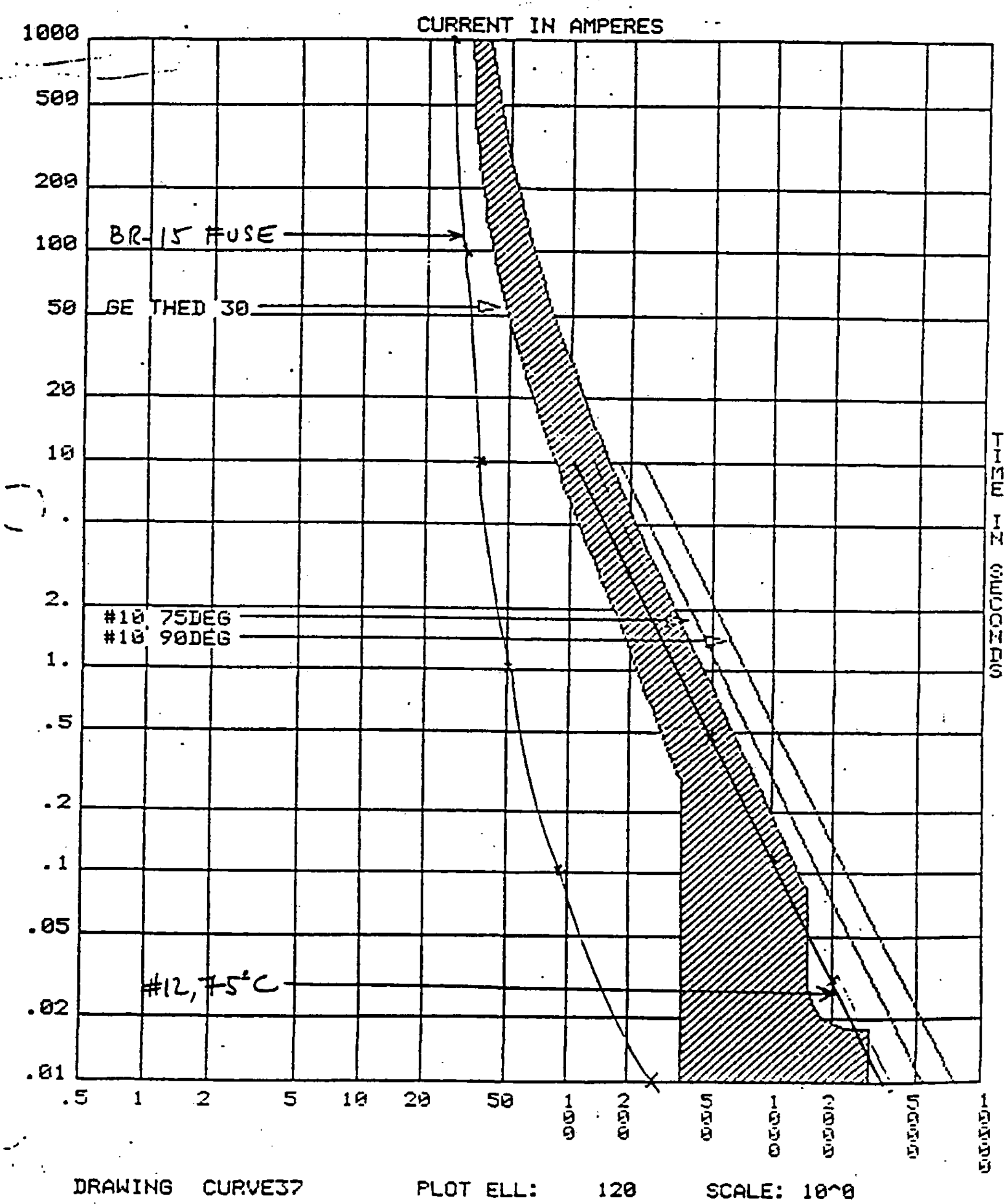
7.7.3

SHEET C10 700 4/11/92
PREPARED 220 DATE 1-31-90
CHECKED GCP DATE 2-1-90

CABLES J43, J46, J47, J59, J64 & J172



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Failed Cable Analysis

Prepared by [signature] Date 4-16-92

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Sheet 16

8.0 SUMMARY OF CALCULATION RESULTS

The calculation results apply to the cables failed in the 18 circuits taken into consideration by Attachment M-16428-A.

8.1 Cases where breaker vendor information is not available.

CABLE NO.	CABLE CLASS	IS CABLE ROUTING ENTIRELY IN NON 1E AREAS	WILL FAILURE OF CABLE AFFECT ANY SAFETY SYSTEM	RESULTS	
				WILL CABLE REQUIRE REPLACEMENT	IF YES MARK NO.
PLS 4132	NON 1E	YES	NO	NO	
PLS 4152	NON 1E	YES	NO	NO	
PLS 4155	NON 1E	YES	NO	NO	
PLS 4158	NON 1E	YES	NO	NO	
PLS 4161	NON 1E	YES	NO	NO	
PLS 4121	NON 1E	YES	NO	NO	

Criteria 2.2
Appendix A Sheet A1

8.2 Cases where breaker trip settings require adjustment

Change instantaneious trip setting of Westinhouse breaker JA3 125A from High to Low. This will prevent thermal damage to cables M29 and M39. (See section 7.2).

DS 4/17/92

Ref. 6.1, Attachment C, Sheet C86, Curve 83.

Criteria 2.1

8.3 Cables protected by Bussmann KLC10 fuse

Cable 1PL139 is adequately protected against thermal damage by Bussmann KLC10 fuse (See Section 7.3).

Criteria 2.1

8.4 Cases where cables were analyzed using maximum ambient temperature as initial conductor temperature.

CABLE NO.	FAIL THERMAL DAMAGE CRITERIA	RESULTS	
		REPLACEMENT CABLE	IF YES MARK NO.
1PV4	NO	NO	
2PV4	NO	NO	
1PV123	NO	NO	
2PV123	NO	NO	
1PV243	NO	NO	
1PV363	NO	NO	
2PV363	NO	NO	
1PM4712	NO	NO	

Criteria 2.1, Graphs 7.4.2 and 7.5.2

8.5 Cases where additional information was found after R7 of this calcu~~l~~lation was issued.

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CABLE NO.	INFORMATION FOUND Circuits contain fuses	PASS THERMAL INSULATION CRITERIA	RESULTS	
			REPLACE CABLE	IF YES MARK NO.
J59	FUSE BR-15	YES	NO	
J60	FUSE BR-15	YES	NO	
J64	FUSE BR-15	YES	NO	
J172	FUSE BR-15	YES	NO	
J46	FUSE BR-15	YES	NO	
J47	FUSE BR-15	YES	NO	
J50	FUSE BR-15	YES	NO	
J43	FUSE BR-15	YES	NO	

Criteria 2.1, Graph 7.7.3

9.0 CONCLUSION

DCN M-08614-A will change the instantaneous trip setting of the breaker protecting cables M29 and M39 from HI to LO. Once this is performed, all the cables failed by revision 7 of this calculation will be considered to be satisfactory. RS 4/17/92

10.0 APPENDIXES

ATTACHMENT M16428A - R1

APPENDIX A

CALC. WBPEVAR9001006 R8
(FAILED CABLES ANALYSIS)

PREPARED BY H. Patel DATE 4/16/92
CHECKED BY [signature] DATE 04/16/92

BOARD	CKT	CABLE	SIZE	FROM EQUIP.	FROM LOC/ELEV	TO EQUIP.	TO LOC/ELEV	JUSTIFICATION
0-MCC-222-HS	B8	PLS4132	#12	0-IFIC-222-HS1	S2N/729	0-MCC-222-HS/DN	S6H/741	NON-1E STRUCTURE
0-MCC-222-HS	B8	PLS4152	#12	0-IFIC-222-HS1	S2N/729	0-MCC-222-HS/BN	S6H/741	NON-1E STRUCTURE
0-MCC-222-HS	B9	PLS4155	#12	0-IFIC-222-HS2	S2N/729	0-MCC-222-HS/BN	S6H/741	NON-1E STRUCTURE
0-MCC-222-HS	B10	PLS4158	#12	0-IFIC-222-HS3	S2N/729	0-MCC-222-HS/BN	S6H/741	NON-1E STRUCTURE
0-MCC-222-HS	B11	PLS4161	#12	0-IFIC-222-HS4	S2N/729	0-MCC-222-HS/BN	S6H/741	NON-1E STRUCTURE
0-MCC-222-HS	B12	PLS4121	#14	0-JB-295-5484	S6K/713	0-MCC-222-HS/BN	S6H/741	NON-1E STRUCTURE

THIS SHEET ADDED BY REV 9

Attachment FIR103A
Reg. Guide 1.75 Associated
Circuits and Appendix R
Analysis for Non-Class 1E
120V AC & 250V DC Circuits

Calculation No. WBPEVAR9001006

Prepared by I. Vl Date 8-8-92

Checked by [signature] Date 8-11-92

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4.0	Design Input Data	3	-
5.0	Justification of Assumptions	3	-
6.0	Methodology	4,5,6,7	4
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TITLE	Appendix	No. of Pages
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Time-Current Plots	C	11
Damage Curve Calculation	D	4
Conductor Protection	E	4

This attachment contains 86 pages.

1.0 PURPOSE AND SCOPE

1.1 This attachment addresses concerns raised in WBFIR910243103 R0, with regard to calculation WBPEVAR9001006. The FIR identified the following areas that were not adequatelly analyzed in the calculation :

1. Communication Systems

2. Potential Transformers Circuits

3. Security Systems(120V AC)

Attachment FIR103A analyzes Potential Transformers Circuits and Attachment FIR103B analyzes Communication Systems and Security Systems. Attachment FIR103C analyzes control or power cables leaving any vendor package and connected to 480V MCC's. This is in addition to the areas identified in the WBFIR910243103 R0.

1.2 The purpose of this attachment is to verify that cables pertaining to circuits supplied by Potential Transformers and connecting to equipment wihtin the seismic class I structures, are properly protected and will not degrade the performance of any class 1E cables or Fire Safe Shutdown (FSSD-Appendix R) cables.

1.3 The scope of work of this attachment contains all the circuits originating at potential transformers outside of and routing into seismic class 1 structures.

The list of boards, panels and equipment which contain these PT's is presented at 6.2.4.

2.0 ASSUMPTIONS

2.1 See Baseline Calculation.

3.0 SOURCES OF DESIGN INPUT/REFERENCES

3.1 WBFIR910243103 R1

3.2 Baseline Calculations : Calculation No. WBPEVAR9001006,

Reg. Guide 1.75 Associated Circuits
and Appendix R Analysis of Non-Class
1E 120 VAC & 250 VDC Circuits

3.3 TVA Electrical Design Guide DG-E12.6.2, Rev. 0

3.4 TVA Electrical Design Guide DG-E2.4.6, Rev. 0

3.5 TVA Design Criteria WB-DC-30-5, Rev.5

3.6 TVA Design Criteria WB-DC-30-13, Rev.2 (B26910131801)

3.7 TVA Electrical Design Standard DS-E12.1.6 Rev. 1

3.8 TVA Computerized databases
- CCRS as of 8/8/1992
- EMSØ as of 8/8/1992

3.9 TVA Drawings - See Appendix A

4.0 DESIGN INPUT DATA

See list of drawings in Appendix A.

5.0 JUSTIFICATION OF ASSUMPTIONS

5.1 There are no unverified assumptions.

5.2 See baseline calculation.

6.0 CALCULATION METHODOLOGY

6.1 Identification of associated circuits.
The corrective action for the FIR requires the analysis of the circuits that are routed into seismic class 1 buildings. The circuits analyzed in this attachment are listed in section 6.2.4. The circuits have been selected by identifying on the drawings all the PT's which have connection cables leaving the panels and routed from seismic class I to non-class I buildings and vice-versa. The purpose of the analysis is to ascertain whether the cable are properly protected, as required by the electrical design guide DG-E12.6.2 and the criteria WB-DC-30-5 and WB-DC-30-13.

6.2 Potential Transformer circuits analysis methodology

6.2.1 The circuits are analyzed as outlined in WB-DC-30-5.

6.2.2 The cable thermal damage is evaluated as indicated in WB-DC-30-13.

6.2.3 The thermal damage up to 10seconds is calculated as per ICEA P-32-382,using the formula

$I^2t = 0.0297*A^2*\log((T_2 + 234)/(T_1 + 234))$,
where :
I = maximum short circuit current
A = conductor area in circular mills
t = duration of fault on seconds
T_1 = maximum operating temperature
T_2 = limiting temperature of insulation, in °C

The thermal damage curves are calculated in Appendix D.

6.2.4 The circuits to be analyzed include the following elements :

a. The potential transformers listed below :

Coupling Capacitor Voltage Transformers (at 500KV switchyard)	0-LTCC-245-2/B 0-LTCC-245-2/C 0-LTCC-245-3/B 0-LTCC-245-3/C 0-LTCC-245-10/A 0-LTCC-245-10/B
Oil Filled Potential Voltage Transformers (at 500kv switchyard)	0-POT-245-3/1A 0-POT-245-3/1B 0-POT-245-9/2A 0-POT-245-9/2B 0-POT-245-9/2C
Bushing Device Potential Transformers (on Main Transformer Banks)	1-OXF-244-A 1-OXF-244-B 1-OXF-244-C 0-OXF-244-SP 2-OXF-244-A 2-OXF-244-B 2-OXF-244-C
Potential Voltage Transformer sets (Attached to the generator bus bars)	1-TB-244-PT 2-TB-244-PT
Potential Voltage Transformers Sets within :	
6900V Unit Board 1A	1-BD-201-A
6900V Unit Board 1B	1-BD-201-B
6900V Unit Board 1C	1-BD-201-C
6900V Unit Board 1D	1-BD-201-D
6900V Unit Board 2A	2-BD-201-A
6900V Unit Board 2B	2-BD-201-B
6900V Unit Board 2C	2-BD-201-C
6900V Unit Board 2D	2-BD-201-D
6900V Start Bus Board A	0-BD-200-SA
6900V Start Bus Board B	0-BD-200-SB
6900V Common Board A	0-BD-200-A
6900V Common Board B.	0-BD-200-B

6900V Common Switchgear C	0-BD-200-C
6900V Common Switchgear D	0-BD-200-D
6900V RCP Board 1A	1-BD-202-A
6900V RCP Board 1B	1-BD-202-B
6900V RCP Board 1D	1-BD-202-D
6900V RCP Board 2A	2-BD-202-A
6900V RCP Board 2B	2-BD-202-B
6900V RCP Board 2C	2-BD-202-C
6900V RCP Board 2D	2-BD-202-D
6900V Shutdown Board 1A-A (2A-A)	1-BD-211-A (2-BD-211-A)
6900V Shutdown Board 1B-B (2B-B)	1-BD-211-B (2-BD-211-B)
480V Unit Board 1A	1-BD-203-A
480V Unit Board 1B	1-BD-203-B
480V Unit Board 2A	2-BD-203-A
480V Unit Board 2B	2-BD-203-B
480V Shutdown Board 1A1-A	1-BD-212-A1-A
480V Shutdown Board 1A2-A	1-BD-212-A2-A
480V Shutdown Board 1B1-B	1-BD-212-B1
480V Shutdown Board 1B2-B	1-BD-212-B2
480V Shutdown Board 2A1-A	1-BD-212-A1
480V Shutdown Board 2A2-A	1-BD-212-A2
480V Shutdown Board 2B1-B	1-BD-212-B1
480V Shutdown Board 2B2-B	1-BD-212-B2

b. The cables between the PT's and the instruments. Tags identifying connecting cables are found on the reference drawings listed in Appendix A. Their characteristics are listed in the CCRS database.

c. The boards and panels incoporating relays and instruments. They are:
- The Unit Control Boards (0-M,1-M,2-M,1-L,2-L)
- The Electrical Control Board (ECB)
- The Relay Boards (MRB, RB's)
- The Auxiliary Control Panel

These equipment items are the end points of the circuits originating at boards and panels listed in 6.2.4.a.

6.2.5 The shortcircuit points are chosen at 10FT from the originating PT. This provides a consistent calculation criteria and a very conservative value for the shortcircuit current.

The fuse shortcircuit interrupting ratings are compared with the shortcircuit current values, in order to ascertain the fuses operating suitability.

6.2.6 The thermal damage curves are calculated for each cable, according to the insulation class for each individual cable.

6.2.7 The calculation has been developed as outlined bellow :

a. Prepare the circuit data sheets indicating
- the PT location
- the circuits intended use
- the protective fuses, their type and rating
- the connecting cables, their type, length, insulation material, etc.

b. Calculate the bolted shortcircuit at 10ft from the PT.

c. Plot the time current characteristics of the protecting fuse and the cable insulation damage curve.

d. Verify the adequacy of the protective device, using the criteria listed in section 6.2.1. The ratings of the cables are listed in reference 3.6. The sources for the fuses ratings are
-The drawings (See Appendix A)
-The TVA walkdown files
-The TVA EMSO database.
-Manufacturers data sheets.

The existence of a safety margin between the cables' thermal damage curves and the time current characteristics of the protective fuse can be ascertained on the plots included in Attachment C. Instances of no margin are justified in section 5.1 of the base calculation.

6.2.8 The short circuit calculation has been performed for each individual circuit. In order to obtain a conservative result, the impedances of the potential transformers and their limiting effect have been neglected.

7.0 ANALYSIS

See Appendices B,E

8.0 GRAPHICS

See Appendix C.

9.0 SUMMARY OF RESULTS

See Appendices B and E .

10.0 CONCLUSION

The analysis of Appendices B and E indicates that

1) The cables are protected from thermal damage.

2) The fuses are applied within their short circuit ratings.

APPENDIX A

LIST OF REFFERENCE DRAWINGS

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APPENDIX A
LIST OF REFERENCE DRAWINGS

NO.	DRAWING	REV	TITLE
1	1-75W1504	0	WIRING DIAGRAM MAIN SINGLE LINE 500KV SWITCHYARD
2	1-75W1505	0	WIRING DIAGRAM MAIN SINGLE LINE 500KV SWITCHYARD
3	1-75W1507	0	WIRING DIAGRAM MAIN SINGLE LINE 500KV SWITCHYARD
4	1-75W1508	0	WIRING DIAGRAM MAIN SINGLE LINE 500KV SWITCHYARD
5	1-75W1509	0	WIRING DIAGRAM MAIN SINGLE LINE 500KV SWITCHYARD
6	1-45W713	0	WIRING DIAGRAM STA. SERV XFRMS & START BUS SINGLE LINE
7	45N714	C	WIRING DIAGRAM 6900V COMMON SWGR C & D SINGLE LINE
8	1-45W715	0	WIRING DIAGRAM 6900V COMMON SWGR A&B SINGLE LINE
9	1-45W720	1	WIRING DIAGRAM 6900V RCP BOARDS SINGLE LINE
10	1-45W721-1	0	WIRING DIAGRAMS 6900V UNIT BDS 1A, 1B, 2A & 2B SINGLE LINE SH-1
11	1-45W721-2	0	WIRING DIAGRAM 6900V UNIT BDS 1C, 1D, 2C & 2D SINGLE LINE SH-2
12	1-45W724-1	0	WIRING DIAGRAM 6900V SHUTDOWN BOARD 1A-A SINGLE LINE
13	1-45W724-2	0	WIRING DIAGRAMS 6900V SHUTDOWN BOARD 1B-B SINGLE LINE

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APPENDIX A
LIST OF REFERENCE DRAWINGS

NO.	DRAWING	REV	TITLE
14	1-45W724-3	0	WIRING DIAGRAMS 6900V SHUTDOWN BOARD 2A-A SINGLE LINE
15	1-45W724-4	0	WIRING DIAGRAMS 6900V SHUTDOWN BOARD 2B-B SINGLE LINE
16	1-45W747-1	0	WIRING DIAGRAM 480V UNIT BOARD 1A, 2A SINGLE LINE
17	1-45W747-1	0	WIRING DIAGRAM 480V UNIT BOARD 1B, 2B SINGLE LINE
18	1-45W749-1	0	WIRING DIAGRAM 480V SHUTDOWN BD 1A1 & 2A1-A SINGLE LINE
19	1-45W749-2	1	WIRING DIAGRAM 480V SHUTDOWN BD 1A2-A & 2A2-A
20	1-45W749-3	1	WIRING DIAGRAM 480V SHUTDOWN BD 1B1-B & 2B1-B
21	1-45W749-4	0	WIRING DIAGRAM 480V SHUTDOWN BD 2B2-A & 2B2-B
22	45N1636-1	R	WIRING DIAGRAM UNIT CONTROL BOARD-PANEL 0-L-4 CONNECTION DIAGRAMS - SHEET 1
23	45N1636-2	R	WIRING DIAGRAM UNIT CONTROL BOARD-PANEL 0-L-4 CONNECTION DIAGRAMS - SHEET 2
24	45N1636-3	R	WIRING DIAGRAM UNIT CONTROL BOARD-PANEL 0-L-4 CONNECTION DIAGRAMS - SHEET 3
25	45N1636-4	R	WIRING DIAGRAM UNIT CONTROL BOARD-PANEL 0-L-4 CONNECTION DIAGRAMS - SHEET 4
26	45N1641-1	R	WIRING DIAGRAMS UNIT CONTROL BOARD PANEL 1-M-1 & 1-M-2 CONNECTION DIAGRAMS SH-1
27	45N1641-2	G	WIRING DIAGRAMS UNIT CONTROL BOARD PANEL 1-M-1 & 1-M-2 CONNECTION DIAGRAMS SH-2

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APPENDIX A
LIST OF REFERENCE DRAWINGS

NO.	DRAWING	REV	TITLE
28	45N1641-3	L	WIRING DIAGRAMS UNIT CONTROL BOARD PANEL 1-M-1 & 1-M-2 CONNECTION DIAGRAMS SH-3
29	45N1641-5	R	WIRING DIAGRAMS UNIT CONTROL BOARD PANEL 1-M-1 & 1-M-2 CONNECTION DIAGRAMS SH-5
30	45N1641-6	P	WIRING DIAGRAMS UNIT CONTROL BOARD PANEL 1-M-1 & 1-M-2 CONNECTION DIAGRAMS SH-6
31	45N1644-1	K	WIRING DIAGRAM UNIT CONTROL BOARD-PANEL 1-M-5 CONNECTION DIAGRAMS - SHEET 1
32	45N1644-2	M	WIRING DIAGRAM UNIT CONTROL BOARD-PANEL 1-M-5 CONNECTION DIAGRAMS - SHEET 2
33	45N1644-4	N	WIRING DIAGRAM UNIT CONTROL BOARD-PANEL 1-M-5 CONNECTION DIAGRAMS - SHEET 4
34	45N1659-2	P	WIRING DIAGRAMS UNIT CONTROL BOARD PANEL 0-M-26 CONNECTION DIAGRAMS SHEET-2
35	45N1659-3	N	WIRING DIAGRAMS UNIT CONTROL BOARD PANEL 0-M-26 CONNECTION DIAGRAMS SHEET-3
36	45N1659-4	P	WIRING DIAGRAMS UNIT CONTROL BOARD PANEL 0-M-26 CONNECTION DIAGRAMS SHEET-4
37	45N1659-5	F	WIRING DIAGRAMS UNIT CONTROL BOARD PANEL 0-M-26 CONNECTION DIAGRAMS SHEET-5
38	45W1714-1	C	WIRING DIAGRAMS 6900V COM STA SWGR C & D
39	45W1720-1	C	WIRING DIAGRAMS 6900V REACTOR COOLANT PUMP BDS CONNECTION DIAGRAMS

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APPENDIX A
LIST OF REFERENCE DRAWINGS

NO.	DRAWING	REV	TITLE
40	45W1721-1	E	WIRING DIAGRAMS 6900V UNIT BOARDS
41	45W1721-2	C	WIRING DIAGRAMS 6900V UNIT BOARDS
42	45W1721-3	D	WIRING DIAGRAMS 6900V UNIT BOARDS
43	45W1721-5	D	WIRING DIAGRAMS 6900V UNIT BOARDS
44	1-45W760-200-1,2	0	WIRING DIAGRAM 6900 START BOARDS SCHEMATIC DIAGRAMS
45	1-45W760-200-5	0	WIRING DIAGRAM 6900 COM STA SWGR C & D SCHEMATIC DIAGRAMS
46	1-45W760-201-1,2	0	WIRING DIAGRAM 6900V UNIT BOARDS TRANSFER SCHEMATIC DIAGRAMS
47	1-45W760-203-1	0	WIRING DIAGRAMS 480V UNIT AUXILIARY POWER SCHEMATIC DIAGRAM
48	1-45W760-205-1	0	WIRING DIAGRAM 480V TURBINE BUILDING COMMON POWER SCHEMATIC DIAGRAMS
49	1-45W760-206-1	0	WIRING DIAGRAM 480V AUX BLDG COMMON POWER SCHEMATIC DIAGRAM
50	1-45W760-206-2	0	WIRING DIAGRAM 480 AUX BLDG COMMON POWER SCHEMATIC DIAGRAM
51	1-45W760-211-6	0	WIRING DIAGRAM 6900V SHUTDOWN POWER-TRAIN A SCHEMATIC DIAGRAMS
52	1-45W760-211-7	0	WIRING DIAGRAM 6900V SHUTDOWN POWER-TRAIN B SCHEMATIC DIAGRAMS
53	1-45W760-211-17	0	WIRING DIAGRAM 6900V SHUTDOWN POWER-TRAIN A & B SCHEMATIC DIAGRAM

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APPENDIX A
LIST OF REFERENCE DRAWINGS
SHEET 5 OF 8

NO.	DRAWING	REV	TITLE
54	1-45W760-212-1	0	WIRING DIAGRAMS 480V SHUTDOWN POWER SCHEMATIC DIAGRAMS
55	55W612-1	D	WIRING DIAGRAM ELEC CONTROL BOARD-PANEL 2 COMMON STA SERV XFMR B & C
56	55W612-2	C	WIRING DIAGRAM ELEC CONTROL BOARD-PANEL 2 COMMON STA SERV XFMR B & C
57	55W613-1	D	WIRING DIAGRAM ELEC CONTROL BOARD-PANEL 3 COMMON STA SERV XFMR A & D
58	55W613-2	C	WIRING DIAGRAM ELEC CONTROL BOARD-PANEL 3 COMMON STA SERV XFMR A & D
60	55W613-5	L	WIRING DIAGRAM ELEC CONTROL BOARD-PANEL 3 COMMON STA SERV XFMR A & D
61	55W615-1	L	WIRING DIAGRAM ELEC CONTROL BOARD-PANEL 5 500KV SEQ 2 LINE,UNIT 2 & SP BKR
62	55W615-2	F	WIRING DIAGRAM ELEC CONTROL BOARD-PANEL 5 500KV SEQ 2 LINE,UNIT 2 & SP BKR
63	55W615-4	D	WIRING DIAGRAM ELEC CONTROL BOARD-PANEL 5 500KV SEQ 2 LINE,UNIT 2 & SP BKR
64	55W615-5	K	WIRING DIAGRAM ELEC CONTROL BOARD-PANEL 5 500KV SEQ 2 LINE,UNIT 2 & SP BKR

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APPENDIX A
LIST OF REFERENCE DRAWINGS

NO.	DRAWING	REV	TITLE
65	55W616-1	H	WIRING DIAGRAM ELEC CONTROL BOARD-PANEL 6 UNIT 1,500KV BULL RUN & VOL LINES
66	55W616-2	E	WIRING DIAGRAM ELEC CONTROL BOARD-PANEL 6 UNIT 1,500KV BULL RUN & VOL LINES
67	55W616-4	D	WIRING DIAGRAM ELEC CONTROL BOARD-PANEL 6 UNIT 1,500KV BULL RUN & VOL LINES
68	55W617-1	E	WIRING DIAGRAM ELEC CONTROL BOARD-PANEL 7 500KV SEQUOYAH LINE
69	55W632-1	E	WIRING DIAGRAMS MAIN RELAY BOARD PANEL 12 OSCILLOGRAPH NO. 2 SH. 1
70	55W640-1	E	WIRING DIAGRAMS MAIN RELAY BOARD PANEL 20 OSCILLOGRAPH NO. 1 SH. 1
71	75W1520-1	G	WIRING DIAGRAM 500KV CONNECTION DIAGRAM SH-1 BAYS 1 & 2
72	75W1520-2	F	WIRING DIAGRAM 500KV CONNECTION DIAGRAM SH-2 BAYS 3 & 4
73	75W1520-5	H	WIRING DIAGRAM 500KV CONNECTION DIAGRAM SH-5 BAYS 9 & 10
74	75W1520-6	G	WIRING DIAGRAM 500KV CONNECTION DIAGRAM SH-6 BAYS 11 & 12
75	1-75W1540-1	0	WIRING DIAGRAM 500KV AC SCHEMATIC BAYS 1 & 2
76	1-75W1540-2	0	WIRING DIAGRAM 500KV AC SCHEMATIC BAYS 3 & 4

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APPENDIX A
LIST OF REFERENCE DRAWINGS

NO.	DRAWING	REV	TITLE
77	1-75W1540-3	0	WIRING DIAGRAM 500KV AC SCHEMATIC BAY 6
78	1-75W1540-4	0	WIRING DIAGRAM 500KV AC SCHEMATIC BAYS 8 & 9
79	1-75W1540-5	0	WIRING DIAGRAM 500KV AC SCHEMATIC BAY 10
80	1-75W1540-6	0	WIRING DIAGRAM 500KV AC SCHEMATIC BAYS 11 AND 12
81	1-75W1541	0	WIRING DIAGRAM 500KV AC SCHEMATIC UNIT 1 GEN & XFMR CIRCUITS
82	1-45W1600-1	3	WIRING DIAGRAM GENERATOR & UNIT SS XFMR 1 C & D CONNECTIONS DIAGRAM SHEET 1
83	75W1601	B	WIRING DIAGRAM 500KV MAIN TRANSFORMER BANK 1 CONNECTION DIAGRAM
84	75W2601	B	WIRING DIAGRAM 500KV MAIN TRANSFORMER BANK 2 CONNECTION DIAGRAM
85	75W1602	D	WIRING DIAGRAM MAIN XFMR2 CT TRANSFORMER CAB CONNECTION DIAGRAM
86	75W2602	E	WIRING DIAGRAM MAIN XFMR2 CT TRANSFORMER CAB CONNECTION DIAGRAM

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APPENDIX A
LIST OF REFERENCE DRAWINGS

NO.	DRAWING	REV	TITLE
87	CONTRACT 73-84193 DRAWINGS #255148		NAMEPLATE OUTLINE DIMENSIONS OF 300KV POTENTIAL TRANSFORMERS
88	CONTRACT 74-85665 DRAWINGS		BUSHING POTENTIAL DEVICE
89	CONTRACT 74-84752 L-82953X70		WIRING DIAGRAM FOR SURGE PROTECTION & P.T. COMPARTMENT
90	CONTRACT 74C2-84376 DWGS. 0123D2336 0125D1483 0126D3929 0126D4535		METALCLAD SWITCHGEAR CONNECTION DIAGRAM (COMMON SWITCHGEAR A &B) (6900V RCP BOARDS) (6900V UNIT BOARDS (6900V SHUTDOWN BOARD)
91	CONTRACT 74C2-84647 DWGS. 6947D55 6947D55 6947D56		 480V SHUTDOWN BD. 2A1-A
92	CONTRACT 74-84252 HC PORTER DWG. L-79798X99		DRAWOUT PT. COMPARTMENT 24KV, 150KV, BIL 72-84752
93	DWG. 82953X70		WIRING DIAGRAM FOR SURGE PROTECTOR AND PT COMPARTMENT
94	CONTRACT 74-85655 DWG. NP267614 DWG. NP267613	 1	 BUSHING POTENTIAL DEVICE BUSHING POTENTIAL DEVICE
95	CONTRACT 81K-829042 DWG. 81004, SH. 12	 903	6900V COMMON SWITCHGEAR C&D TRANSFORMER YARD

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APPENDIX B

POTENTIAL TRANSFORMER CIRCUITS DATA SHEETS

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APPENDIX B

POTENTIAL TRANSFORMER CIRCUITS DATA SHEETS

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PT or LOCATION IDENTIFIER	SHEET
0-LTCC-245-2/B,C	1
0-LTCC-245-3/B,C	2
0-POT-245-3/1A,1B,1C	3
0-LTCC-245-9/B,C	4
0-LTCC-245-10/A,B	5
0-POT-245-9/2A,2B,2C	6
0-LTCC-245-11/A,B	7
1-TB-244-PT	8
2-TB-244-PT	9
1-BD-201-A	10
1-BD-201-B	11
1-BD-201-C	12
1-BD-201-D	13
2-BD-201-A	14
2-BD-201-B	15
2-BD-201-C	16

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APPENDIX B

POTENTIAL TRANSFORMER CIRCUITS DATA SHEETS

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(continuation)

PT or LOCATION IDENTIFIER	SHEET
2-BD-201-D	17
0-BD-200-SA,SB	18
0-BD-200-C	19
0-BD-200-D	20
1-BD-202-A	21
1-BD-202-B	22
1-BD-202-C	23
1-BD-202-D	24
2-BD-202-A	25
2-BD-202-B	26
2-BD-202-C	27
2-BD-202-D	28
0-BD-200-A	29
0-BD-200-B	30
1-BD-211-A & 2-BD-211-A	31
1-BD-211-B & 2-BD-211-B	32

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APPENDIX B

POTENTIAL TRANSFORMER CIRCUITS DATA SHEETS

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(continuation)

PT or LOCATION IDENTIFIER	SHEET
1-BD-203-A	33
1-BD-203-B	34
2-BD-203-A	35
2-BD-203-B	36
1-BD-212-A1-A	37
1-BD-212-A2-A	38
1-BD-212-B1-B	39
1-BD-212-B2-B	40
2-BD-212-A1-A	41
2-BD-212-A2-A	42
2-BD-212-B1-B	43
2-BD-212-B2-B	44
1-OXF-244/A,B,C & 0-OXF-244/SP	45
2-OXF-244/A,B,C	46

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APPENDIX B

SHEET 1 OF 46

POTENTIAL TRANSFORMER CIRCUITS DATA SHEETS

1. SYMBOL & LOCATION	0-LTCC-245-2/C,B CCVT, Bϕ & Cϕ, LOCATED IN THE 500KV SWITCHYARD, BAY 1,SECT. 1, CONN. TO ROANE LINE, WESTINGHOUSE MFR.		REFERENCES 1-75W 1504 75W1520-1 1-75W1540-1
2. DESCRIPTION	COUPLING CAPACITOR VOLTAGE TRANSFORMERS		
3. QUANTITY	1(Bϕ)& 1(Cϕ)		
4. PRIMARY VOLT	500KV		
5. SECONDARY VOLT	120V		
6. TERTIARY VOLT	66.7V		PLOT #01
7. VOLTAMP RATING	BURDEN = 400VA		
9. PRIMARY FUSE			
10. SECONDARY FUSE	15A - FUSETRON, BUSSMAN		
11. CONNECT	ELECTRICAL CONTROL BOARD		
12. TAG	(Bϕ) FBT 1015 TO JB 2997 FBT 1016 TO ECB 4	(Cϕ) FBT 5104 TO JB 5530 FBT 5105 TO ECB 4	
13. WIRING	1-2C #10 AWG	1-2C #10AWG	
15. LENGTH	1251 FT	1287 FT	
16. TYPE	WFB	WFB-1	
17. CONDUCTOR PROTECTION	Thermal damage up to 10 s : Pass (See plot)	Thermal damage up to 10 s : Pass (See plot)	

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ATTACHMENT FIR103A
REG GUIDE 1.75
ASSOCIATED CIRCUITS AND APPENDIX R
ANALYSIS FOR NON-CLASS 1E
120V AC & 250V DC CIRCUITS

CALCULATION WBPEVAR 9001006
PAGE ___ OF ______

PREPARED BY P. V. DATE 8-04-92
CKD. BY [signature] DATE 8-7-92

APPENDIX B

SHEET 2 OF 46

POTENTIAL TRANSFORMER CIRCUITS DATA SHEETS

1. SYMBOL & LOCATION	0-LTCC-245-3/C,B, CCVT, Bϕ & Cϕ, , LOCATED IN THE 500 KV SWITCHYARD, BAY 3, BUS 2, SECT 1, (SEQUOYAH 2 LINE) - MFR. BY WESTINGHOUSE		REFERENCES 1-75W 1505 75W1520-2 PLOT #01
2. DESCRIPTION	COUPLING CAPACITOR VOLTAGE TRANSFORMER		
3. QUANTITY	1 (Bϕ) & 1 (Cϕ)		
4. PRIMARY VOLT	300KV		
5. SECONDARY VOLT	120V		
6. TERTIARY VOLT	66.7V		
7. RATED VA	BURDEN = 400VA		
8. PRIMARY FUSE			
9. SECONDARY FUSE	15A: FUSETRON, BUSSMAN		
10. CONNECT	CONN. THROUGH JB 5531 & JB 2015 TO THE ELECTRICAL CONTROL BOARD		
11. TAG	FBT 5107(Cϕ)	FBT 2019(Bϕ)	
12. WIRING	1-2C #10	1-2C #10	
13. LENGTH	1197 FT	1161 FT	
14. TYPE	WFB-1	WFB	
15. CONDUCTOR PROTECTION	Thermal damage up to 10 s : Pass (See ref. plot)	Thermal damage up to 10 s : Pass (See ref. plot)	

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POTENTIAL TRANSFORMER CIRCUITS DATA SHEETS

1. SYMBOL & LOCATION	0-POT-245-3/1A, 1B, 1C, POTENTIAL TRANSFORMERS, LOCATED IN THE 500 KVA SWITCHYARD, CONNECTED TO BUS 1, SECT 1, BAY 3,	REFERENCES 1-75W 1504 75W1520-2 1-75W1540-2 PLOT #03
2. DESCRIPTION	SINGLE PHASE 300KV/120/66.7V, OIL FILLED POTENTIAL TRANSFORMERS, GE CAT #44H485	
3. QUANTITY	3	
4. PRIMARY VOLT	300KV WYE, GROUNDED	
5. SECONDARY VOLT	120V WYE, GROUNDED	
6. TERTIARY VOLT	66.5V DELTA	
7. VA RATING	7.5KVA RATING, 400VA BURDEN	
8. PRIMARY FUSE		
9. SECONDARY FUSE	30A - FUSETRON, BUSSMAN	
10. CONNECT	UNPROTECTED FROM TRANSFORMERS TO JB 2991 :FBT 2014: 1-4C #10, 60 FT.; FBT 2015: 1-4C #10, 10 FT.; FBT 2016- 1-4C #10, 60 FT.-NOT INCLUDED IN THE SCOPE OF WORK; PROTECTED : FROM JB 2991 TO RB20, FBT 2017	
11. TAG	FBT 2017	
12. WIRING	1-12 #10	
13. LENGTH	1363 FT	
14. TYPE	WFL	
15. CONDUCTOR PROTECTION	Thermal damage up to 10 s : pass (See ref. plot, see baseline calculation, section 5.1)	

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POTENTIAL TRANSFORMER CIRCUITS DATA SHEETS

1. SYMBOL & LOCATION	0-LTCC-245-9/B,C : CCVT ON (Bϕ) & (Cϕ), LOCATED IN THE 500KV SWITCHYARD, BAY 9 , CONNECTED TO BULL RUN LINE, MFR. BY WESTINGHOUSE		REFERENCES 1-75W1508 75W1520-5 PLOT #01
2. DESCRIPTION	COUPLING CAPACITOR SINGLE PHASE VOLTAGE TRANSFORMERS		
3. QUANTITY	1(Bϕ) & 1 (Cϕ)		
4. PRIMARY VOLT	300KV		
5. SECONDARY VOLT	120V		
6. TERTIARY VOLT	66.7V		
7. VOLTAMP RATING			
9. PRIMARY FUSE			
10. SECONDARY FUSE	15A, FUSETRON FRN-R ,BUSSMANN		
11. CONNECT	TO METERING & RELAYS		
12. TAG	FBT 3019(Bϕ)	FBT 5109(Cϕ)	
13. WIRING	1-2C #10	1-2C#10	
14. LENGTH	1339	1261	
15. TYPE	WFB	WFB-1	
16. CABLE PROTECTION	Thermal damage up to 10 s : Pass (See ref. plot)	Thermal damage up to 10s:Pass (See ref. plot)	

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POTENTIAL TRANSFORMER CIRCUITS DATA SHEETS

1. SYMBOL & LOCATION	0-LTCC-245-10A, B: CCVT ON (Aϕ) & (Bϕ), LOCATED IN THE 500KV SWITCHYARD, BAY10, CONN. TO VOLUNTEER LINE, MFR. WESTINGHOUSE		REFERENCES 1-75W1540-5 1-75W1508 PLOT #01
2. DESCRIPTION	COUPLING CONDENSER SINGLE PHASE VOLTAGE TRANSFORMERS		
3. QUANTITY	1 ON Aϕ & 1 ON Bϕ	~~CONNECTIONS~~ P. V. 8-07-92	
4. PRIMARY VOLT	300KV	~~OPEN DELTA~~ P. V. 8-07-92	
5. SECONDARY VOLT	120V		
6. TERTIARY VOLT	66.7V		
7. VOLTAMP RATING			
9. PRIMARY FUSE			
10. SECONDARY FUSE	15A FUSETRON		
11. CONNECT			
12. TAG	FBT 5111 (Aϕ)	FBT 4016 (Bϕ)	
13. WIRING	1-2C #10	1-2C#10	
14. LENGTH	1406 FT	1424 FT	
15. TYPE	WFB-1	WFB	
16. CABLE PROTECTION	Thermal damage up to 10s:Pass (See ref. plot)	Thermal damage up to 10s:Pass (See ref. plot)	

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POTENTIAL TRANSFORMER CIRCUITS DATA SHEETS

1. SYMBOL & LOCATION	0-POT-245-9/2A, 2B, 2C: POTENTIAL VOLTAGE TRANSFORMERS, LOCATED IN THE 500KV SWITCHYARD, BAY 9, BUS 2, SECT 3		REFERENCES 1-75W1540-4 1-75W1508 1-75W1520-5 PLOT #03
2. DESCRIPTION	GE - TYPE EW-1800Y, CAT 44H845, 3-SINGLE PHASE VOLTAGE TRANSFORMERS, OIL FILLED		
3. QUANTITY	3		
4. PRIMARY VOLT	300KV	WYE GROUNDED CONNECTION	
5. SECONDARY VOLT	120V	WYE GROUNDED	
6. TERTIARY VOLT	66.7V	OPEN DELTA	
7. VOLTAMP RATING	7.5 KVA TOTAL; 400VA BURDEN		
9. PRIMARY FUSE			
10.SECONDARY FUSE	30A FUSETRON (0-FU-245-2995/1)		
11.CONNECT	TO METERING AND RELAYS		
12.TAG	FBT 3017		
13.WIRING	1-12C #10 AWG		
14.LENGTH	1480 FT		
15.TYPE	WFL		
16. CONDUCTOR PROTECTION	Thermal damage up to 10s : Pass (See ref. plot)		

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POTENTIAL TRANSFORMER CIRCUITS DATA SHEETS

			REFERENCES
1. SYMBOL & LOCATION	0-LTCC-245-11?,B: CCVT ON (Aϕ) & (Bϕ) , LOCATED IN THE 500KV SWITCHYARD, BAY11, CONN. TO SEQUOYAH LINE, MFR. BY WESTINGHOUSE		1-75W1509 75W1520-6 1-75W1540-6 PLOT #01
2. DESCRIPTION	COUPLING CAPACITOR SINGLE PHASE VOLTAGE TRANSFORMERS		
3. QUANTITY	1(Aϕ) + 1(Bϕ)		
4. PRIMARY VOLT	300KV		
5. SECONDARY VOLT	120V		
6. TERTIARY VOLT	66.7V		
7. VOLTAMP RATING			
9. PRIMARY FUSE			
10.SECONDARY FUSE	15A FUSETRON		
11.CONNECT	TO METERING AND RELAYS		
12.TAG	FBT 5113(Aϕ)	FBT 5016 (Bϕ)	
13.WIRING	1-2C #10	1-2C#10	
15.LENGTH	1556 FT	1584FT	
16.TYPE	WFB-1	WFB-1	
17. CABLE PROTECTION	Thermal damage up to 10s: Pass (See ref. plot)	Thermal damage up to 10s: Pass(See ref. plot)	

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POTENTIAL TRANSFORMER CIRCUITS DATA SHEETS

1. SYMBOL & LOCATION	1-TB-244-PT GENERATOR #1 POTENTIAL VOLTAGE TRANSFORMERS, LOCATED UNDER THE MAIN BUS BARS, MFR. WESTINGHOUSE			REFERENCES 1-75W1507 1-75W1541 45N1600-1 HR PORTER CONTRACT 74-8452 DWGS. L-82953X70 L-79798X99 APPX. C PLOT #02
2. DESCRIPTION	(2) SETS OF 3-SINGLE PHASE TYPE PT 25			
3. QUANTITY	2 SETS			
4. PRIMARY VOLT	24KV			
5. SECONDARY VOLT	120V			
6. VOLTAMP RATING				
7. PRIMARY FUSE	0.5A:1-FU-244-A/PT1; 1-FU-244-B/PT1; 1-FU-244-C/PT1; 1-FU-244-A/PT2; 1-FU-244-B/PT2; 1-FU-244-C/PT2			
8. SECONDARY FUSE	FRN 20A :1-FU-244-A/1X1;1-FU-244-C/1X1; 1-FU-244-A/2X1;1-FU-244-C/2X1; 6A:1-FU-244-N-2X2 - NOT IN THE SCOPE OF WORK			
9. CONNECT	THROUGH THE TERMINAL BOX TB-244-PT TO : - MAIN RELAY BOARD(2 CABLES) - ELECTRICAL CONTROL BOARD - VOLTAGE REGULATOR(LOCAL CONNECTION, NOT ANALYZED IN THIS ATTACHMENT)			
10. TAG	1G66	1G70	1G71	
11. WIRING	1-3C #12	1-4C#12	1-3C #12	
12. LENGTH	513 FT	513 FT	434 FT	
13. TYPE	WGC	WGD-1	WGC	
14. PROTECTION	Thermal damage up to 10s: PASS (See ref. plot, see baseline calculation, sect 5.1)	Thermal damage up to 10s: PASS (See ref. plot)	Thermal damage up to 10s: PASS (See ref. plot)	

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POTENTIAL TRANSFORMER CIRCUITS DATA SHEETS

1. SYMBOL & LOCATION	2-TB-244-PT GENERATOR #2 POTENTIAL VOLTAGE TRANSFORMERS, LOCATED UNDER THE MAIN BUS BARS, MFR. WESTINGHOUSE		
2. DESCRIPTION	(2) SETS OF 3-SINGLE PHASE TYPE PT 25		
3.QUANTITY	2 SETS		
4.PRIMARY VOLT	24KV		
5.SECONDARY VOLT	120V		
6.VOLTAMP RATING			
7.PRIMARY FUSE	0.5A:		
8.SECONDARY FUSE	FRN 20A: THE WORK FOR UNIT 2 HAS BEEN DELETED FROM DRAWINGS AND NO UNID NO. AVAILABLE 6A:NOT IN THE SCOPE OF WORK		
9.CONNECT	THROUGH THE TERMINAL BOX TB-244-PT TO : - MAIN RELAY BOARD(2 CABLES) - ELECTRICAL CONTROL BOARD - VOLTAGE REGULATOR(LOCAL CONNECTION, NOT ANALYZED IN THIS ATTACHMENT)		
10.TAG	2G66	2G70	2G71
11.WIRING	1-3C #12	1-4C#12	1-3C #12
12.LENGTH	410 FT	433 FT	439 FT
13.TYPE	WGC	WGD-1	WGC
14. PROTECTION	Thermal damage up to 10s: PASS (See ref. plot, see baseline calculation, sect 5.1)	Thermal damage up to 10s: PASS (See ref. plot, see baseline calculation, sect 5.1)	Thermal damage up to 10s: PASS (See ref. plot, see baseline calculation, sect 5.1)

REFERENCES
1-75W1507
1-75W1541
45N1600-1
HR PORTER
CONTRACT 74-8452
DWGS.
L-82953X70
L-79798X99

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PLOT #02

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POTENTIAL TRANSFORMER CIRCUITS DATA SHEETS

1. SYMBOL & LOCATION	6900V UNIT BOARD 1A (1-BD-201-A)		REFERENCES 1-45W721-1 1-45W760-201-1 45N1641-2,3,5,6 GE CONTRACT 74C2-84376, DRAWING 0126D3929 & FIELD WALK APPX. C PLOT#05,
2. DESCRIPTION	POTENTIAL VOLTAGE TRANSFORMER, MFR. BY GE		
3. QUANTITY	2 SETS OF 2 TRANSFORMERS		
4. PRIMARY VOLT	6.9KV	OPEN DELTA	
5. SECONDARY VOLT	120V		
6. TERTIARY VOLT	N/A		
7. VOLTAMP RATING	1000VA		
9. PRIMARY FUSE			
10. SECONDARY FUSE	6A: A6Y6 GOULD-SHAWMUT		
11. CONNECT	TO UNIT CONTROL BOARD		
12. TAG	1PP1	1SS1	
13. WIRING	1-2C #12	1-2C #10	
15. LENGTH	545	503	
16. TYPE	WGB	WFB	
17. PROTECTION	Thermal damage up to 10s: Pass(See plot)	Thermal damage up to 10s: Pass(See plot)	

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POTENTIAL TRANSFORMER CIRCUITS DATA SHEETS

1. SYMBOL & LOCATION	6900V UNIT BOARD 1B (1-BD-201-B)		REFERENCES 1-45W721-1 1-45W760-201-1 PLOT #05
2. DESCRIPTION	POTENTIAL VOLTAGE TRANSFORMERS, MFR. BY GE		
3. QUANTITY	2 SETS OF 2 TRANSFORMERS		
4. PRIMARY VOLT	6.9KV	OPEN DELTA	
5. SECONDARY VOLT	120V		
6.VOLTAMP RATING	1000VA		
7.PRIMARY FUSE			
8.SECONDARY FUSE	6A A6Y6 GOULD-SHAWMUT		
11.CONNECT	UNIT CONTROL BOARD 1-M-1		
12.TAG	1PP2		
13.WIRING	1-2C #12		
15.LENGTH	512 FT		
16.TYPE	WGB		
17.PROTECTION	Thermal damage up to 10s: Pass(See plot)		

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1. SYMBOL & LOCATION	6900V UNIT BOARD 1C (1-BD-201-C)		REFERENCES 1-45W721-1 1-45W760-201-1 45N1641-6 TVA WALKDOWN PLOT #05
2. DESCRIPTION	POTENTIAL VOLTAGE TRANSFORMER, MFR. BY GE		
3. QUANTITY	2 SETS OF 2 TRANSFORMERS		
4. PRIMARY VOLT	6.9KV	OPEN DELTA	
5. SECONDARY VOLT	120V		
6. TERTIARY VOLT	N/A		
7. VOLTAMP RATING	1000VA		
9. PRIMARY FUSE			
10. SECONDARY FUSE	6A: A6Y6 GOULD-SHAWMUT		
11. CONNECT	UNIT CONTROL BOARD 1-M-1		
12. TAG	1PP3	1SS6	
13. WIRING	#12AWG	#10AWG	
15. LENGTH	517FT	480FT	
16. TYPE	WGB	WFB	
17. CONDUCTOR PROTECTION	Thermal damage up to 10s: Pass(See plot)	Thermal damage up to 10s: Pass(See plot)	

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1. SYMBOL & LOCATION	6900V UNIT BOARD 1D (1-BD-201-D)		REFERENCES 1-45W721-2 1-45W-760-201-1 PLOT #05
2. DESCRIPTION	POTENTIAL VOLTAGE TRANSFORMER, MFR. BY GE		
3. QUANTITY	2 SETS OF 2 TRANSFORMERS		
4. PRIMARY VOLT	6.9KV	OPEN DELTA	
5. SECONDARY VOLT	120V		
6. VOLTAMP RATING	1000VA		
7. PRIMARY FUSE			
8. SECONDARY FUSE	6A: A6Y6 GOULD-SHAWMUT		
9. CONNECT	TO UNIT CONTROL BOARD 1-M-1		
10. TAG	1PP4		
11. WIRING	1-2C #12		
12. LENGTH	477		
13. TYPE	WGB		
14. CONDUCTOR PROTECTION	Thermal damage up to 10s: Pass(See plot)		

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			REFERENCES
1. SYMBOL & LOCATION	6900V UNIT BOARD 2A (2-BD-201-A)		1-45W721-1 1-45W760-201-1 PLOT #05
2. DESCRIPTION	POTENTIAL VOLTAGE TRANSFORMERS, MFR. BY GE		
3. QUANTITY	2 SETS OF 2 TRANSFORMERS		
4. PRIMARY VOLT	6.9KV	OPEN DELTA	
5. SECONDARY VOLT	120V		
6. VOLTAMP RATING	1000VA		
7. PRIMARY FUSE			
8. SECONDARY FUSE	6A A6Y6 GOULD-SHAWMUT		
9. CONNECT	UNIT CONTROL BOARD 2-M-1		
10. TAG	2PP1	2SS1	
11. WIRING	1-2C #12	1-2C #10	
12. LENGTH	461 FT	520 FT	
13. TYPE	WGB	WFB	
14. CONDUCTOR WFB PROTECTION	THERMAL DAMAGE UP TO 10S : PASS (SEE REFERENCE PLOT)		

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1. SYMBOL & LOCATION	6900V UNIT BOARD 2B (2-BD-201-B)		REFERENCES 1-45W721-1 1-45W760-201-1 45N2641-5 PLOT #05
2. DESCRIPTION	POTENTIAL VOLTAGE TRANSFORMER, MFR. BY GE		
3. QUANTITY	2 SETS OF 2 TRANSFORMERS		
4. PRIMARY VOLT	6.9KV	OPEN DELTA	
5. SECONDARY VOLT	120V	WYE	
6. VOLTAMP RATING	1000VA		
7. PRIMARY FUSE			
8. SECONDARY FUSE	6A: A6Y6 GOULD-SHAWMUT		
9. CONNECT	UNIT CONTROL BOARD 2-M-1		
10. TAG	2PP2		
11. WIRING	1-2C #12		
12. LENGTH	520 FT		
13. TYPE	WGB		
14. CONDUCTOR PROTECTION	THERMAL DAMAGE UP TO 10S : PASS (SEE REFERENCE PLOT)		

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POTENTIAL TRANSFORMER CIRCUITS DATA SHEETS

1. SYMBOL & LOCATION	6900V UNIT BOARD 2C ((2-BD-201-C)		REFERENCES 1-45W721-2 1-45W760-201-1 PLOT #05
2. DESCRIPTION	POTENTIAL VOLTAGE TRANSFORMER, MFR. BY GE		
3. QUANTITY	2 SETS OF 2 TRANSFORMERS		
4. PRIMARY VOLT	6.9KV	OPEN DELTA	
5. SECONDARY VOLT	120V		
6. VOLTAMP RATING	1000VA		
7. PRIMARY FUSE			
8. SECONDARY FUSE	6A: A6Y6 TYPE II GOULD-SHAWMUT		
9. CONNECT	UNIT CONTROL BOARD 2-M-1		
10. TAG	2PP3		
11. WIRING	1-2C #12		
12. LENGTH	536FT		
13. TYPE	WGB		
14 CONDUCTOR PROTECTION	THERMAL DAMAGE UP TO 10S : PASS (SEE REFERENCE PLOT)		

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1. SYMBOL & LOCATION	6900V UNIT BOARD 2D (2-BD-201-D)		REFERENCES 1-45W721-2 1-45W760-201-1 PLOT #05
2. DESCRIPTION	POTENTIAL VOLTAGE TRANSFORMER, MFR. BY GE		
3. QUANTITY	2 SETS OF 2 TRANSFORMERS		
4. PRIMARY VOLT	6.9KV	OPEN DELTA	
5. SECONDARY VOLT	120V		
6. VOLTAMP RATING	1000VA		
7. PRIMARY FUSE			
8. SECONDARY FUSE	6A : A6Y6 GOULD-SHAWMUT		
9. CONNECT	UNIT CONTROL BOARD 2-M-1		
10. TAG	2PP4		
11. WIRING	1-2C #12		
12. LENGTH	562 FT		
13. TYPE	WGB		
14. CONDUCTOR PROTECTION	THERMAL DAMAGE UP TO 10S : PASS (SEE REFERENCE PLOT)		

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POTENTIAL TRANSFORMER CIRCUITS DATA SHEETS

1. SYMBOL & LOCATION	6900V START BUS BOARD A & B (0-BD-200-SA & SB)				REFERENCES 1-45W713 1-45W760-200-1, #2 55W617-1 TVA WALKDOWN PLOT #05
2. DESCRIPTION	POTENTIAL VOLTAGE TRANSFORMER, MFR. BY GE				
3. QUANTITY	8 SETS OF 2 POTENTIAL TRANSFORMERS				
4. PRIMARY VOLT	6.9KV				
5. SECONDARY VOLT	120V				
6. VOLTAMP RATING	1000VA				
7. PRIMARY FUSE					
8. SECONDARY FUSE	6A : A6Y6 GOULD-SHAWMUT				
9. CONNECT	4 SETS CONNECTED TO THE ELECTRICAL CONTROL BOARD, PANELS 2&3 4 SETS CONNECTED TO THE RECORDING INSTRUMENT BOARD THROUGH TRANSMITTERS				
10. TAG	SS25	SS65	SS30	SS75	
11. WIRING	1-2C #12	1-2C #12	1-2C #12	1-2C #12	
12. LENGTH	788	768	727	727	
13. TYPE	WGB	WGB	WGB	WGB	
14. CONDUCTOR PROTECTION	Termal damage up to 10s:pass (See reference plot)		Termal damage up to 10s:pass (See reference plot)		

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			REFERENCES
1. SYMBOL & LOCATION	6900V COMMON SWITCHGEAR C (0-BD-200-C)		45N714 CONTRACT 81K5-829042 DWGS. 1-45W760-200-5 TVA WALKDOWN PLOT #07
2. DESCRIPTION	POTENTIAL VOLTAGE TRANSFORMER, TYPE JVM-5, MFR. BY GE		
3. QUANTITY	2 SETS OF 2 TRANSFORMERS		
4. PRIMARY VOLT	6.9KV		
5. SECONDARY VOLT	120V		
6. VOLTAMP RATING	1000VA		
7. PRIMARY FUSE			
8. SECONDARY FUSE	10A : LIMITRON KTN-R, BUSSMAN		
9. CONNECT	TO ELECTRICAL CONTROL BOARD DIRECT CONN TO VM; CONNECT TO WATTM. THROUGH TRANSMITTERS		
10. TAG	SS525	SS529	
11. WIRING	1-2C#12	1-2C#12	
12. LENGTH	1000	994	
13. TYPE	WGB-1	WGB-1	
14. PROTECTION	Termal damage up to 10s:pass (See reference plot)	Termal damage up to 10s:pass	

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1. SYMBOL & LOCATION	6900V COMMON SWITCHGEAR D (0-3D-200-D)		REFERENCES 45N714 1-45W760-200-5 PLOT #07
2. DESCRIPTION	POTENTIAL VOLTAGE TRANSFORMER, TYPE JVM5, MFR. BY GE		
3. QUANTITY	2 SETS OF 2 POTENTIAL TRANSFORMERS		
4. PRIMARY VOLT	6.9KV	OPEN DELTA	
5. SECONDARY VOLT	120V		
6. VOLTAMP RATING	1000VA		
7. PRIMARY FUSE			
8. SECONDARY FUSE	10A: LIMITRON,KTN-R, BUSSMAN		
9. CONNECT	TO ELECTRICAL CONTROL BOARD		
10. TAG	SS532	SS535	
11. WIRING	1-2C#12	1-2C#12	
12. LENGTH	1001	1001	
13. TYPE	WGB-1	WGB-1	
14. PROTECTION	THERMAL DAMAGE UP TO 10S : PASS (SEE REFERENCE PLOT)		

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1. SYMBOL & LOCATION	6900V RCP BOARD 1A (1-BD-202-A)		REFERENCES 1-45W720 45-N1644-4 GE CONTRACT #74-84376 DRAWING 0125D1483 EMSO DATABASE PLOT #06
2. DESCRIPTION	POTENTIAL VOLTAGE TRANSFORMERS, TYPE JVM5, MFR. BY GE		
3. QUANTITY	4 SETS OF 2 TRANSFORMERS		
4. PRIMARY VOLT	6.9KV	OPEN DELTA	
5. SECONDARY VOLT	120V		
6. VOLTAMP RATING	1000VA		
7. PRIMARY FUSE			
8. SECONDARY FUSE	6A: 1-FU-202-A,B,C,D-A2/2,3/4 - KLC6, BUSSMAN		
9. CONNECT	NOT ANALYZED : 2 PT SETS CONNECTED INTERNALLY & 1 PT SET CONNECTED TO THE CONTROLLED RCP ANALYZED : 1 SET CONNECTED TO THE UNIT CONTROL BOARD 1-M-1		
10. TAG	1PP 961		
11. WIRING	1-3C#12		
12. LENGTH	827 FT		
13. INSULATION	WGC		
14. PROTECTION	Termal damage up to 10s:pass (See reference plot)		

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1. SYMBOL & LOCATION	6900V RCP BOARD 1B(1-BD-202-B)	REFERENCES 1-45W720 PLOT #06
2. DESCRIPTION	POTENTIAL VOLTAGE TRANSFORMER, TYPE JVM5, MFR. BY GE	
3. QUANTITY	4 SETS OF 2 TRANSFORMERS	
4. PRIMARY VOLT	6.9KV	
5. SECONDARY VOLT	120V	
6. VOLTAMP RATING	1000VA	
7. PRIMARY FUSE		
8. SECONDARY FUSE	6A: KLC6, BUSSMAN	
9. CONNECT	NOT ANALYZED: 2 PT SETS CONNECTED INTERNALLY & 1 PT SET CONNECTED TO THE CONTROLLED RCP ANALYZED: 1 SET CONNECTED TO THE UNIT CONTROL BOARD 1-M-1	
10.TAG	1PP965	
11.WIRING	1-3C#12	
12.LENGTH	822	
13.TYPE	WGC	
14.PROTECTION	THERMAL DAMAGE UP TO 10S : PASS (SEE REFERENCE PLOT	

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1. SYMBOL & LOCATION	6900V RCP BOARD 1C(1-BD-202-C)		REFERENCES 1-45W720, PLOT #06
2. DESCRIPTION	POTENTIAL VOLTAGE TRANSFORMER, MFR. BY GE, TYPE JVM5,		
3. QUANTITY	4 SETS OF 2 TRANSFORMERS		
4. PRIMARY VOLT	6.9KV		
5. SECONDARY VOLT	120V		
6. VOLTAMP RATING	1000VA		
7. PRIMARY FUSE			
8. SECONDARY FUSE	6A: KLC6, BUSSMAN		
9. CONNECT	NOT ANALYZED: 2 PT SETS CONNECTED INTERNALLY & 1 PT SET CONNECTED TO THE CONTROLLED RCP ANALYZED : 1 SET CONNECTED TO THE UNIT CONTROL BOARD 1-M-1		
10. TAG	1PP969		
11. WIRING	1-3C#12		
12. LENGTH	802		
13. TYPE	WGC		
14. PROTECTION	THERMAL DAMAGE UP TO 10S : PASS (SEE REFERENCE PLOT)		

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1. SYMBOL & LOCATION	6900V RCP BOARD 1D(1-BD-202-D)	REFERENCES 1-45W720, PLOT #06
2. DESCRIPTION	POTENTIAL VOLTAGE TRANSFORMER, MFR. BY GE, TYPE JVM-5	
3. QUANTITY	4 SETS OF 2 TRANSFORMERS	
4. PRIMARY VOLT	6.9KV	
5. SECONDARY VOLT	120V	
6.VOLTAMP RATING	1000VA	
7.PRIMARY FUSE		
8.SECONDARY FUSE	6A: KLC6, BUSSMAN	
9.CONNECT	NOT ANALYZED : 2 PT SETS CONNECTED INTERNALLY & 1 PT SET CONNECTED TO THE CONTROLLED RCP ANALYZED : 1 SET CONNECTED TO THE UNIT CONTROL BOARD 1-M-1	
10.TAG	1PP973	
11.WIRING	1-3C#12	
12.LENGTH	781	
13.TYPE	WGC	
14.PROTECTION	THERMAL DAMAGE UP TO 10S : PASS (SEE REFERENCE PLOT)	

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POTENTIAL TRANSFORMER CIRCUITS DATA SHEETS

1. SYMBOL & LOCATION	6900V RCP BOARD 2A(2-BD-202-A)		REFERENCES 1-45W720 PLOT #06
2. DESCRIPTION	POTENTIAL VOLTAGE TRANSFORMER, MFR. BY GE, TYPE JVM5		
3. QUANTITY	4 SETS OF 2 TRANSFORMERS		
4. PRIMARY VOLT	6.9KV		
5. SECONDARY VOLT	120V		
6. VOLTAMP RATING	1000VA		
7. PRIMARY FUSE			
8. SECONDARY FUSE	6A: KLC6, BUSSMAN		
9. CONNECT	NOT ANALYZED : 2 PT SETS CONNECTED INTERNALLY & 1 PT SET CONNECTED TO THE CONTROLLED RCP ANALYZED : 1 SET CONNECTED TO THE UNIT CONTROL BOARD 1-M-1		
10. TAG	2PP961		
11. WIRING	1-3C#12		
12. LENGTH	792		
13. TYPE	WGC		
14. PROTECTION	THERMAL DAMAGE UP TO 10S : PASS (SEE REFERENCE PLOT)		

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1. SYMBOL & LOCATION	6900V RCP BOARD 2B(2-BD-202-B)		REFERENCES 1-45W720, PLOT #06
2. DESCRIPTION	POTENTIAL VOLTAGE TRANSFORMER, MFR. BY GE, TYPE JVM5,		
3. QUANTITY	4 SETS OF 2 TRANSFORMERS		
4. PRIMARY VOLT	6.9KV		
5. SECONDARY VOLT	120V		
6. VOLTAMP RATING	1000VA		
7. PRIMARY FUSE			
8. SECONDARY FUSE	6A: KLC6, BUSSMAN		
9. CONNECT	NOT ANALYZED :2 PT SETS CONNECTED INTERNALLY & 1 PT SET CONNECTED TO THE CONTROLLED RCP ANALYZED : 1 SET CONNECTED TO THE UNIT CONTROL BOARD 1-M-1		
10. TAG	2PP965		
11. WIRING	1-3C#12		
12. LENGTH	777		
13. TYPE	WGC		
14. PROTECTION	THERMAL DAMAGE UP TO 10S : PASS (SEE REFERENCE PLOT)		

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1. SYMBOL & LOCATION	6900V RCP BOARD 2C(2-BD-202-C)		REFERENCES 1-45W720, PLOT #06
2. DESCRIPTION	POTENTIAL VOLTAGE TRANSFORMER, MFR. BY GE, TYPE JVM-5		
3. QUANTITY	4 SETS OF 2 TRANSFORMERS		
4. PRIMARY VOLT	6.9KV		
5. SECONDARY VOLT	120V		
6. VOLTAMP RATING	1000VA		
7. PRIMARY FUSE			
8. SECONDARY FUSE	6A: KLC6, BUSSMAN		
9. CONNECT	NOT ANALYZED : 2 PT SETS CONNECTED INTERNALLY & 1 PT SET CONNECTED TO THE CONTROLLED RCP ANALYZED : 1 SET CONNECTED TO THE UNIT CONTROL BOARD 1-M-1		
10. TAG	2PP969		
11. WIRING	1-3C#12		
12. LENGTH	746		
13. TYPE	WGC		
14. PROTECTION	THERMAL DAMAGE UP TO 10S : PASS (SEE REFERENCE PLOT)		

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1. SYMBOL & LOCATION	6900V RCP BOARD 2D(2-BD-202-D)		REFERENCES 1-45W720, PLOT #06
2. DESCRIPTION	POTENTIAL VOLTAGE TRANSFORMER, MFR. BY GE, TYPE JVM5		
3. QUANTITY	4 SETS OF 2 TRANSFORMERS		
4. PRIMARY VOLT	6.9KV		
5. SECONDARY VOLT	120V		
6. VOLTAMP RATING	1000VA		
7. PRIMARY FUSE			
8. SECONDARY FUSE	6A: KLC6, BUSSMAN		
9. CONNECT	NOT ANALYZED :2 PT SETS CONNECTED INTERNALLY & 1 PT SET CONNECTED TO THE CONTROLLED RCP ANALYZED : 1 SET CONNECTED TO THE UNIT CONTROL BOARD 1-M-1		
10. TAG	2PP973		
11. WIRING	1-3C#12		
12. LENGTH	736		
13. TYPE	WGC		
14. PROTECTION	THERMAL DAMAGE UP TO 10S : PASS (SEE REFERENCE PLOT)		

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1. SYMBOL & LOCATION	6900V COMMON BOARD A(0-BD-200-A)		REFERENCES 1-45W715 GE VENDOR DRAWINGS, CONTRACT 74-84376 DWG 0123D2336 45N1641-6, TVA WALKDOWN, EMSO DATABASE PLOT #05
2. DESCRIPTION	POTENTIAL VOLTAGE TRANSFORMER, MFR. BY GE		
3. QUANTITY	3 SETS OF 2 TRANSFORMERS		
4. PRIMARY VOLT	6.9KV	OPEN DELTA	
5. SECONDARY VOLT	120V		
6. VOLTAMP RATING	1000VA		
7. PRIMARY FUSE			
8. SECONDARY FUSE	1-FU-200-A3/3 = 6A: A6Y6, GOULD-SHAWMUT		
9. CONNECT	NOT ANALYZED : 2 SETS CONNECTED INTERNALLY ANALYZED : 1 SET CONNECTED TO UNIT CONTROL BOARD(1-278-M1)		
10. TAG	PP3		
11. WIRING	1-2C#12		
12. LENGTH	450FT		
13. TYPE	WGB		
14. PROTECTION	Termal damage up to 10s: Pass (See reference plot)		

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1. SYMBOL & LOCATION	6900V COMMON BOARD B(0-BD-200-B)		REFERENCES 1-45W715
2. DESCRIPTION	POTENTIAL VOLTAGE TRANSFORMER, MFR. BY GE		
3. QUANTITY	3 SETS OF 2 TRANSFORMERS		
4. PRIMARY VOLT	6.9KV	OPEN DELTA	GE VENDOR DRAWINGS, CONTRACT 74-84376 DWG 0123D2336
5. SECONDARY VOLT	120V		
6. VOLTAMP RATING	1000VA		
7. PRIMARY FUSE			45N1641-6 PLOT #05
8. SECONDARY FUSE	6A: A6Y6 GOULD-SHAWMUT		
9. CONNECT	NOT ANALYZED : 2 SETS CONNECTED INTERNALLY: ANALYZED : 1 SET CONNECTED TO TO UNIT CONTROL BOARD(1-278-M1)		
10. TAG	PP4		
11. WIRING	1-2C#12		
12. LENGTH	486FT		
13. TYPE	WGB		
14. PROTECTION	THERMAL DAMAGE UP TO 10S : PASS (SEE REFERENCE PLOT)		

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POTENTIAL TRANSFORMER CIRCUITS DATA SHEETS

1. SYMBOL & LOCATION	6900V SHUTDOWN BOARDS 1A-A,2A-A (1-BD-211-A, 2-BD-211-A)				REFERENCES 1-45W724-1 1-45W724-2 1-45W724-3 1-45W724-4 1-45W760-211-17 CONTRACT 74-84376, DWG:0126D4535 EMSO DATABASE PLOT #04
2. DESCRIPTION	POTENTIAL VOLTAGE TRANSFORMER, MFR. BY GE				
3. QUANTITY	5 SETS OF 2 TRANSFORMERS				
4. PRIMARY VOLT	7.2KV				
5. SECONDARY VOLT	120V				
6. VOLTAMP RATING	1000VA				
7. PRIMARY FUSE	1-FU-211-A17/1, A17/2, A12/3, A12/4, A/12/1, A12/2, A2/1, A2/1, A7/1, A7/2				
8. SECONDARY FUSE	6A: 1-FU-211-A17/4, A17/5, A2/5, A2/6, A12/8, A12/9, A12/5, A12/6 - OT6, GOULD SHAWMUT				
9. CONNECT	-TO UNIT CONTROL BOARD -TO DIESEL GENERATOR CONTROL BOARD -TO AUXILIARY CONTROL PANEL IN THE AUX. CONTROL ROOM				
10.TAG	1PP508	1PP544	1PP500	1PP594	
11.WIRING	1-2C#14	1-2C#14	1-2C#14	1-2C#14	
12.LENGTH	189FT	202FT	202FT	256FT	
13.TYPE	WHB	WHB	WHB-1	WHB-1	
14. PROTECTION	Termal damage up to 10s:pass (See reference plot)		Termal damage up to 10s:pass (See reference plot)		

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POTENTIAL TRANSFORMER CIRCUITS DATA SHEETS

1. SYMBOL & LOCATION	6900V SHUTDOWN BOARDS 1B-B, 2B-B(1-BD-211-B, 2-BD-211-B)				REFERENCES 1-45W724-1 1-45W724-2 1-45W724-3 1-45W724-4 1-45W760-211-17 PLOT #04
2. DESCRIPTION	POTENTIAL VOLTAGE TRANSFORMER, MFR. BY GE				
3. QUANTITY	3 PCS				
4. PRIMARY VOLT	7.2KV		OPEN DELTA		
5. SECONDARY VOLT	120V				
6. VOLTAMP RATING	1000VA				
7. PRIMARY FUSE					
8 .SECONDARY FUSE	6A: 1-FU-211-B17/4, B17/4, B12/8, B12/9, B12/5, B12/6, B2/5, B2/6, B7/5, B7/6 ; OT6, GOULD SHWMUT				
9 .CONNECT	-TO THE UNIT 1(2) CONTROL BOARD IN THE MAIN CONTROL ROOM ; -TO THE DIESEL GENERATOR CONTROL BOARD IN THE MAIN CONTROL ROOM -TO THE AUXILIARY CONTROL PANEL IN THE AUXILIARY CONTROL ROOM				
10.TAG	1PP618	1PP535	1PP527	1PP547	
11.WIRING	1-2C #14	1-2C#14	1-2C#14	1-2C#14	
12.LENGTH	404	350	350	350	
13.TYPE	WHB-1	WHB	WHB	WHB	
14.PROTECTION	Termal damage up to 10s:pass (See reference plots)				

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POTENTIAL TRANSFORMER CIRCUITS DATA SHEETS

1. SYMBOL & LOCATION	48CV UNIT AUXILIARY POWER BOARD 1A 1-BD-203-A			REFERENCES 1-45W760-203-1 45N1641-5 45N1641-3 1-45W747-1 EMSO DATABASE PLOT #06
2. DESCRIPTION	POTENTIAL VOLTAGE TRANSFORMER, MFR. BY GE			
3. QUANTITY	4 SETS OF 2 TRANSFORMERS & 1 SET CONNECTED INTERNALLY FOR THE TEST LAMP(NOT IN THE SCOPE OF WORK); 3 EXTERNAL CONNECTIONS FOR PANELS 1A &2A ONLY			
4. PRIMARY VOLT	480V	OPEN DELTA		
5. SECONDARY VOLT	120V			
6.VOLTAMP RATING	1000VA			
7. PRIMARY FUSE	3A			
8.SECONDARY FUSE	6A: 1-FU-203-A2/2,4/3,5/2 ; KWN 6, LIMITRON, BUSSMAN			
9.CONNECT	TO UNIT 1 CONTROL BOARD 1-PNL-278-M1			
10.TAG	1PL1	1PL2	1PL3	
11.WIRING	1-2C#14	1-2C#14	1-2C#14	
12.LENGTH	362 FT	362FT	362FT	
13.TYPE	WHB	WHB	WHB	
14.PROTECTION	Termal damage up to 10s:pass (See reference plot)			

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1. SYMBOL & LOCATION	480V UNIT AUXILIARY POWER BOARD 1B (1-BD-203-B)		REFERENCES 1-45W760-203-1 45N1641-5 45N1641-3 1-45W474-2 PLOT #06
2. DESCRIPTION	POTENTIAL VOLTAGE TRANSFORMER, MFR. BY WESTINGHOUSE		
3. QUANTITY	1 SET OF 2 TRANSFORMERS		
4. PRIMARY VOLT	480V	OPEN DELTA	
5. SECONDARY VOLT	120V		
6.			
7. VOLTAMP RATING			
~~9~~ 8 P.V. 8-07-92. PRIMARY FUSE	3A		
~~10~~ 9 P.V. 8-07-92. SECONDARY FUSE	6A: KWN6, BUSSMAN		
~~11~~ 10 P.V. 8-07-92. CONNECT	TO THE UNIT CONTROL BOARD, PANEL 1-PNL-278-M1		
~~12~~ 11 P.V. 8-07-92. TAG	1PL6 1PL7	1PL7	
~~13~~ 12 P.V. 8-07-92. WIRING	1-2C#14	1-2C#14	
~~15~~ 13 P.V. 8-07-92. LENGTH	157 FT	157	
~~16~~ 14 P.V. 8-07-92. TYPE	WHB	WHB	
	Termal damage up to 10s:pass (See reference plot)		

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1. SYMBOL & LOCATION	480V UNIT AUXILIARY POWER BOARD 2A 2-BD-203-A			REFERENCES 1-45W760-203-1 45N1641-5 45N1641-3, PLOT #06
2. DESCRIPTION	POTENTIAL VOLTAGE TRANSFORMER, MFR. BY WESTINGHOUSE			
3. QUANTITY	1 SET OF 2 TRANSFORMERS			
4. PRIMARY VOLT	480V	OPEN DELTA		
5. SECONDARY VOLT	120V			
6.VOLTAMP RATING				
7. PRIMARY FUSE	3A			
8.SECONDARY FUSE	6A : KWN 6, BUSSMAN			
9.CONNECT	TO THE UNIT CONTROL BOARD PANEL 1-PNL-278-M1			
10.TAG	2PL1	2PL2	2PL3	
11.WIRING	1-2C#14	1-2C#14	1-2C#14	
12.LENGTH	267 FT	267	267	
13.TYPE	WHB	WHB	WHB	
14.PROTECTION	THERMAL DAMAGE UP TO 10S : PASS (SEE REFERENCE PLOT)			

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1. SYMBOL & LOCATION	480V UNIT AUXILIARY POWER BOARD 2B 2-BD-203-B		REFERENCES 1-45W760-203-1 45N1641-2 45N1641-6 1-45W747-2 PLOT #06
2. DESCRIPTION	POTENTIAL VOLTAGE TRANSFORMER, MFR. BY WESTINGHOUSE		
3. QUANTITY	4 SETS OF 2 TRANSFORMERS; 1 SET CONNECTED INTERNALLY ONLY		
4. PRIMARY VOLT	480V	OPEN DELTA	
5. SECONDARY VOLT	120V		
6.VOLTAMP RATING			
7. PRIMARY FUSE	3A		
8.SECONDARY FUSE	6A: KWN, BUSSMAN		
9.CONNECT	TO THE UNIT CONTROL BOARD PANEL 2-PNL-278-M1		
10.TAG	2PL6	2PL7	
11.WIRING	1-2C#14	1-2C#14	
12.LENGTH	209 FT	209	
13.TYPE	WHB	WHB	
14.PROTECTION	THERMAL DAMAGE UP TO 10S : PASS (SEE REFERENCE PLOT)		

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POTENTIAL TRANSFORMER CIRCUITS DATA SHEETS

1. SYMBOL & LOCATION	480V SHUTDOWN BOARD 1A1-A (1-BD-212-A1-A)				REFERENCES 1-45W749-1 1-45W760-212-1 45N1641-5 45N1636-1 CONTRACT 74C2-84647 DWG. 6947054 55, 56 PLOT #06
2. DESCRIPTION	POTENTIAL VOLTAGE TRANSFORMER, MFR. BY WESTINGHOUSE				
3. QUANTITY	3 SETS OF 2 TRANSFORMERS & 1 SET OF 3 TRANSFORMERS: 2 OF THE 3 SETS CONNECTED TO THE UNIT CONTROL BOARD IN THE MAIN CONTROL ROOM, TO THE AUX. CONTROL ROOM & TO DIESEL CONTROL BOARD IN THE MAIN CONTROL ROOM; THE REMAINING SETS CONNECTED INTERNALLY				
4. PRIMARY VOLT	480V				
5. SECONDARY VOLT	120V				
6.VOLTAMP RATING	1000VA				
7. PRIMARY FUSE	6A				
8.SECONDARY FUSE	6A; 1-FU-212-A01514-A; KTN6 - BUSSMAN				
9.CONNECT	TO UNIT CONTROL BOARD 1-PNL-278-MI		TO DIESEL CONTROL BOARD 0-PNL-82-L4		
10.TAG	1PL 4561	1PL 5248	1PL 5247	1PL 4560	
11.WIRING	1-2C #14	1-2C #14	1-2C #14	1-2C #14	
12.LENGTH	302	392	277	301	
13.TYPE	WHB-1	WHB-1	WHB-1	WHB-1	
14.PROTECTION	Termal damage up to 10s:pass (See reference plot)		Termal damage up to 10s: pass (See reference plot)		

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1. SYMBOL & LOCATION	480V SHUTDOWN BOARD 1A2-A (1-BD-212-A2-A)				REFERENCES 1-45W749-1 1-45W760-212-1 1-45W760-212-2 1-45W760-212-3 PLOT #06
2. DESCRIPTION	POTENTIAL VOLTAGE TRANSFORMER, MFR. BY WESTINGHOUSE				
3. QUANTITY	SEE BOARD 1A1-A, SHEET 37				
4. PRIMARY VOLT	480V		OPEN DELTA		
5. SECONDARY VOLT	120V				
6.VOLTAMP RATING	1000VA				
7. PRIMARY FUSE	6A				
8.SECONDARY FUSE	6A; 1-FU-212-A01514-A; KTN6 - BUSSMAN				
9.CONNECT	TO UNIT CONTROL BOARD 1-PNL-278-MI		TO DIESEL CONTROL BOARD 0-PNL-82-L4		
10.TAG	1PL 4573	1PL 5267	1PL 4572	1PL 5268	
11.WIRING	1-2C #14	1-2C #14	1-2C #14	1-2C #14	
12.LENGTH	288	265	287	380	
13.TYPE	WHB-1	WHB-1	WHB-1	WHB-1	
14.PROTECTION	Termal damage up to 10s:pass (See reference plot)		Termal damage up to 10s:pass (See reference plot)		

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POTENTIAL TRANSFORMER CIRCUITS DATA SHEETS

1. SYMBOL & LOCATION	480V SHUTDOWN BOARD 1A2-A (1-BD-212-A2-A)				REFERENCES 1-45W749-1 1-45W760-212-1 1-45W760-212-2 1-45W760-212-3 PLOT #06
2. DESCRIPTION	POTENTIAL VOLTAGE TRANSFORMER, MFR. BY WESTINGHOUSE				
3. QUANTITY	SEE BOARD 1A1-A, SHEET 37				
4. PRIMARY VOLT	480V		OPEN DELTA		
5. SECONDARY VOLT	120V				
6.VOLTAMP RATING	1000VA				
7. PRIMARY FUSE	6A				
8.SECONDARY FUSE	6A; 1-FU-212-A01514-A; KTN6 - BUSSMAN				
9.CONNECT	TO UNIT CONTROL BOARD 1-PNL-278-MI		TO DIESEL CONTROL BOARD 0-PNL-82-L4		
10.TAG	1PL 4573	1PL 5267	1PL 4572	1PL 5268	
11.WIRING	1-2C #14	1-2C #14	1-2C #14	1-2C #14	
12.LENGTH	288	265	287	280	
13.TYPE	WHB-1	WHB-1	WHB-1	WHB-1	
14.PROTECTION	Termal damage up to 10s:pass (See reference plot)		Termal damage up to 10s:pass (See reference plot)		

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APPENDIX B

SHEET 39 OF 46

POTENTIAL TRANSFORMER CIRCUITS DATA SHEETS

1. SYMBOL & LOCATION	480V SHUTDOWN BOARD 1B1-B (1-BD-212-B1-B)			
2. DESCRIPTION	POTENTIAL VOLTAGE TRANSFORMER, MFR. BY WESTINGHOUSE			
3. QUANTITY	SEE BOARD 1A1-A, SHEET 37			
4. PRIMARY VOLT	480V			
5. SECONDARY VOLT	120V			
6. VOLTAMP RATING	1000VA			
7. PRIMARY FUSE	6A;			
8.SECONDARY FUSE	6A; 1-FU-212-A01514-A; KTN6 - BUSSMAN			
9.CONNECT	TO UNIT CONTROL BOARD 1-PNL-278-MI		TO DIESEL CONTROL BOARD 0-PNL-82-L4	
10.TAG	1PL 4585	1PL 5257	1PL 4584	1PL 5258
11.WIRING	1-2C #14	1-2C #14	1-2C #14	1-2C #14
12.LENGTH	376	263	549	366
13.TYPE	WHB-1	WHB-1	WHB-1	WHB-1
14.PROTECTION	Termal damage up to 10s:pass (See reference plot)		Termal damage up to 10s:pass (See reference plot)	

REFERENCES
1-45W749-3
1-45W760-212-1

PLOT #06

THIS PAGE ADDED BY REVISION 10

APPENDIX B

SHEET 40 OF 46

POTENTIAL TRANSFORMER CIRCUITS DATA SHEETS

1. SYMBOL & LOCATION	480V SHUTDOWN BOARD 1B2-B (1-BD-212-B2-B)				REFERENCES 1-45W749-4 1-45W760-212-1 1-45W760-212-2 1-45W760-212-3 PLOT #06
2. DESCRIPTION	POTENTIAL VOLTAGE TRANSFORMER, MFR. BY WESTINGHOUSE				
3. QUANTITY	SEE BOARD 1A1-A, SHEET 37				
4. PRIMARY VOLT	480V				
5. SECONDARY VOLT	120V				
6. VOLTAMP RATING	1000VA				
7. PRIMARY FUSE	6A				
8.SECONDARY FUSE	6A; 1-FU-212-A01514-A; KTN6 - BUSSMAN				
9.CONNECT	TO UNIT CONTROL BOARD 1-PNL-278-M1		TO DIESEL CONTROL BOARD 0-PNL-82-L4		
10.TAG	1PL4597	1PL5278	1PL4596	1PL 5277	
11.WIRING	1-2C#14	1-2C#14	1-2C #14	1-2C #14	
12.LENGTH	352	353	540	233	
13.TYPE	WHB-1	WHB-1	WHB-1	WHB-1	
14.PROTECTION	Termal damage up to 10s:pass (See reference plot)		Termal damage up to 10s:pass (See reference plot)		

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PREPARED BY P. Vlt DATE 8-05-92
CKD. BY [signature] DATE 8-7-92

APPENDIX B

SHEET 41 OF 46

POTENTIAL TRANSFORMER CIRCUITS DATA SHEETS

1. SYMBOL & LOCATION	480V UNIT SHUTDOWN BOARD 2A1-A (2-BD-212-A1-A)				REFERENCES 1-45W749-1 1-45W760-212-1 45N1641-5 45N1636-1 PLOT #06
2. DESCRIPTION	POTENTIAL VOLTAGE TRANSFORMER, MFR. BY WESTINGHOUSE				
3. QUANTITY	SEE BOARD 1A1-A, SHEET 37				
4. PRIMARY VOLT	480V		OPEN DELTA		
5. SECONDARY VOLT	120V				
6.VOLTAMP RATING	1000VA				
7. PRIMARY FUSE	6A				
8.SECONDARY FUSE	6A; 1-FU-212-A01514-A; KTN6 - BUSSMAN				
9.CONNECT	TO UNIT CONTROL BOARD 2-PNL-278-M1		TO DIESEL CONTROL BOARD 0-PNL-82-L4		
10.TAG	2PL4561	2PL5248	2PL5247	2PL4560	
11.WIRING	1-2C#14	1-2C#14	1-2C #14	1-2C #14	
12.LENGTH	320	372	341	471	
13.TYPE	WHB-1	WHB-1	WHB-1	WHB-1	
14.PROTECTION	THERMAL DAMAGE UP TO 10S : PASS (SEE REFERENCE PLOT)		THERMAL DAMAGE UP TO 10S : PASS (SEE REFERENCE PLOT)		

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APPENDIX B

SHEET 42 OF 46

POTENTIAL TRANSFORMER CIRCUITS DATA SHEETS

1. SYMBOL & LOCATION	480V UNIT SHUTDOWN BOARD 2A2-A (2-BD-212-A2-A)				REFERENCES 1-45W-749-2 1-45W760-212-1 1-45W760-212-2 1-45W760-212-3 PLOT #06
2. DESCRIPTION	POTENTIAL VOLTAGE TRANSFORMER, MFR. BY WESTINGHOUSE				
3. QUANTITY	SEE BOARD 1A1-A, SHEET 37				
4. PRIMARY VOLT	480V				
5. SECONDARY VOLT	120V				
6.VOLTAMP RATING	1000VA				
7. PRIMARY FUSE	6A				
8.SECONDARY FUSE	6A; 1-FU-212-A01514-A; KTN6 - BUSSMAN				
9.CONNECT	TO UNIT CONTROL BOARD 2-PNL-278-M1		TO DIESEL CONTROL BOARD 0-PNL-82-L4		
10.TAG	2PL4573	2PL5267	2PL4572	2PL5268	
11.WIRING	1-2C#14	1-2C#14	1-2C #14	1-2C #14	
12.LENGTH	261	311	474	342	
13.TYPE	WHB-1	WHB-1	WHB-1	WHB-1	
14.PROTECTION	THERMAL DAMAGE UP TO 10S : PASS (SEE REFERENCE PLOT)		THERMAL DAMAGE UP TO 10S : PASS (SEE REFERENCE PLOT)		

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PREPARED BY P. V.H DATE 8-01-92
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APPENDIX B

SHEET 43 OF 46

POTENTIAL TRANSFORMER CIRCUITS DATA SHEETS

1. SYMBOL & LOCATION	480V UNIT SHUTDOWN BOARD 2B1-B (2-BD-212-B1-B)			
2. DESCRIPTION	POTENTIAL VOLTAGE TRANSFORMER, MFR. BY WESTINGHOUSE			
3. QUANTITY	6 SETS OF 2 TRANSFORMERS; 2 SETS CONNECTED TO THE UNIT CONTROL BOARD IN THE MAIN CONTROL ROOM & TO THE AUX. CONTROL ROOM & TO DIESEL CONTROL BOARD IN THE MAIN CONTROL ROOM			
4. PRIMARY VOLT	480V			
5. SECONDARY VOLT	120V			
6. VOLTAMP RATING	1000VA			
7. PRIMARY FUSE	6A			
8. SECONDARY FUSE	6A; 1-FU-212-A01514-A; KTN6 - BUSSMAN			
9. CONNECT	TO UNIT CONTROL BOARD 2-PNL-278-M1		TO DIESEL CONTROL BOARD 0-PNL-82-L4	
10.TAG	2PL4585	2PL5257	2PL4584	2PL5258
11.WIRING	1-2C#14	1-2C#14	1-2C #14	1-2C #14
12.LENGTH	523	290	332	375
13.TYPE	WHB-1	WHB-1	WHB-1	WHB-1
14.PROTECTION	THERMAL DAMAGE UP TO 10S : PASS (SEE REFERENCE PLOT)		THERMAL DAMAGE UP TO 10S : PASS (SEE REFERENCE PLOT)	

REFERENCES
1-45W-749-2
1-45W760-212-1
PLOT #06

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APPENDIX B

SHEET 44 OF 46

POTENTIAL TRANSFORMER CIRCUITS DATA SHEETS

1. SYMBOL & LOCATION	480V UNIT SHUTDOWN BOARD 2B2-B (2-BD-212-B2-B)				REFERENCES 1-45W-749-2 1-45W760-212-1 1-45W760-212-2 1-45W760-212-3 PLOT #06
2. DESCRIPTION	POTENTIAL VOLTAGE TRANSFORMER, MFR. BY WESTINGHOUSE				
3. QUANTITY	SEE BOARD 1A1-A, SHEET 37				
4. PRIMARY VOLT	480V				
5. SECONDARY VOLT	120V				
6.VOLTAMP RATING	1000VA				
7. PRIMARY FUSE	6A				
8.SECONDARY FUSE	6A; 1-FU-212-A01514-A; KTN6 - BUSSMAN				
9.CONNECT	TO UNIT CONTROL BOARD 2-PNL-278-M1		TO DIESEL CONTROL BOARD 0-PNL-82-L4		
10.TAG	2PL4597	2PL5278	2PL4596	2PL5277	
11.WIRING	1-2C#14	1-2C#14	1-2C #14	1-2C #14	
12.LENGTH	470	329	279	244	
13.TYPE	WHB-1	WHB-1	WHB-1	WHB-1	
14.PROTECTION	THERMAL DAMAGE UP TO 10S : PASS (SEE REFERENCE PLOT)		THERMAL DAMAGE UP TO 10S : PASS (SEE REFERENCE PLOT)		

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CKD. BY [signature] DATE 8-7-92

APPENDIX B

SHEET 45 OF 46

POTENTIAL TRANSFORMER CIRCUITS DATA SHEETS

1. SYMBOL & LOCATION	MAIN TRANSFORMER BANK #1 (1-OXF-244A,B,C, 0-OXF-244-SP)		REFERENCES 75W1601 75W1602 75W2602 1-75W1541 CONTRACT 74-85655 EMSO DATABASE APPX. C, PLOT #01
2. DESCRIPTION	BUSHING DEVICE POTENTIAL TRANSFORMERS - MFR. BY GE, CATALOG # 44H924, TYPE KA108, 1 SECONDARY COIL WITH MEDIAN TAP, 1 TERTIARY COIL WITH MEDIAN TAP		
3. QUANTITY	4 SETS - 1 SPARE		
4. PRIMARY VOLT	289V		
5. SECONDARY VOLT	115V	Y & Δ	
6. TERTIARY RATING	66.4V	Y & Δ	
7VOLTAMP RATING	200VA BURDEN		
8 PRIMARY FUSE			
9.SECONDARY FUSE	15A: BUSSMAN FRN15; 1-FU-244-A/1Y 1-FU-244-A/1X 1-FU-244-B/1Y 1-FU-244-B/1X 1-FU-244-C/1Y 1-FU-244-C/1X 1-FU-244-SP/1Y 1-FU-244-SP/1X		
10.CONNECT CABLE	TO ELECTRICAL CONTROL BOARD		
11.TAG	1TBT225		
12.WIRING	1-7C #10		
13.LENGTH	674		
14.TYPE	WFG		
15.PROTECTION	Termal damage up to 10s:pass (See reference plot)		

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APPENDIX B

SHEET 46 OF 46

POTENTIAL TRANSFORMER CIRCUITS DATA SHEETS

			REFERENCES
1. SYMBOL & LOCATION	MAIN TRANSFORMER BANK #2 (2-OXF-244A,B,C)		75W2601 75W2602 1-75W1541 CONTRACT 74-85655 EMSO DATABASE PLOT #01
2. DESCRIPTION	BUSHING DEVICE POTENTIAL TRANSFORMERS - MFR. BY GE, CATALOG # 44H924, TYPE KA108, 1 SECONDARY COIL WITH MEDIAN TAP, 1 TERTIARY COIL WITH MEDIAN TAP		
3. QUANTITY	4 SETS - 1 SPARE		
4. PRIMARY VOLT	289V		
5. SECONDARY VOLT	115V	Y & Δ	
6. TERTIARY RATING	66.4V	Y & Δ	
7 VOLTAMP RATING	200VA BURDEN		
8 PRIMARY FUSE			
9.SECONDARY FUSE	15A; BUSSMAN FRN15: 1-FU-244-A/1Y 1-FU-244-A/1X 1-FU-244-B/1Y 1-FU-244-B/1X 1-FU-244-C/1Y 1-FU-244-C/1X 1-FU-244-SP/1Y 1-FU-244-SP/1X		
10.CONNECT CABLE	TO ELECTRICAL CONTROL BOARD		
11.TAG	2TBT223		
12.WIRING	1-7C #10		
13.LENGTH	667		
14.TYPE	WFG		
15.PROTECTION	THERMAL DAMAGE UP TO 10S : PASS (SEE REFERENCE PLOT)		

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APPENDIX C

TIME-CURRENT PLOTS

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APPENDIX C

TABLE OF CONTENTS

PLOT	REFERENCE	SHEET
	COVER SHEET	i
	TABLE OF CONTENTS	ii
	PLOTS CROSS-RFERENCE TABLE CABLE REFERENCE TABLE	iii
	FUSE REFERENCE TABLE	iv
#01	FRN-R, 15A	1
#02	FRN-R, 20A	2
#03	FRN-R, 30A	3
#04	OT6	4
#05	A2Y/A6Y, 6A	5
#06	KTN/KLC, 6A	6
#07	KWN/KLC, 10A	7

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PLOTS CROSS-REFERENCE TABLE

PLOT	DATA SHEET	FUSE	SIZE	CONDUCTOR
#1	1,2,4,5	FRN-R	15A	2#10, PJJ
#1	1,2,4,5,7			2#10, PXMJ
#1	45,46			7#10, PJJ
#2	8,9	FRN-R	20A	3#12, PJJ
#2	8,9			3#12, PXMJ
#3	3,6	FRN-R	30A	12#10, PJJ
#4	31,32	OT6	6A	2#14, PJJ
#4	31,32			2#14, PXMJ
#5	10,11,12,13 14,13,15,16, 17,18,29,30	A6Y6,T11	6A	2#10, PJJ
#6	33,34,35,36	KLC	6A	2#14, PJJ
#6	33,35,39,40,	(KTN)		2#14, PXMJ
#6	41,42,43,44			
#6	21, 22,23,24			3#12, PJJ
#6	25,26,27,28			
#7	19,20	KTN-R	10A	2#12, PXMJ

CABLE REFERENCE TABLE
(SEE DS-12.1.6)

MARK NUMBER	CABLE
WFB	2#10, PJJ
WFB-1	2#10, PXMJ
WFG	7#10, PJJ
WFL	12#10,PJJ
WGB	2#12, PJJ
WGB-1	2#12, PXMJ
WGC	3#12, PJJ
WGD-1	4#12, PXMJ
WHB	2#14, PJJ
WHB-1	2#14, PXMJ

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250V DC CIRCUITS

CALCULATION WBPEVAR9001006
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PREPARED BY E. VLADU P.Vb DATE 8-04-92
CKD. BY [signature] DATE 8-7-92

SHEET iv

APPENDIX C

FUSE REFERENCE TABLE

FUSE	INTERUPTING RATE	REFERENCE
FUSETRON FRN-R	200KA RMS. SYM.	BUSSMAN CATALOG FLC, JUNE 1990
LIMITRON KTN-R, KWN-R	200KA RMS. SYM.	BUSSMAN CATALOG FLC, JUNE 1990
AMPTRAP A6Y	200KA RMS. SYM.	GOULD SHAWMUT ADVISOR, 1991
ONE TIME OT6	50KA RMS. SYM.	GOULD SHAWMUT ADVISOR, 1991

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Prepared P.V. Date 7-7-92
Checked Date 8-7-92

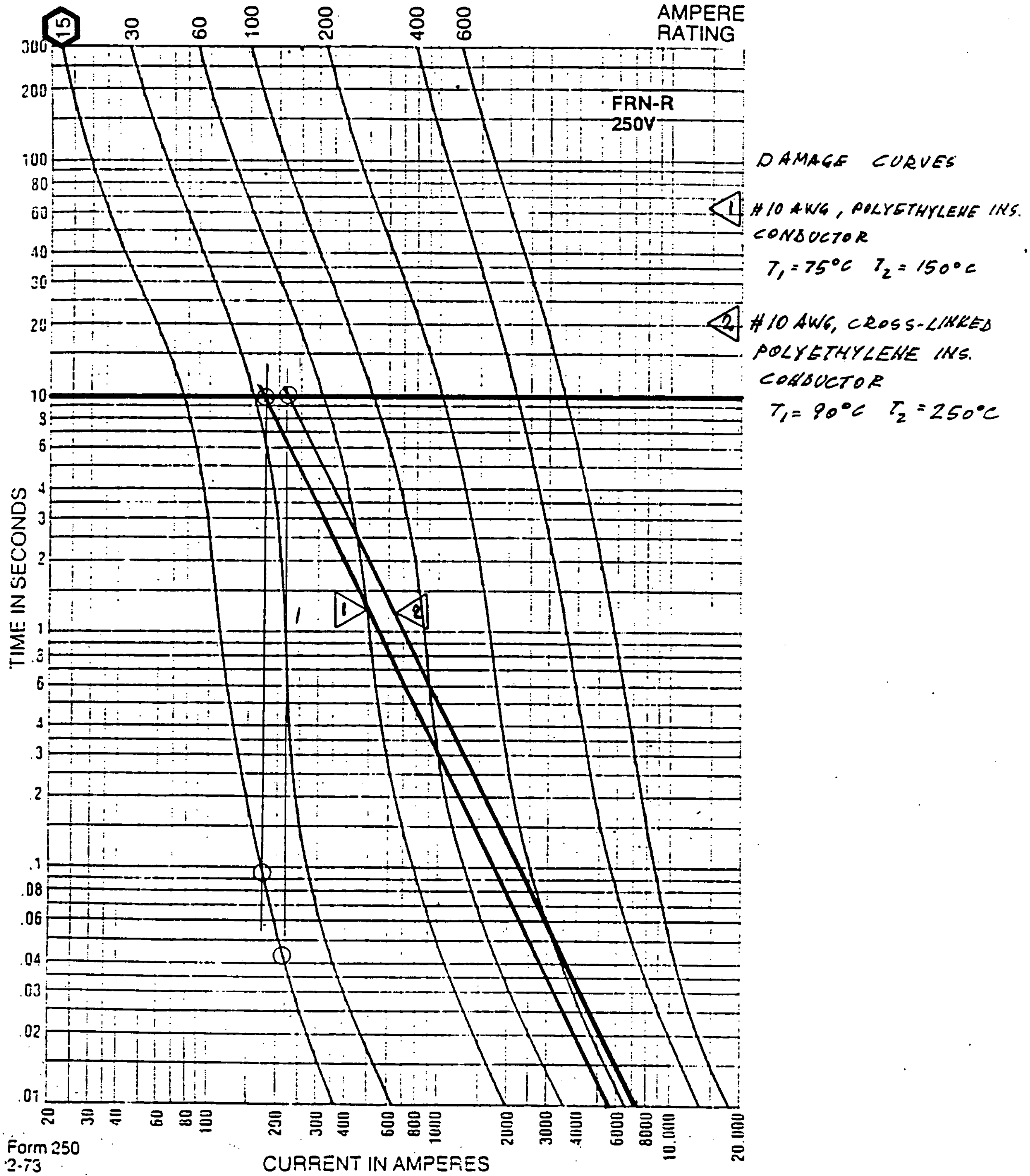
Page 1

ATTACHMENT C

SHEET 1 OF 7

RE: Data sheets # 1, 2, 4, 5, 7, 45, 46

PLOT 01



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ATTACHMENT FIR103A
PREPARED P.V. DATE 7-7-92
CHECKED [signature] DATE 8-7-92

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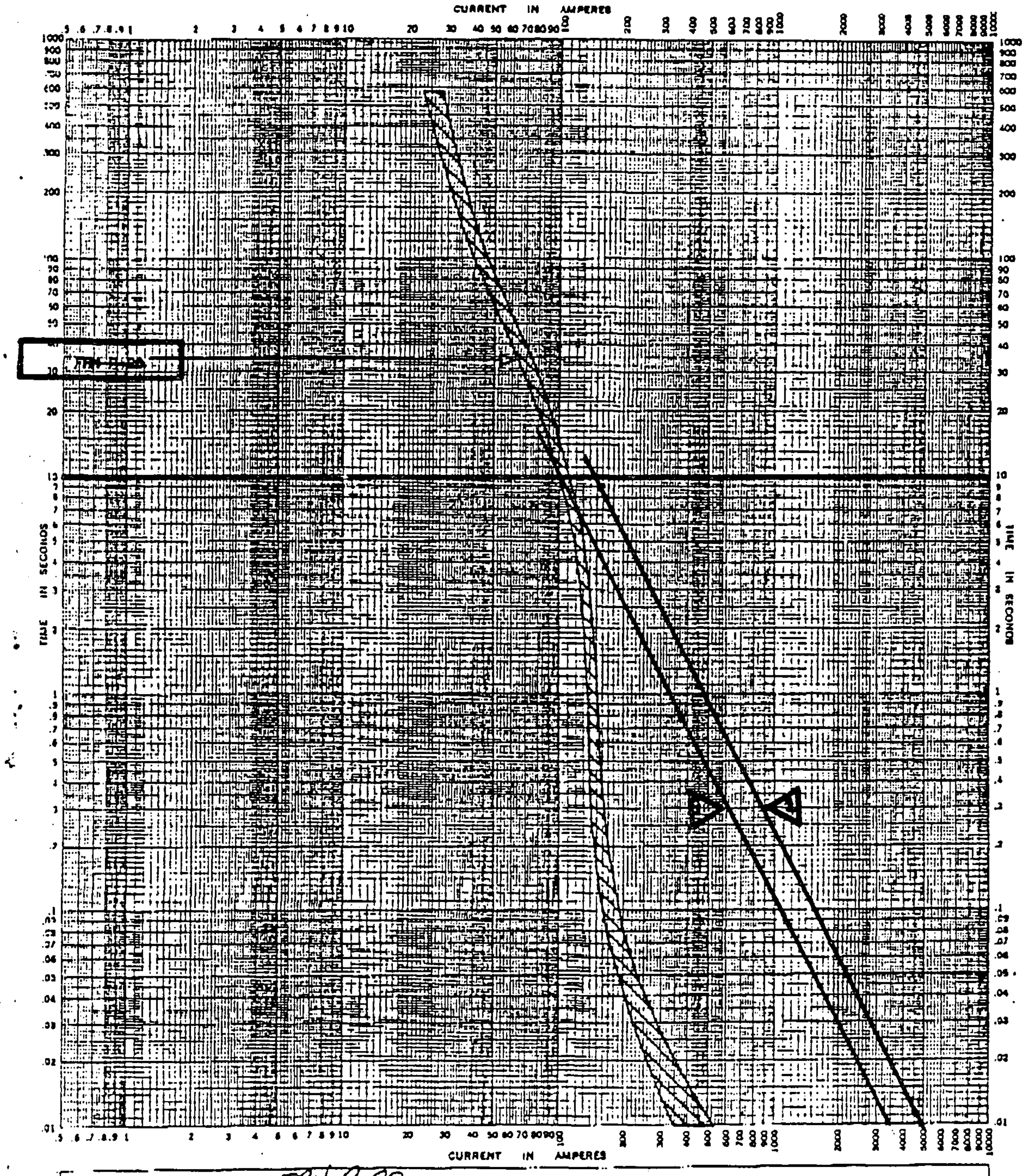
APPENDIX C

SHEET 2 OF 7

RE : Data sheets # 8, 9

PLOT #2

DAMAGE CURVES 1 #12 AWG, POLYETHYLENE INSULATED CABLE T_1=75°C T_2=150°C
2 #12 AWG, CROSS-LINKED POLYETHYLENE INS. CABLE, T_1=90°C T_2=250°C



FRN-R-20 TIME-CURRENT CHARACTERISTIC CURVES
For ... Fuse Links, In ...
BASIS FOR DATA Standards ... Dated ...
1. Tests made at 250 Volts a-c at ... p.f., starting at 25C with no initial load.
2. Curves are plotted to ... Test points so variations should be ...
No.
Date 4/16/92

FROM BUSSPLOT ON TRON SOFTWARE PACKAGE

K·E TIME-CURRENT CHARACTERISTIC 48 5258

THIS SHEET ADDED BY REV 10

WBPEVAR 9001006

Prepared P-V. Date 7-7-92

Checked [signature] Date 8-7-92

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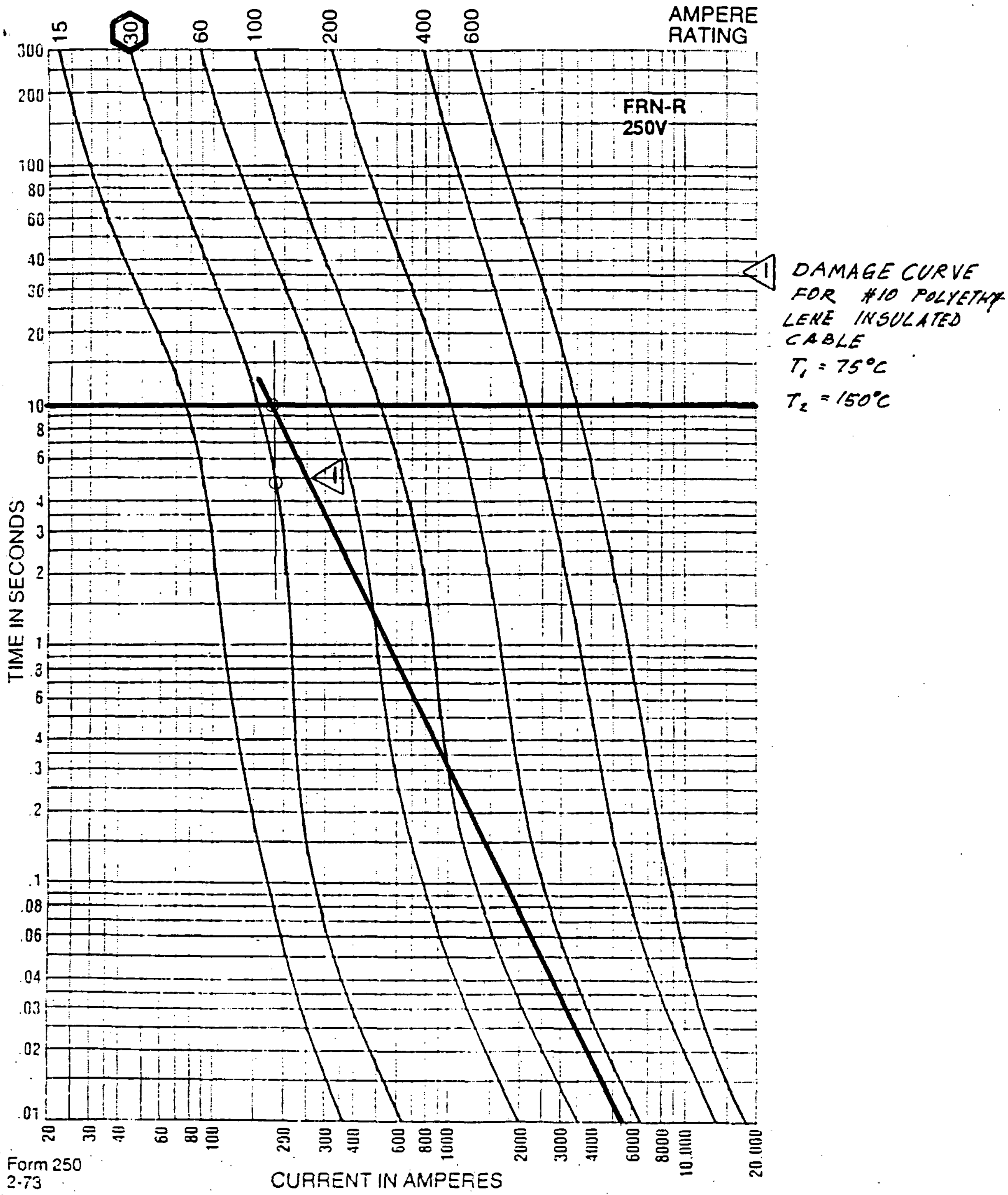
ATTACHMENT C

SHEET 3 OF 7

RE: Data sheets # 3, 6

PLOT 03



Form 250
2-73

THIS SHEET ADDED BY REV. 10

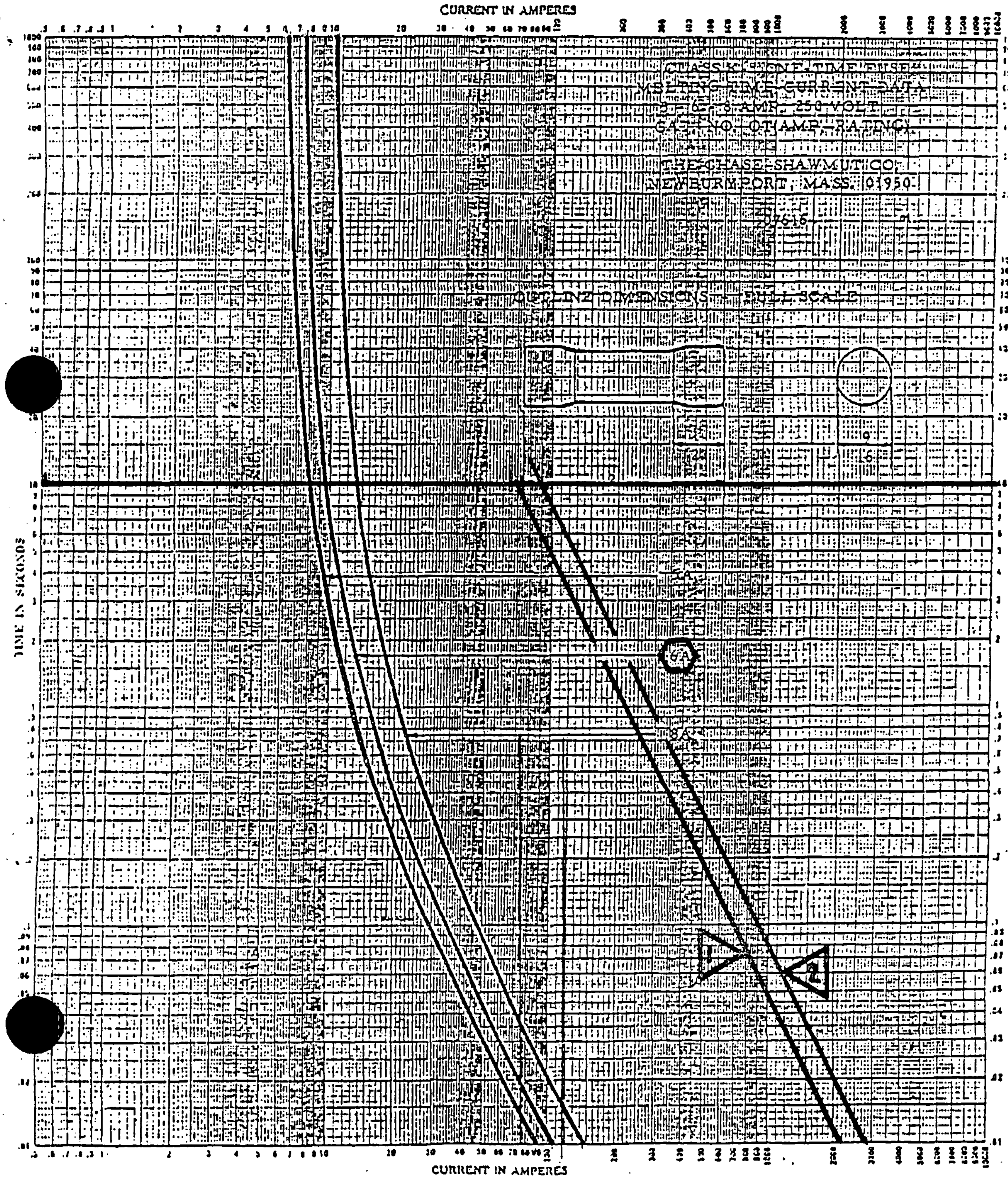
RE : Data sheets #31,32

PLOT 04

1 #14 AWG POLYETHYLENE INSULATED CABLE, $T_1=75°C$ $T_2=150°C$

2 #14AWG, CROSS-LINKED POLYETHYLENE INS. CABLE, $T_1=90°C$ $T_2=250°C$

06. 92 03:55 PM *GOULD MKTG CPD P03



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PREPARED P.V. DATE 7-7-92
CHECKED [signature] DATE 8-7-92

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SHEET 5 OF 7

RE : Data sheets # 10, 11, 12, 13, 14, 15, 16, 17, 18, 29, 30

PLOT 05

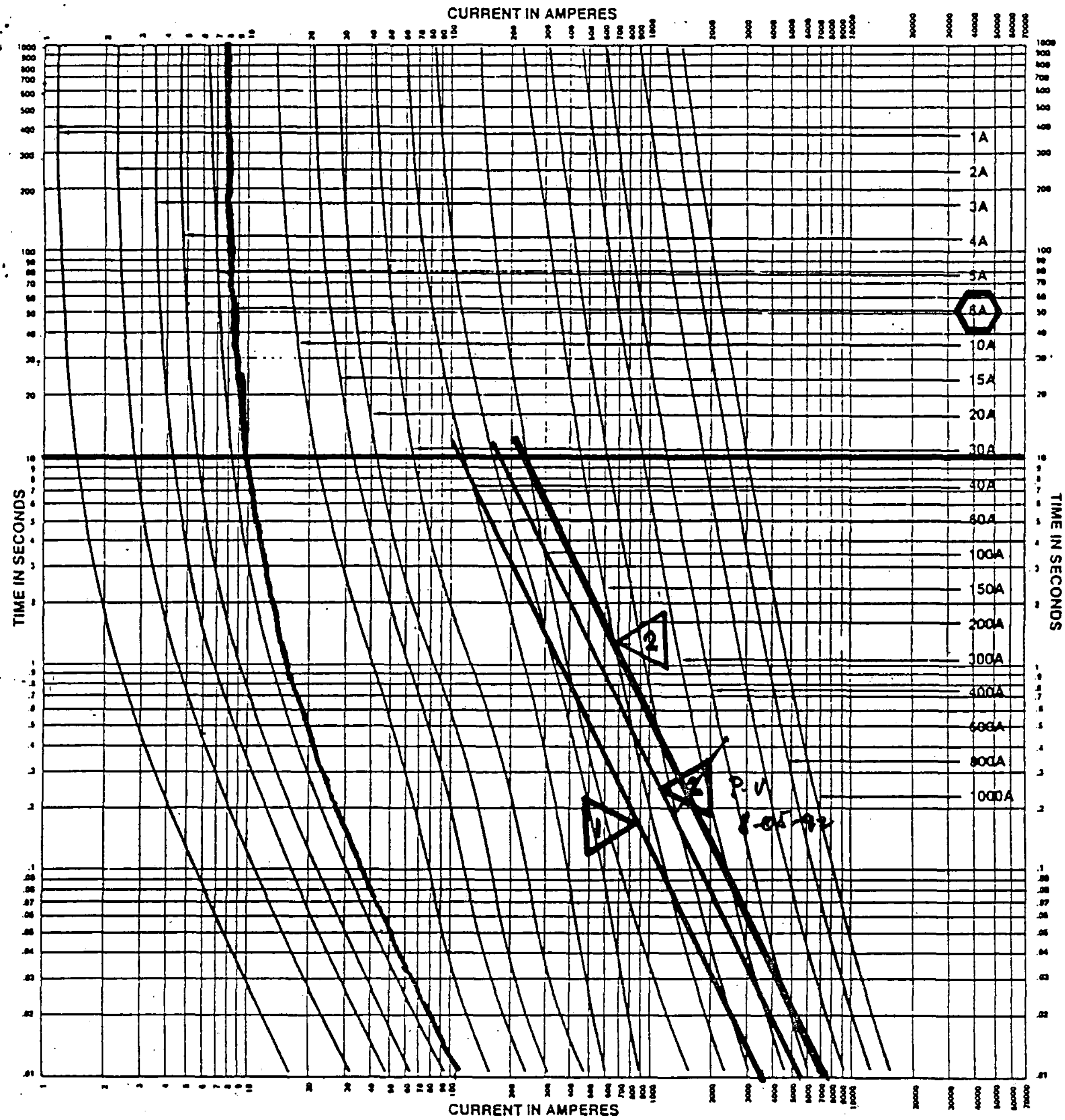
, DAMAGE CURVES

1 #12 AWG, POLYETHYLENE INS. CABLE , T1 = 75°C T2 = 150°C

2 #10 AWG, POLYETHYLENE INS. CABLE, T1 = 90°C T2 = 250°C

A2Y/A6Y

Melting Time—Current Data
1-600 Amperes, 250 or 600 Volts—Types 1, 3 or 5
650-1200 Amperes, 600 Volts—Types 4 or 5



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PREPARED F VLL DATE 7-7-92
CHECKED [signature] DATE 8-7-92

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ATTACHMENT C

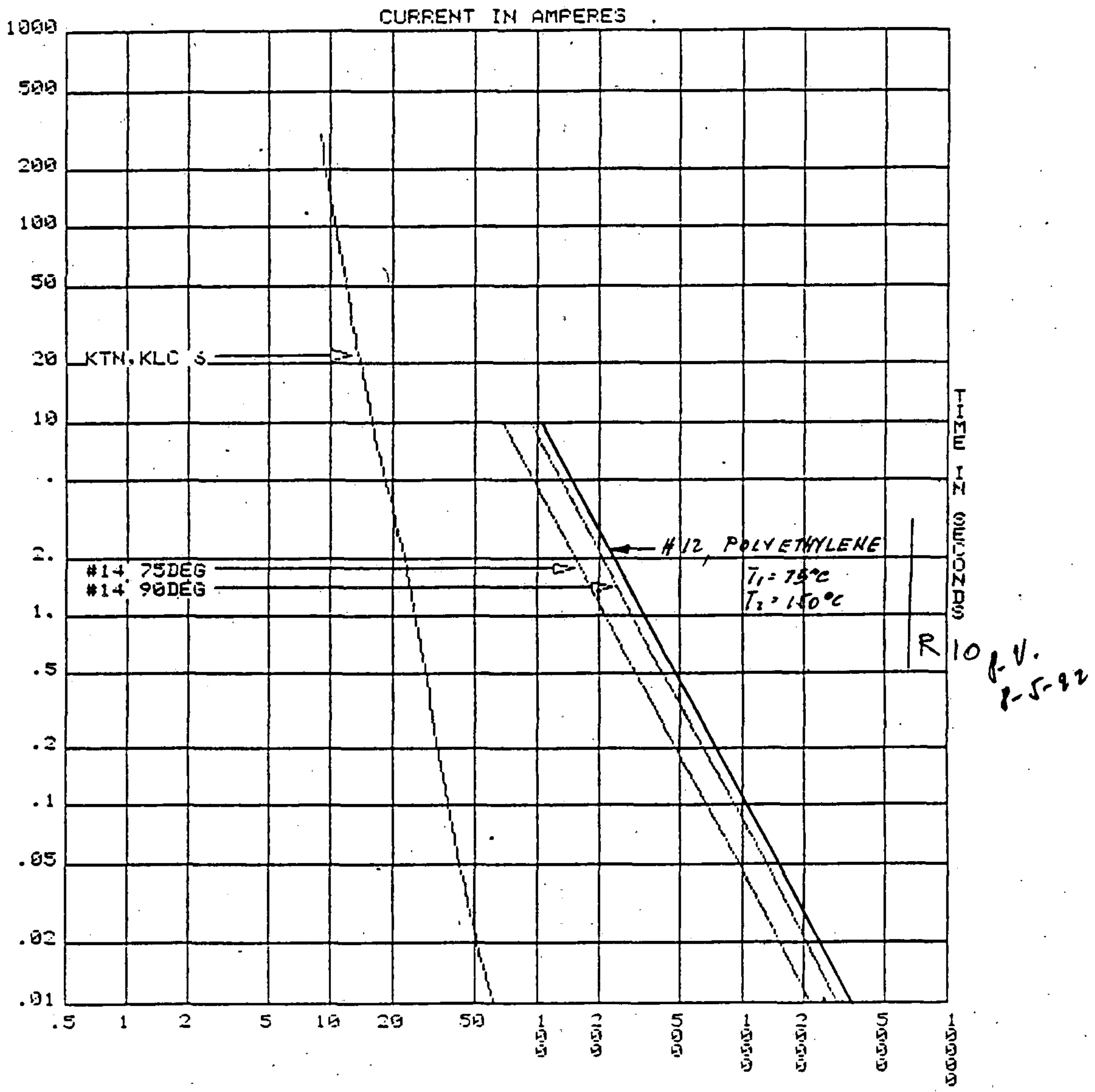
SHEET 6 OF 7

RE : Data sheets # 33, 34, 35, 36, 39, 40, 41, 42, 43, 44, 21, 22, 23, 24, 25, 26, 27, 28

PLOT 06

WBPEVAR 9001006

SHEET C36
PREPARED TDD DATE 1-31-90
CHECKED GCP DATE 2-1-90



DRAWING CURVE33 PLOT ELL: 120 SCALE: 10^0

THIS SHEET ADDED BY REV. 10

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ATTACHMENT FIR103A
PREPARED P V L DATE 7-7-92
CHECKED [signature] DATE 8-7-92

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ATTACHMENT C

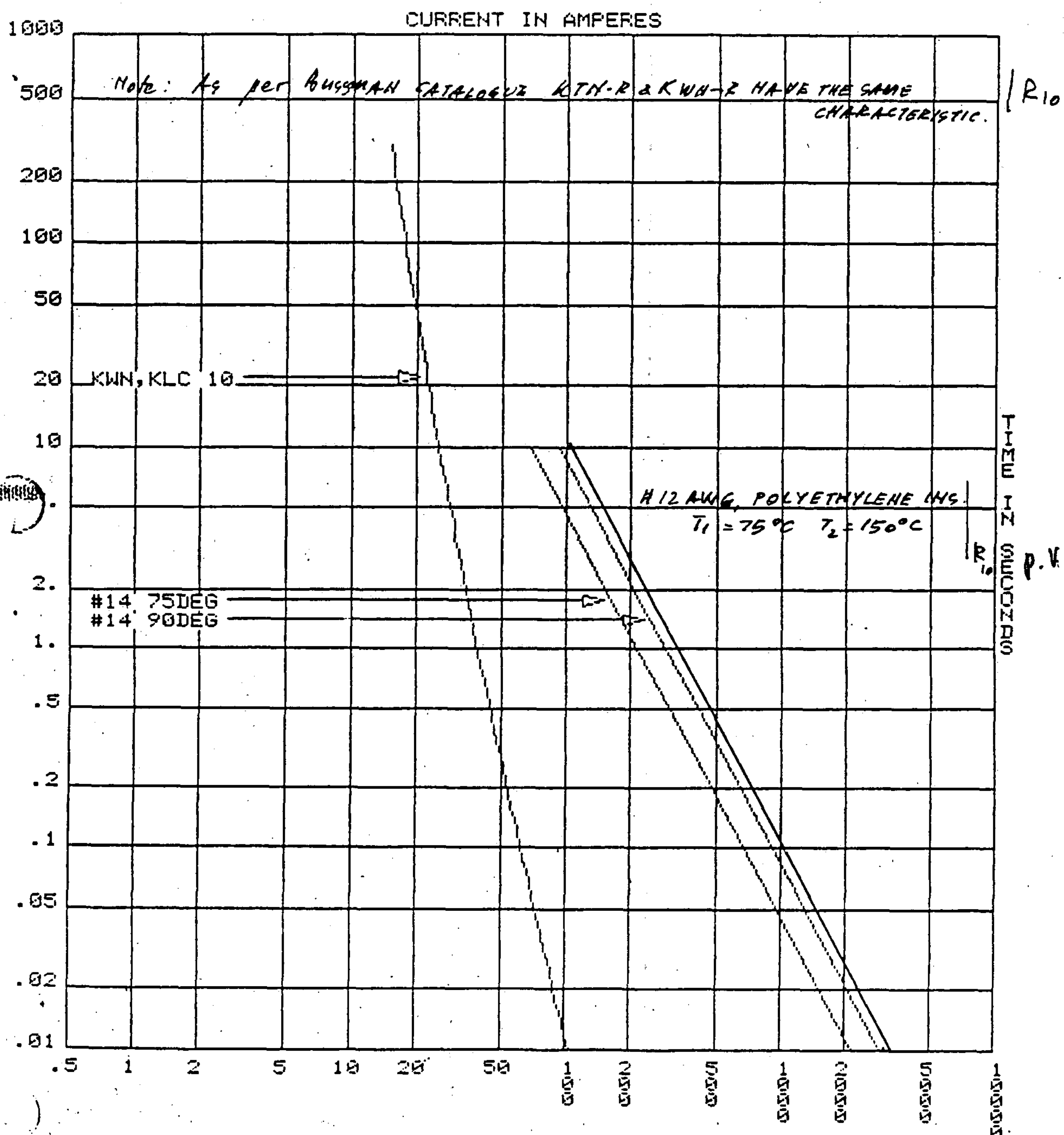
SHEET 7 OF 7

RE : DATA SHEETS #19,20

PLOT 07

WBPEVAR 9001006

SHEET C37
PREPARED 708 DATE 1-31-90
CHECKED GCP DATE 2-1-90



DRAWING CURVE34 PLOT ELL: 120 SCALE: 10^0

THIS SHEET ADDED BY REV 10

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250V DC CIRCUITS

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PREPARED BY P. VLADU P.Vl DATE 6-15-92
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SHEET i

APPENDIX D

DAMMAGE CURVE CALCULATION

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ANALYSIS FOR NON-CLASS 1E
120V AC & 250V DC CIRCUITS

CALCULATION WBPEVAR9001006

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PREPARED BY P. VLADU P. Vlf DATE 6-15-92
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APPENDIX D
DAMAGE CURVE CALCULATION
SHEET 1 OF 3

CONDUCTOR GAUGE	CROSS SECT. [CM]	T1 [CELS]	T2 [CELS]	TIME [s]	I*I [Asq]	I [A]
16	2580	90	150	0.01	1458717.15	1207.77
	2580	90	150	1.00	14587.17	120.78
	2580	90	150	10.00	1458.72	38.19
	2580	90	250	0.01	3445832.19	1856.30
	2580	90	250	1.00	34458.32	185.63
	2580	90	250	10.00	3445.83	58.70
	2580	90	270	0.01	3793482.45	1947.69
	2580	90	270	1.00	37934.82	194.77
	2580	90	270	10.00	3793.48	61.59
	2580	90	300	0.01	4289909.04	2071.21
	2580	90	300	1.00	42899.09	207.12
	2580	90	300	10.00	4289.91	65.50

CONDUCTOR GAUGE	CROSS SECT. [CM]	T1 [CELS]	T2 [CELS]	TIME [s]	I*I [Asq]	I [A]
14	4110	90	150	0.01	3701820.20	1924.01
	4110	90	150	1.00	37018.20	192.40
	4110	90	150	10.00	3701.82	60.84
14	4110	90	250	0.01	8744567.93	2957.12
	4110	90	250	1.00	87445.68	295.71
	4110	90	250	10.00	8744.57	93.51
14	4110	90	270	0.01	9626808.01	3102.71
	4110	90	270	1.00	96268.08	310.27
	4110	90	270	10.00	9626.81	98.12
14	4110	90	300	0.01	10886601.23	3299.48
	4110	90	300	1.00	108866.01	329.95
	4110	90	300	10.00	10886.60	104.34

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ATTACHMENT FIR103A
REG. GUIDE 1.75
ASSOCIATED CIRCUITS AND APPENDIX R
ANALYSIS FOR NON-CLASS 1E
120V AC & 250V DC CIRCUITS

CALCULATION WBPEVAR9001006

PAGE — OF —

PREPARED BY D. VLADO P. Vlt DATE 6-15-92
CKD. BY [signature] DATE 8-7-92

APPENDIX D
DAMAGE CURVE CALCULATION
SHEET 2 OF 3

CONDUCTOR GAUGE	CROSS SECT. [CM]	T1 [CELS]	T2 [CELS]	TIME [s]	I*I [Asq]	I [A]
12	6530	90	150	0.01	9344542.42	3056.88
	6530	90	150	1.00	93445.42	305.69
	6530	90	150	10.00	9344.54	96.67
12	6530	90	250	0.01	22074001.85	4698.30
	6530	90	250	1.00	220740.02	469.83
	6530	90	250	10.00	22074.00	148.57
12	6530	90	270	0.01	24301049.46	4929.61
	6530	90	270	1.00	243010.49	492.96
	6530	90	270	10.00	24301.05	155.89
12	6530	90	300	0.01	27481158.33	5242.25
	6530	90	300	1.00	274811.58	524.22
	6530	90	300	10.00	27481.16	165.77

CONDUCTOR GAUGE	CROSS SECT. [CM]	T1 [CELS]	T2 [CELS]	TIME [s]	I*I [Asq]	I [A]
10	10380	90	150	0.01	23611652.58	4859.18
	10380	90	150	1.00	236116.53	485.92
	10380	90	150	10.00	23611.65	153.66
10	10380	90	250	0.01	55776263.75	7468.35
	10380	90	250	1.00	557762.64	746.84
	10380	90	250	10.00	55776.26	236.17
10	10380	90	270	0.01	61403534.95	7836.04
	10380	90	270	1.00	614035.35	783.60
	10380	90	270	10.00	61403.53	247.80
10	10380	90	300	0.01	69438987.34	8333.01
	10380	90	300	1.00	694389.87	833.30
	10380	90	300	10.00	69438.99	263.51

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APPENDIX D
DAMAGE CURVE CALCULATION
SHEET 3 OF 3

NOTE. LIMIT OPERATING TEMPERATURES, DAMAGE CURVES, AS PER WB DG-30-13 ARE :

150°C,	FOR POLYETHYLENE
250°C,	XLPE, EPR, TEFZEL
270°C,	SILICONE RUBBER

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APPENDIX E

CONDUCTOR PROTECTION

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ATTACHMENT FIR103A
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ASSOCIATED CIRCUITS AND
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NON-CLASS-1E 120V AC &
250V DC CIRCUITS

CALCULATION WBPEVAR9001006
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APPENDIX E PAGE 1 OF 3

SH.	CABLE	MARK	SIZE	LN. [FT]	z OHM / 1000FT NOTE 1	IMPED AT 10FT [OHM]	Iscc [A] NOTES 2,3,4	FUSE		Iscmax [A] SEE APPX. C	FUSE RATING
1	FBT1016	WFB	1-2#10	1251	1.0406	0.0104	12175.67	FUSETRON, 15A	*	200,000.0	PASS
2	FBT2019	WFB	1-2#10	1162	1.0406	0.0104	12175.67	FUSETRON, 15A	*	200,000.0	PASS
4	FBT3019	WFB	1-2#10	1339	1.0406	0.0104	12175.67	FUSETRON, 15A	*	200,000.0	PASS
5	FBT4016	WFB	1-2#10	1424	1.0406	0.0104	12175.67	FUSETRON, 15A	*	200,000.0	PASS
10	1SS1	WFB	1-2#10	503	1.0406	0.0104	12175.67	A6Y6,6A	*	200,000.0	PASS
12	1SS6	WFB	1-2#10	480	1.0406	0.0104	12175.67	A6Y6,6A	*	200,000.0	PASS
14	2SS1	WFB	1-2#10	520	1.0406	0.0104	12175.67	A6Y6,6A	*	200,000.0	PASS
1	FBT5105	WFB-1	1-2#10	1287	1.0406	0.0104	12175.67	FUSETRON, 15A	*	200,000.0	PASS
2	FBT5107	WFB-1	1-2#10	1197	1.0406	0.0104	12175.67	FUSETRON, 15A	*	200,000.0	PASS
4	FBT5109	WFB-1	1-2#10	1261	1.0406	0.0104	12175.67	FUSETRON, 15A	*	200,000.0	PASS
5	FBT5111	WFB-1	1-2#10	1406	1.0406	0.0104	12175.67	FUSETRON, 15A	*	200,000.0	PASS
7	FBT5016	WFB-1	1-2#10	1584	1.0406	0.0104	12175.67	FUSETRON, 15A	*	200,000.0	PASS
7	FBT5113	WFB-1	1-2#10	1556	1.0406	0.0104	12175.67	FUSETRON, 15A	*	200,000.0	PASS
45	1TBT225	WFG	1-7C#10	674	1.0406	0.0104	12175.67	FRN, 15A	**	200,000.0	PASS
46	2TBT223	WFG	1-7C#10	667	1.0406	0.0104	12175.67	FRN, 15A	**	200,000.0	PASS
3	FBT2017	WFL	1-12#10	1363	1.0406	0.0104	12175.67	FUSETRON, 30A	**	200,000.0	PASS
6	FBT3017	WFL	1-12#10	1480	1.0406	0.0104	12175.67	FUSETRON, 30A	**	200,000.0	PASS
10	1PP1	WGB	1-2C#12	545	1.6505	0.0165	7676.46	A6Y6, 6A	*	200,000.0	PASS
11	1PP2	WGB	1-2C#12	512	1.6505	0.0165	7676.46	A6Y6, 6A	*	200,000.0	PASS
12	1PP3	WGB	1-2C#12	517	1.6505	0.0165	7676.46	A6Y6, 6A	*	200,000.0	PASS
13	1PP4	WGB	1-2C#12	477	1.6505	0.0165	7676.46	A6Y6, 6A	*	200,000.0	PASS
14	2PP1	WGB	1-2C#12	461	1.6505	0.0165	7676.46	A6Y6, 6A	*	200,000.0	PASS
15	2PP2	WGB	1-2C#12	520	1.6505	0.0165	7676.46	A6Y6, 6A	*	200,000.0	PASS
16	2PP3	WGB	1-2C#12	536	1.6505	0.0165	7676.46	A6Y6, 6A	*	200,000.0	PASS
17	2PP4	WGB	1-2C#12	562	1.6505	0.0165	7676.46	A6Y6, 6A	*	200,000.0	PASS
18	SS30	WGB	1-2C#12	727	1.6505	0.0165	7676.46	A6Y6, 6A	*	200,000.0	PASS
18	SS75	WGB	1-2C#12	727	1.6505	0.0165	7676.46	A6Y6, 6A	*	200,000.0	PASS
18	SS25	WGB	1-2C#12	788	1.6505	0.0165	7676.46	A6Y6, 6A	*	200,000.0	PASS
18	SS65	WGB	1-2C#12	768	1.6505	0.0165	7676.46	A6Y6, 6A	*	200,000.0	PASS
29	PP3	WGB	1-2C#12	450	1.6505	0.0165	7676.46	A6Y6, 6A	*	200,000.0	PASS
30	PP4	WGB	1-2C#12	486	1.6505	0.0165	7676.46	A6Y6, 6A	*	200,000.0	PASS
19	SS529	WGB-1	1-2C#12	994	1.6505	0.0165	7676.46	LIM KTN-R, 10A	*	200,000.0	PASS
19	SS525	WGB-1	1-2C#12	1000	1.6505	0.0165	7676.46	LIM KTN-R, 10A	*	200,000.0	PASS
20	SS532	WGB-1	1-2C#12	1001	1.6505	0.0165	7676.46	LIM KTN-R, 10A	*	200,000.0	PASS
20	SS535	WGB-1	1-2C#12	1001	1.6505	0.0165	7676.46	LIM KTN-R, 10A	*	200,000.0	PASS
8	1G71	WGC	1-3C#12	434	1.6505	0.0165	7676.46	FRN, 20A	*	200,000.0	PASS
8	1G66	WGC	1-3C#12	513	1.6505	0.0165	7676.46	FRN, 20A	*	200,000.0	PASS
9	2G71	WGC	1-3C#12	439	1.6505	0.0165	7676.46	FRN, 20A	*	200,000.0	PASS
9	2G66	WGC	1-3C#12	410	1.6505	0.0165	7676.46	FRN, 20A	*	200,000.0	PASS
21	1PP961	WGC	1-3C#12	827	1.6505	0.0165	7676.46	KLC, 6A	*	200,000.0	PASS
22	1PP965	WGC	1-3C#12	822	1.6505	0.0165	7676.46	KLC, 6A	*	200,000.0	PASS
23	1PP969	WGC	1-3C#12	802	1.6505	0.0165	7676.46	KLC, 6A	*	200,000.0	PASS
24	1PP973	WGC	1-3C#12	781	1.6505	0.0165	7676.46	KLC, 6A	*	200,000.0	PASS
25	2PP961	WGC	1-3C#12	792	1.6505	0.0165	7676.46	KLC, 6A	*	200,000.0	PASS
26	2PP965	WGC	1-3C#12	777	1.6505	0.0165	7676.46	KLC, 6A	*	200,000.0	PASS
27	2PP969	WGC	1-3C#12	746	1.6505	0.0165	7676.46	KLC, 6A	*	200,000.0	PASS
28	2PP973	WGC	1-3C#12	735	1.6505	0.0165	7676.46	KLC, 6A	*	200,000.0	PASS

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ASSOCIATED CIRCUITS AND
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NON-CLASS-1E 120V AC &
250V DC CIRCUITS

CALCULATION WBPEVAR9001006
PAGE ______ OF ______
PREPARED BY P. VLADU P. Vladu DATE 8-08-92
CKD. BY [illegible] DATE 8-11-92

APPENDIX E PAGE 2 OF 3

SH.	CABLE	MARK	SIZE	LN. [FT]	z OHM / 1000FT NOTE 1	IMPED AT 10FT [OHM]	Iscc [A] NOTES 2,3,4	FUSE		Iscmax [A] SEE APPX. C	FUSE RATING
8	1G70	WGD-1	1-4C#12	513	1.6505	0.0165	7676.46	FRN, 20A	*	200,000.0	PASS
9	2G70	WGD-1	1-4C#12	433	1.6505	0.0165	7676.46	FRN, 20A	*	200,000.0	PASS
31	1PP544	WHB	1-2C#14	202	2.6203	0.0262	4835.32	OT6	*	200,000.0	PASS
31	1PP508	WHB	1-2C#14	189	2.6203	0.0262	4835.32	OT6	*	200,000.0	PASS
32	1PP527	WHB	1-2C#14	350	2.6203	0.0262	4835.32	OT6	*	200,000.0	PASS
32	1PP535	WHB	1-2C#14	350	2.6203	0.0262	4835.32	OT6	*	200,000.0	PASS
32	1PP547	WHB	1-2C#14	350	2.6203	0.0262	4835.32	OT6	*	200,000.0	PASS
33	1PL1	WHB	1-2C#14	362	2.6203	0.0262	4835.32	LIM KWN, 6A	*	200,000.0	PASS
33	1PL2	WHB	1-2C#14	362	2.6203	0.0262	4835.32	LIM KWN, 6A	*	200,000.0	PASS
33	1PL3	WHB	1-2C#14	362	2.6203	0.0262	4835.32	LIM KWN, 6A	*	200,000.0	PASS
34	1PL7	WHB	1-2C#14	157	2.6203	0.0262	4835.32	LIM KWN, 6A	*	200,000.0	PASS
34	1PL6	WHB	1-2C#14	157	2.6203	0.0262	4835.32	LIM KWN, 6A	*	200,000.0	PASS
35	2PL2	WHB	1-2C#14	267	2.6203	0.0262	4835.32	LIM KWN, 6A	*	200,000.0	PASS
35	2PL1	WHB	1-2C#14	267	2.6203	0.0262	4835.32	LIM KWN, 6A	*	200,000.0	PASS
35	2PL3	WHB	1-2C#14	267	2.6203	0.0262	4835.32	LIM KWN, 6A	*	200,000.0	PASS
36	2PL6	WHB	1-2C#14	209	2.6203	0.0262	4835.32	LIM KWN, 6A	*	200,000.0	PASS
36	2PL7	WHB	1-2C#14	209	2.6203	0.0262	4835.32	LIM KWN, 6A	*	200,000.0	PASS
31	1PP500	WHB-1	1-2C#14	202	2.6203	0.0262	4835.32	OT6	*	50,000.0	PASS
31	1PP594	WHB-1	1-2C#14	256	2.6203	0.0262	4835.32	OT6	*	50,000.0	PASS
32	1PP618	WHB-1	1-2C#14	404	2.6203	0.0262	4835.32	OT6	*	50,000.0	PASS
37	1PL4560	WHB-1	1-2C#14	301	2.6203	0.0262	4835.32	KTN, 6A	*	200,000.0	PASS
37	1PL5247	WHB-1	1-2C#14	277	2.6203	0.0262	4835.32	KTN, 6A	*	200,000.0	PASS
37	1PL4561	WHB-1	1-2C#14	302	2.6203	0.0262	4835.32	KTN, 6A	*	200,000.0	PASS
37	1PL5248	WHB-1	1-2C#14	392	2.6203	0.0262	4835.32	KTN, 6A	*	200,000.0	PASS
38	1PL5267	WHB-1	1-2C#14	265	2.6203	0.0262	4835.32	KTN, 6A	*	200,000.0	PASS
38	1PL5268	WHB-1	1-2C#14	380	2.6203	0.0262	4835.32	KTN, 6A	*	200,000.0	PASS
38	1PL4573	WHB-1	1-2C#14	288	2.6203	0.0262	4835.32	KTN, 6A	*	200,000.0	PASS
38	1PL4572	WHB-1	1-2C#14	287	2.6203	0.0262	4835.32	KTN, 6A	*	200,000.0	PASS
39	1PL4585	WHB-1	1-2C#14	376	2.6203	0.0262	4835.32	KTN, 6A	*	200,000.0	PASS
39	1PL4584	WHB-1	1-2C#14	549	2.6203	0.0262	4835.32	KTN, 6A	*	200,000.0	PASS
39	1PL5257	WHB-1	1-2C#14	263	2.6203	0.0262	4835.32	KTN, 6A	*	200,000.0	PASS
39	1PL5258	WHB-1	1-2C#14	366	2.6203	0.0262	4835.32	KTN, 6A	*	200,000.0	PASS
40	1PL4596	WHB-1	1-2C#14	540	2.6203	0.0262	4835.32	KTN, 6A	*	200,000.0	PASS
40	1PL5277	WHB-1	1-2C#14	233	2.6203	0.0262	4835.32	KTN, 6A	*	200,000.0	PASS
40	1PL4597	WHB-1	1-2C#14	352	2.6203	0.0262	4835.32	KTN, 6A	*	200,000.0	PASS
40	1PL5278	WHB-1	1-2C#14	353	2.6203	0.0262	4835.32	KTN, 6A	*	200,000.0	PASS
41	2PL5248	WHB-1	1-2C#14	372	2.6203	0.0262	4835.32	KTN, 6A	*	200,000.0	PASS
41	2PL5247	WHB-1	1-2C#14	341	2.6203	0.0262	4835.32	KTN, 6A	*	200,000.0	PASS
41	2PL4560	WHB-1	1-2C#14	471	2.6203	0.0262	4835.32	KTN, 6A	*	200,000.0	PASS
41	2PL4561	WHB-1	1-2C#14	320	2.6203	0.0262	4835.32	KTN, 6A	*	200,000.0	PASS
42	2PL4573	WHB-1	1-2C#14	261	2.6203	0.0262	4835.32	KTN, 6A	*	200,000.0	PASS
42	2PL5268	WHB-1	1-2C#14	342	2.6203	0.0262	4835.32	KTN, 6A	*	200,000.0	PASS
42	2PL5267	WHB-1	1-2C#14	311	2.6203	0.0262	4835.32	KTN, 6A	*	200,000.0	PASS
42	2PL4572	WHB-1	1-2C#14	474	2.6203	0.0262	4835.32	KTN, 6A	*	200,000.0	PASS

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REG. GUIDE 1.75
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CALCULATION WBPEVAR9001006
PAGE ______ OF ______
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APPENDIX E PAGE 3 OF 3

SH.	CABLE	MARK	SIZE	LN. [FT]	Z OHM / 1000FT NOTE 1	IMPED ↗ 10FT [OHM]	Iscc [A] NOTES 2,3,4	FUSE		Iscmax [A] SEE APPX. C	FUSE RATING
43	2PL4584	WHB-1	1-2C#14	332	2.6203	0.0262	4835.32	KTN, 6A	*	200,000.0	PASS
43	2PL5258	WHB-1	1-2C#14	375	2.6203	0.0262	4835.32	KTN, 6A	*	200,000.0	PASS
43	2PL5257	WHB-1	1-2C#14	290	2.6203	0.0262	4835.32	KTN, 6A	*	200,000.0	PASS
43	2PL4585	WHB-1	1-2C#14	523	2.6203	0.0262	4835.32	KTN, 6A	*	200,000.0	PASS
44	2PL5277	WHB-1	1-2C#14	244	2.6203	0.0262	4835.32	KTN, 6A	*	200,000.0	PASS
44	2PL5278	WHB-1	1-2C#14	329	2.6203	0.0262	4835.32	KTN, 6A	*	200,000.0	PASS
44	2PL4596	WHB-1	1-2C#14	279	2.6203	0.0262	4835.32	KTN, 6A	*	200,000.0	PASS
44	2PL4597	WHB-1	1-2C#14	470	2.6203	0.0262	4835.32	KTN, 6A	*	200,000.0	PASS

NOTES

1) Impedances as per DG-E2.4.6, at 25°C

2) Shortcircuit voltage : Emax = 126.7V
The shortcircuit voltage is calculated as follows:
Calculation WBN-EEB-MS-TI06-0010, Rev. 4 indicates that the maximum voltages the WBN electrical system can tolerate are 7260V on the 6900V system and 506.6V on the 480V system.
The rated voltage of the PT is 120V.
Therefore the maximum voltage on the secondary side of the PT can be

$$E_{2max} = \frac{7260V}{6900V} \times 120 = 126.26\ V$$

or

$$E_{2max} = \frac{506.6}{480V} \times 120 = 126.65\ V$$

For conservatism, this calculation uses the value of 126.7V

3) The fault is considered on a single phase only, in order to maximize the fault current. The impedance of PT's has been omitted for conservatism.Thus

$$I_{sc} = E_{2max} / Z$$

4) The shortcircuit point is calculated at 10FT from the PT. This is conservative value, limiting the cable run to the close proximity of the voltage source.

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Attachment FIR103B
Reg. Guide 1.75 Associated
Circuits and Appendix R
Analysis for Non-Class 1E
120V AC & 250V DC Circuits

NE Calculation No. WBPEVAR9001006

Prepared by A. Wright Date 8/6/92

Checked by [signature] Date 8-7-92

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This attachment contains 78 pages.

1.0 PURPOSE AND SCOPE - Attachment FIR 103B

1.1 Purpose

The purpose of this attachment, FIR 103B, is to verify that non-class 1E cables in systems 250 (Automatic, Manual and Public Telephone), 252 (Code Call, Paging, Intercom, and Evacuation Alarm also known as the CAP system), 253 (Microwave and VHF radio) and 257 (Closed Circuit Television & Security) will not degrade the performance of Class 1E cables associated with such circuits.

Baseline Calculation	Calculation No.
Reg. Guide 1.75 Associated Circuits and Appendix R Analysis of Non-Class 1E 120 VAC & 250 VDC Circuits	WBPEVAR9001006

1.2 Scope

The scope of this attachment is to analyze all cables of the systems identified in paragraph 1.1 for Appendix R, Associated Circuit, Type III, and Category I Structure concerns. These were not analyzed previously.

2.0 ASSUMPTIONS AND CRITERIA

2.1 ~~Unverified~~ C.H. 8/6/92 Assumptions - None - See baseline calculation for assumptions

2.2 TVA Design Criteria WB-DC-30-5

3.0 SOURCES OF DESIGN INPUT/REFERENCES

3.1 WBFIR910243103 R1

3.2 Baseline Calculation

3.3 TVA Electrical Design Guide DG-E12.6.2 R0

3.4 TVA Computerized Cable Routing System (CCRS) printouts by system dated 3/9/92 and 4/16/92.

3.5 TVA Drawing 55N1388 Rev. T

3.6 TVA Contract 90NYA-93515B

3.6.1 Vendor Technical manual WBN-VTM-B570-0020 RIMS # T28 920130 808

3.6.2 Vendor Technical manual WBN-VTM-B570-0030 RIMS # T28 920130 809

3.6.3 Vendor Technical manual WBN-VTM-B570-0040 RIMS # T28 920130 810

3.7 TVA Electrical Design Guide DG-E2.4.6 R0

3.8 TVA Drawing 55N1388-1 Rev. U

3.9 TVA Drawing 55N1388-2 Rev. D

3.10 TVA Drawing 55N1388-3 Rev. F

3.11 TVA Drawing 55N2338 Rev. N

3.12 TVA Drawing 55N2338-1 Rev. P

3.13 TVA Drawing 55N2338-2 Rev. G

3.14 TVA Drawing 55N2339 Rev. N

3.15 TVA Drawing 55N2339-1 Rev. P

3.16 TVA Drawing 55N2339-2 Rev. F

3.17 TVA Drawing 55W716-3 Rev. M

3.18 TVA Drawing 55N2335 Rev. F

3.19 TVA Drawing 55N2335-1 Rev. J

3.20 TVA Drawing 1-45W1646-4 Rev. 0

3.21 TVA Drawing 55W1390 Rev. E

3.22 TVA Drawing 1-45W706-1 Rev. 3

3.23 TVA Drawing 55W1300 Rev. S

3.24 TVA Drawing 1-45W708-1 Rev. 0

3.25 TVA Drawing 1-45W708-2 Rev. 0

3.26 TVA Drawing 45N1637-7 Rev. J

3.27 TVA Drawing 55W1391 Rev. D

3.28 TVA Drawing 55W1392-4 Rev. C

3.29 TVA Drawing 55W1390-1 Rev. C

3.30 TVA Drawing 55W1393 Rev. D

3.31 TVA Drawing 55W1392-1 Rev. C

3.32 TVA Drawing 55N2341-1 Rev. F

3.33 TVA Drawing 45B1761-5C Rev. E

3.34 TVA Drawing 45B2761-5C Rev. E

3.35 Engineering Assessment (Appendix B)

3.36 TVA Drawing 45B1752-6F Rev. D

3.37 TVA DCN K-04130-A

3.38 TVA Drawing 45N708-8 Rev. F

3.39 Company Faxes, Catalog Data, and Records of Telephone Conversations (Appendix C)

3.40 TVA Drawing 55N1301 Rev. M

3.41 TVA Walkdown WD-007 - data

3.42 TVA Calculation WBPE2579011010 R0

3.0 SOURCES OF DESIGN INPUT/REFERENCES (Continued)

3.43 TVA Drawing 45W707-1 R0

3.44 TVA Drawing 55W1379-3 RH

3.45 TVA Drawing 15W420-3 RJ

3.46 TVA Drawing 15W420-5 RC

3.47 Cable Protection Study (Appendix A) from Published Data, faxed data, References 3.48, 3.50, and 3.2

3.48 TVA Calculation WBN EEB-MS-TI07-0018 R11.

3.49 TVA Drawing 55BM1306 Rev. 1

3.50 Square D Transformer Catalogue Data (Appendix E)

3.51 TVA Contract 74C8-85544 - Vendor Manuals

3.52 WB-DC-30-13 ~~Dated 8/13/85~~ R2 (issued 1-31-91) N.W. 8/10/92

3.53 TVA Drawing 1-35W733-3 R1

3.54 TVA Drawing 55W1393-2 RE

4.0 DESIGN INPUT DATA

See Section 3.0

5.0 JUSTIFICATION OF ASSUMPTIONS

5.1 See Baseline Calculation

6.0 METHODOLOGY

6.1 Cable printouts for systems 250, 251, 253, and 257 have been reviewed to identify any non-safety power or signal cables which may be associated with safety cables or equipment. These printouts have also been reviewed to identify any cables which are routed within or through a Category I structure (the control building, intake pumping station, auxiliary building, diesel generator building, or reactor building). Associated cables are identified by train designations in the node voltage, conduit, and "from" and "to" fields. The location/elevation field indicates routing to or through a Category I structure.

6.0 METHODOLOGY (Continued)

6.1 (Continued)

The communications circuits through the Diesel Generator Building are either protected or current limited per Section 6.9 and are not analyzed.

6.2 NV2 or smaller cables are not analyzed since they pose no challenge to class 1E cables as per Attachment MP E110007 Page 3 of the baseline calculation.

6.3 "Spare" cables have not been analyzed since these are deenergized.

6.4 Cables of #14 AWG in size which are protected by fuses rated 10 amps or less are not analyzed as per the baseline calculation (Section 6.1 page 9)(Page C1 through C116). It follows that larger cables protected by 10 Amp fuses or less also need not be analyzed.

6.5 Amplifier power supply and signal cables (from 16 to no smaller than 22 AWG) in the CAP system (252) are not specifically analyzed since they are protected by 1, 2, or 5 amp fuses; all of the 5 amp fuse curves in the baseline calculation, except for fuse links which would not be used for this application, will protect down to a #22 AWG cable from thermal damage (See Appendix A Page 2 through 7). Therefore, no further analysis is necessary.

6.6 Cables M460, M461, M462 and M463 are #12 AWG cables protected by a 20 Amp Westinghouse EB1020 breaker (Ref. 3.35). Per Reference 3.39, page 8b, the EB1020 is equivalent to the EHB20. Per the baseline calculation (Page C12), this breaker will protect a #12 AWG cable rated at 90°C from thermal damage.

6.7 PL5029 and PL5031 are in Calculation WBPE2579011010 R0 (Reference 3.42) which sizes their breakers.

6.0 METHODOLOGY (Continued)

6.8 Cable B174 is protected by a 250 Amp Heinemann breaker (Ref. 3.35, page 1). Heinemann only makes two types of breakers that handle 250 amps. As per Reference 3.47, pages 15a and 15b, these ~~cables~~ breakers will protect a 1/0 size cable from thermal damage. AW 8/6/92

6.9 Communications cables (sized 16 AWG and smaller) are not used in power applications. In communications systems, such cables are signal and alarm cables which, due to equipment current limiting or internal protection, should not carry or be subject to currents that will cause damage. This includes 24V microwave antenna cables (Reference 3.39).

6.10 Based on the information supplied by FUJITSU Business Systems concerning the F6900 (Reference 3.39), the short circuit current will not exceed 66 mA. This current is not significant and will cause no damage.

6.11 Cables down to a size 22 AWG protected by a 5 Amp or less fuse are adequately protected within 10 seconds and require no further analysis (See Appendix A Page 2 through 7).

6.12 The maximum fuse shown in Reference 3.19 is 10 Amps; therefore, no fuse for any cable referenced in this drawing is higher than 10 Amps. Per Baseline Calculation (Section 6.1 page 9)(See Section 6.4 of this attachment) any cable #14 AWG in size protected by a 10 Amp fuse need not be analyzed.

6.13 The maximum fuse size for the CAP speaker cables in Referenced Drawings (3.11 through 3.16) is 5 Amps; as per Ref. 3.43, therefore, no fuse for any cable referenced in this drawing is greater than 5 Amps.

6.14 A review of References 3.44 through 3.46 indicates that all of the strobe light and relay cables (system 252 - no smaller than 22 AWG) are protected by 1 Amp fuses and, therefore, by Section 6.5, do not require analysis.

6.15 A review of References 3.6 and the fax from Lantek to Burns and Roe in Appendix C, indicates that the equipment in the Security System 257 is adequately protected internally or limited internally or at such low power that no short circuit analysis is required.

6.16 All 15 Amp fuses except for FRN (which is no longer available) examined in the baseline calculation (Page C1 through C116) will protect a #14 AWG or larger cable under short circuit conditions. Therefore, this configuration requires no further analysis.

6.17 According to the Baseline calculation (Page C112) and this revision (Appendix A, page 10), both the 60 amp breakers (EF3-B060 and Heinemann CF2 Curve 3 breakers) will adequately protect down to a #6 AWG cable rated at 90°C.

6.0 METHODOLOGY (Continued)

6.18 According to the Baseline calculation (C1 through C116), all 150 Amp breakers will protect down to a #2 size cable while all 175 Amp breakers will protect down to a 1/0 within 10 seconds (provided the cable is rated at 90°C). Therefore, any 150 Amp breaker will protect down to a 1/0 cable.

6.19 According to the 400 Amp fuse and breaker study in Appendix A (Page 8, 14, 15 and 9), all the fuses and breakers examined will protect a 300 MCM cable from thermal damage due to short circuit within 10 seconds. Therefore, any 400 Amp fuse or breaker reviewed by this calculation will adequately protect a 300 MCM cable.

6.20 A review of the curves in Appendix A (Page 13 and 14) shows that 150 Amp fuses will protect a #2 AWG cable. Therefore a 35 Amp fuse will adequately protect a #2 AWG cable.

6.21 A review of the curves in Appendix A (Page 11, 14 and 15) show that 60 Amp and 100 Amp fuses will protect a #4 AWG cable; therefore, a 40A fuse of the types shown in the pages indicated will protect a #4 AWG cable.

6.22 The 24 VDC microwave radio transmission cables are signal cables and require no analysis per 6.9.

6.23 Insulation damage curves at a final temperature of 150°C for an initial temperature of 90°C are generated using the formula:

$$\left(\frac{I}{A}\right)^2 \quad t = 0.0297 \log 10\left(\frac{Tf + 234}{To + 234}\right) \text{ (Ref. 3.3).}$$

An initial temperature of 90°C is used for a more conservative result.

6.24 None of the cables are Appendix R as indicated by an N in the Appendix R field of the CCRS printouts (Ref. 3.4). Since the thermal damage curve is more conservative than the auto-ignition curve, any cable which is protected from thermal damage will be protected from auto-ignition as well. Breakers or fuses which open the circuit before the cable insulation is damaged will adequately protect their respective cables. Thermal damage evaluation is required by WB-DC-30-5.

6.25 Those cables identified as acceptable are indicated on the tables in Appendix D by "Pass". Those which are not acceptable are indicated by "Fail".

7.0 GRAPHICS

See Appendix A

8.0 SUMMARY OF RESULTS

Cables addressed by this calculation are summarized in Appendix D. All cables have passed.

9.0 CONCLUSIONS

All cables are adequately protected ~~of~~ and pose no threat to Class 1E circuits as indicated by "Pass" in Appendix D. SINGLE BREAKERS IDENTIFIED WILL BE ADDED TO DCN- S-19093A TO REQUIRE PERIODIC TESTING. R11

10.0 APPENDICES

Appendix A - Cable Protection Study - 17 pages

Appendix B - Engineering Assessment - 3 pages

Appendix C - Company Faxes, Catalog Data, and Records of Telephone Conversations - 12 pages

Appendix D - Tabularized Cable Data - 36 pages

Appendix E - Square D Transformer Catalogue Data - 1 page

Prepared by M. Wright Date 6/23/92

Checked by [signature] Date 6-25-92

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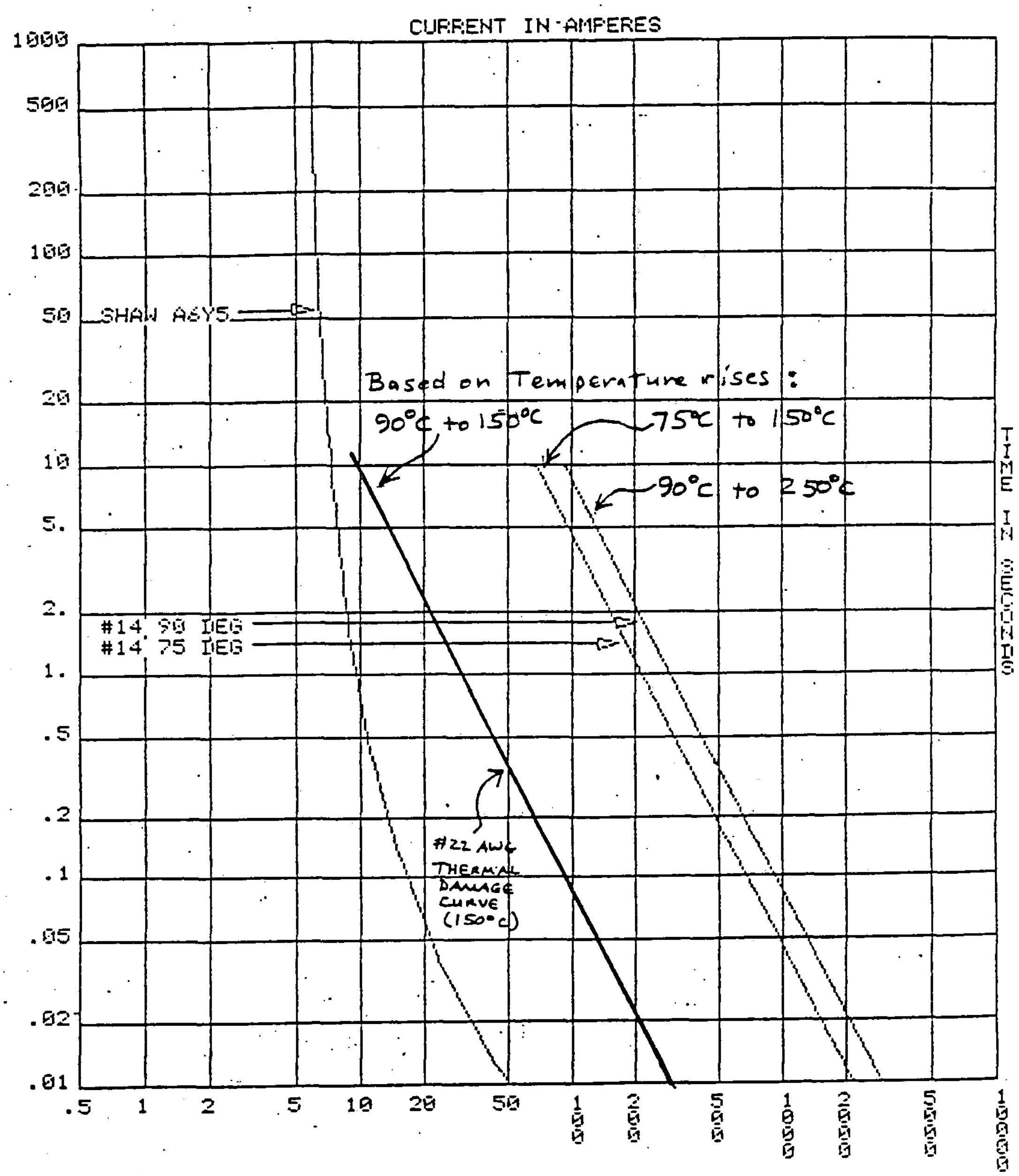
to maintain page count

THIS PAGE ADDED BY REVISION 10

WBPEVAR9001006

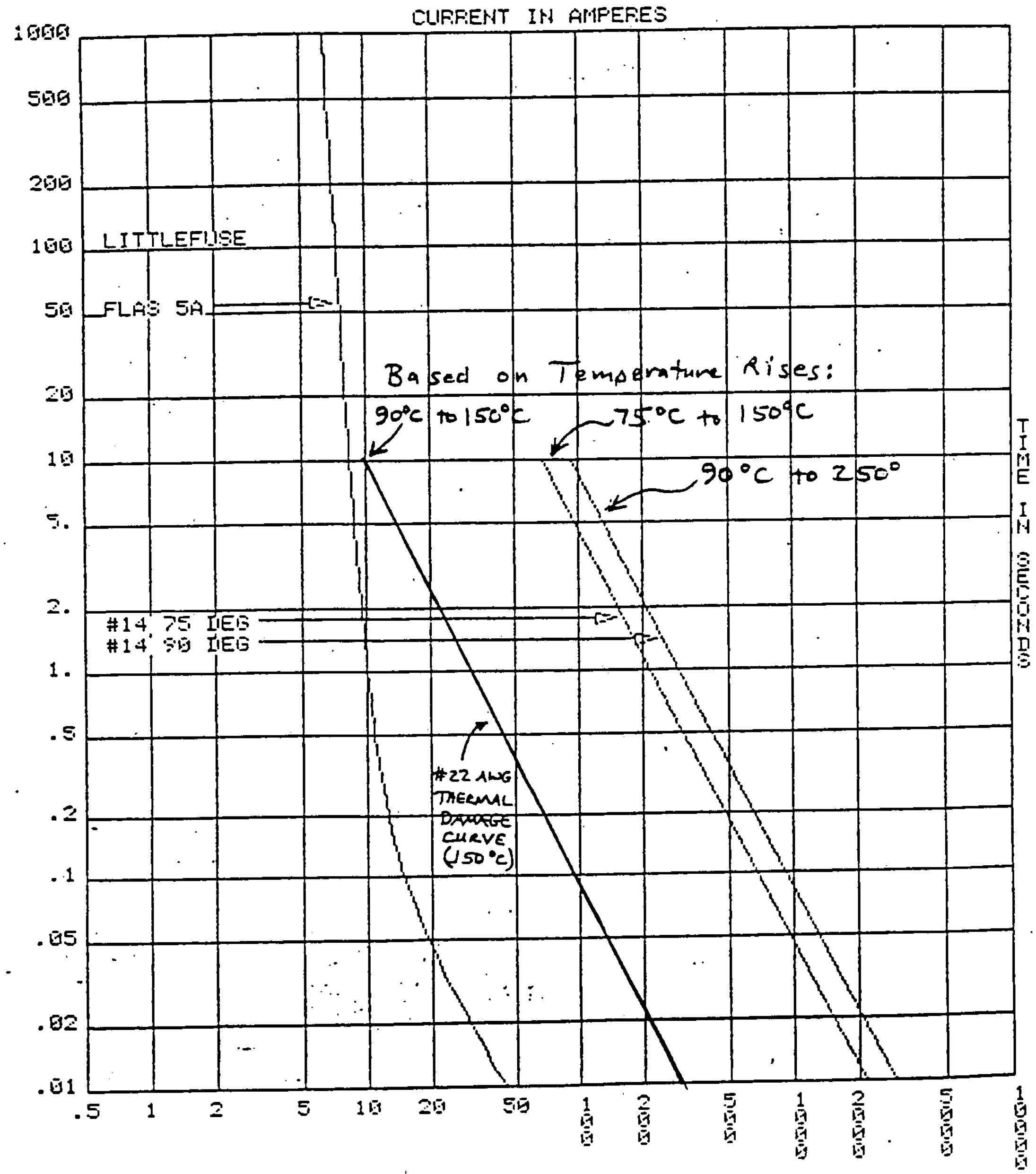
SHEET C18
PREPARED TAD DATE 1-31-90
CHECKED GCP DATE 2-1-90



DRAWING CURVE15 PLOT ELL: 120 SCALE: 10^0

SHEET C111
PREPARED [initials] DATE 1-31-90
CHECKED [initials] DATE 1/31/90

WBPEVAR9001006



DRAWING CURVE108 PLOT ELL: 120 SCALE: 10^0

Attachment Fir 103B
Reg. Guide 1.75 Associated
Circuits and Appendix R
Analysis for Non-Class 1E
120V AC & 250V DC Circuits

Appendix A

NE Calculation No. WBPEVAR9001006

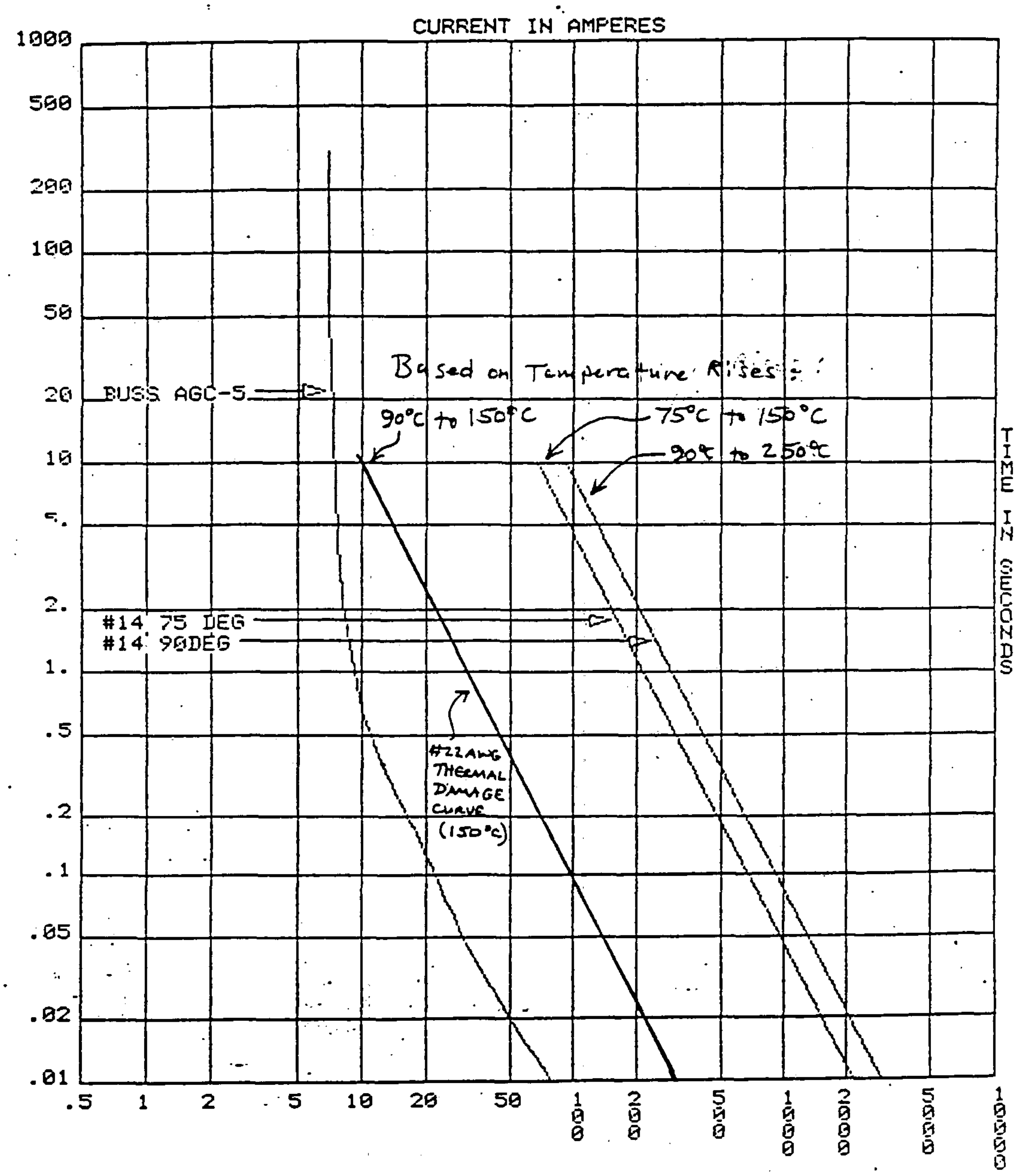
Prepared by N. Wright Date 6/16/92

Checked by [signature] Date 6-25-92

Page 4 of 15

WBPEVAR9001006

C69
PREPARED [initials] DATE 1-31-90
CHECKED [initials] DATE 1/31/90



DRAWING CURVE66 PLOT ELL: 120 SCALE: 10^0

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Attachment Fir 103B
Reg. Guide 1.75 Associated
Circuits and Appendix R
Analysis for Non-Class 1E
120V AC & 250V DC Circuits

Appendix A

NE Calculation No. WBPEVAR9001006

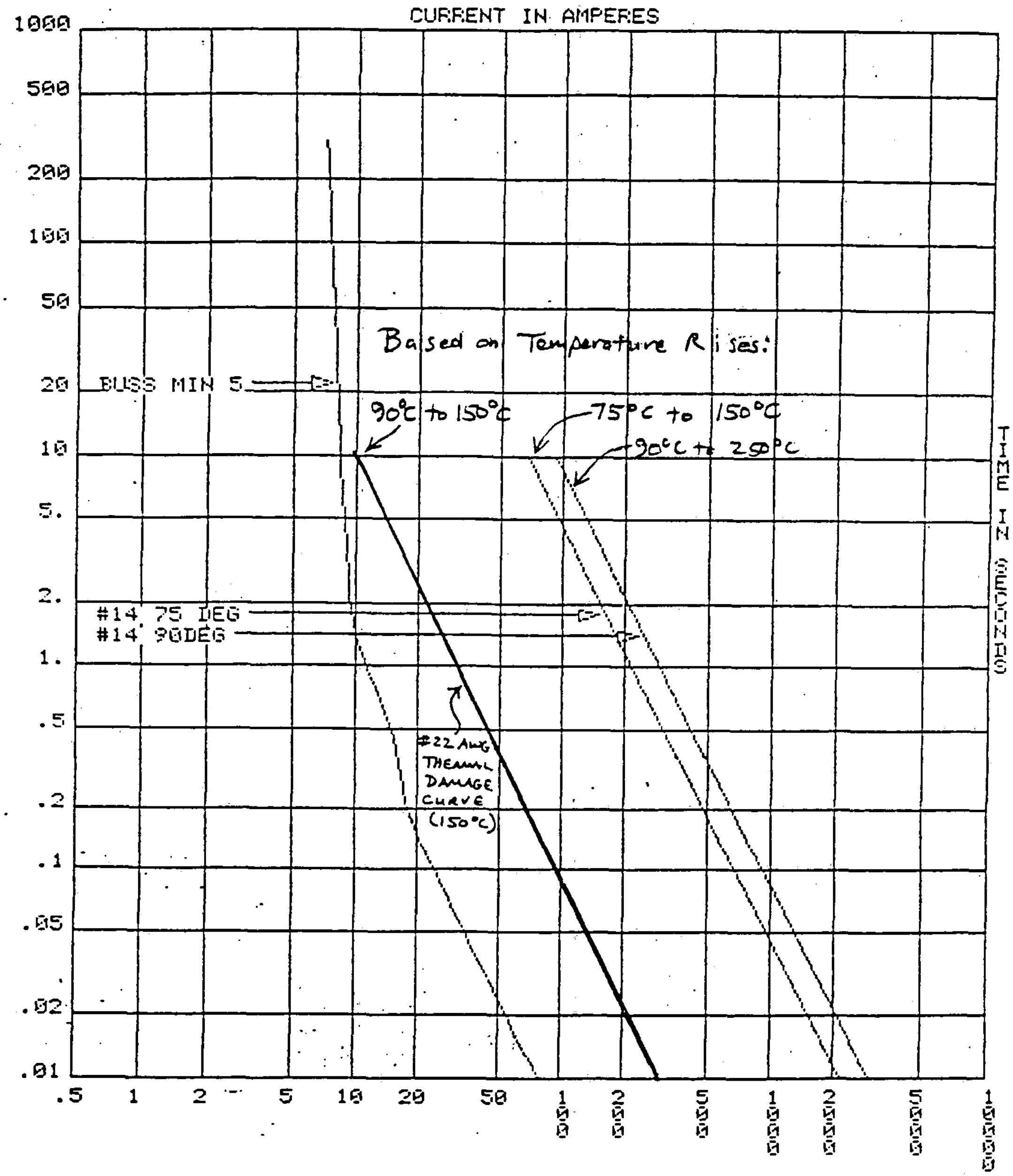
Prepared by [signature] Date 6/16/92

Checked by [signature] Date 6-25-92

Page 5 of 15

WBPEVAR 9001006

SHEET C64
PREPARED [initials] DATE 1-31-90
CHECKED RS DATE 1/31/90



DRAWING CURVE61 PLOT ELL: 120 SCALE: 10^0.

3101x

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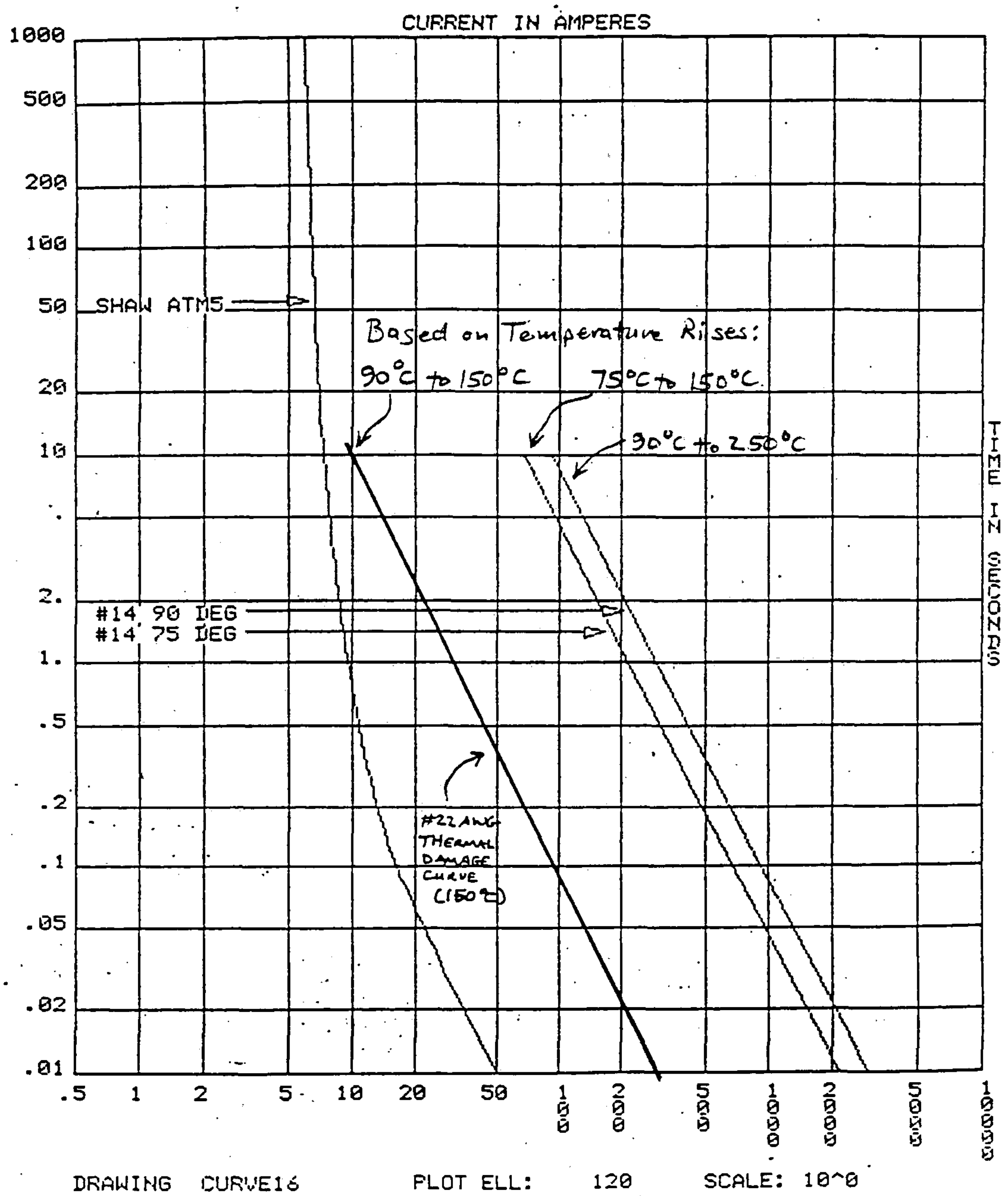
WBPEVAR9001006

SHEET C/9
PREPARED 7AD DATE 1-31-90
CHECKED GCP DATE 2-1-90



Attachment Fir 103B
Reg. Guide 1.75 Associated
Circuits and Appendix R
Analysis for Non-Class 1E
120V AC & 250V DC Circuits

Appendix A

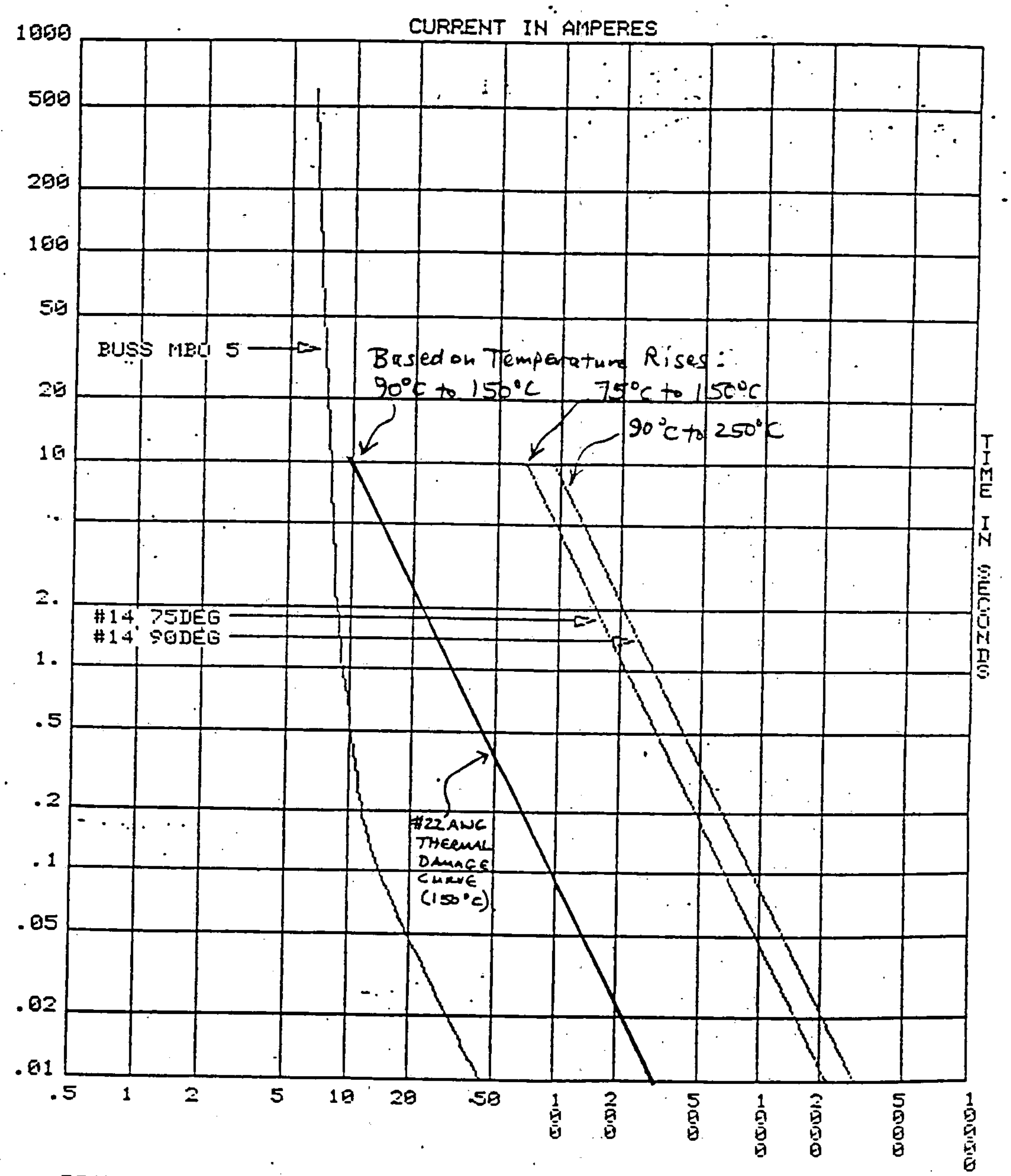
NE Calculation No. WBPEVAR9001006

Prepared by [signature] Date 6/16/92

Checked by [signature] Date 6-25-92

WBPEVAR9001006

SHEET C-35
PREPARED TAB DATE 1-31-90
CHECKED GCP DATE 2-1-90



DRAWING CURVE32 PLOT ELL: 120 SCALE: 1000

3101x

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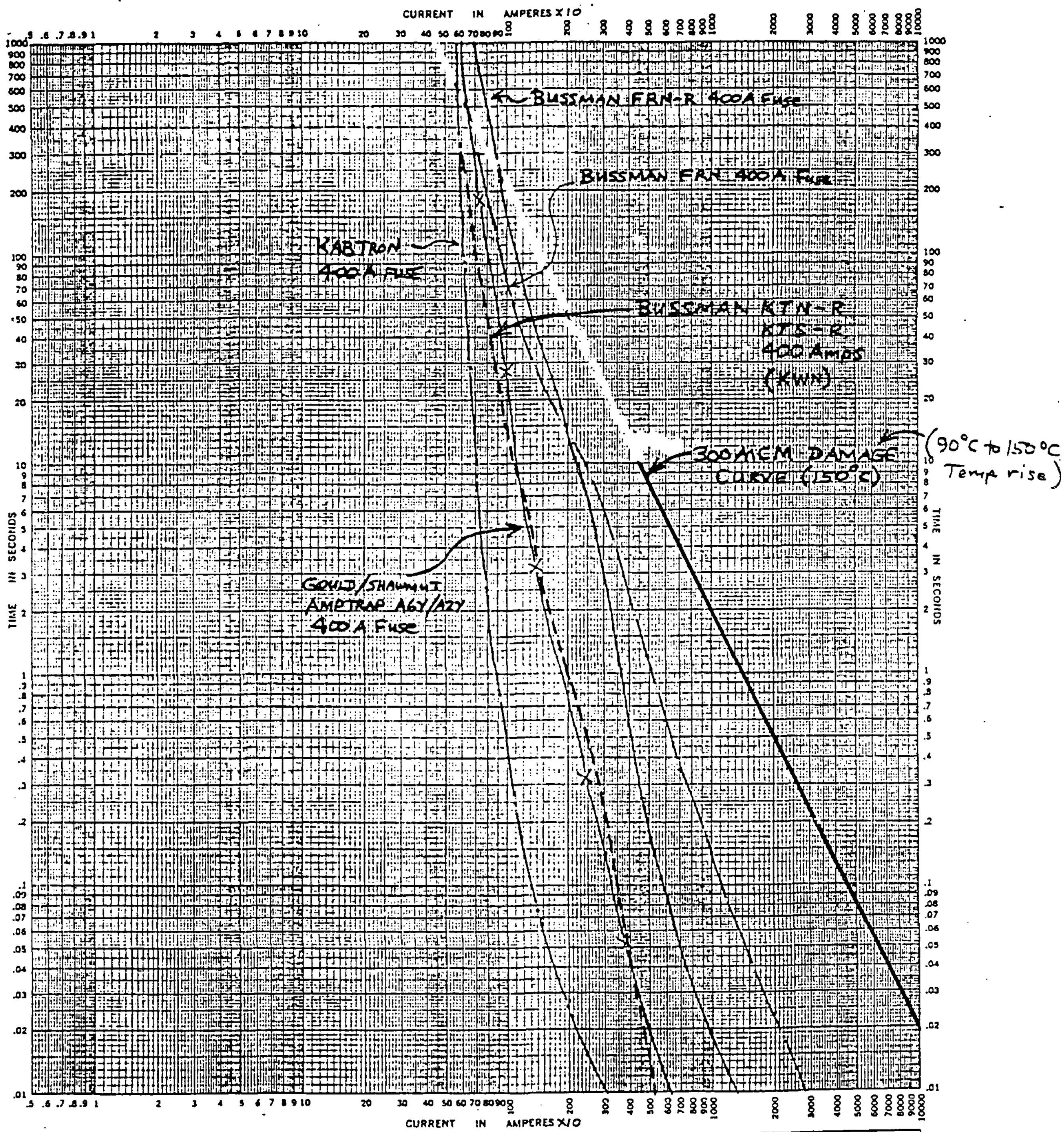


______ TIME-CURRENT CHARACTERISTIC CURVES ~~FROM PUBLISHED DATA AND APPENDIX C~~

For ______ Fuse Links. In ______

BASIS FOR DATA Standards ______ Dated ______

1. Tests made at ______ Volts a-c at ______ p-f., starting at 25C with no initial load ______

2. Curves are plotted to ______ Test points so variations should be ______

No. ______

Date ______

K•E TIME-CURRENT CHARACTERISTIC 48 5258
KEUFFEL & ESSER CO. MADE IN U.S.A.

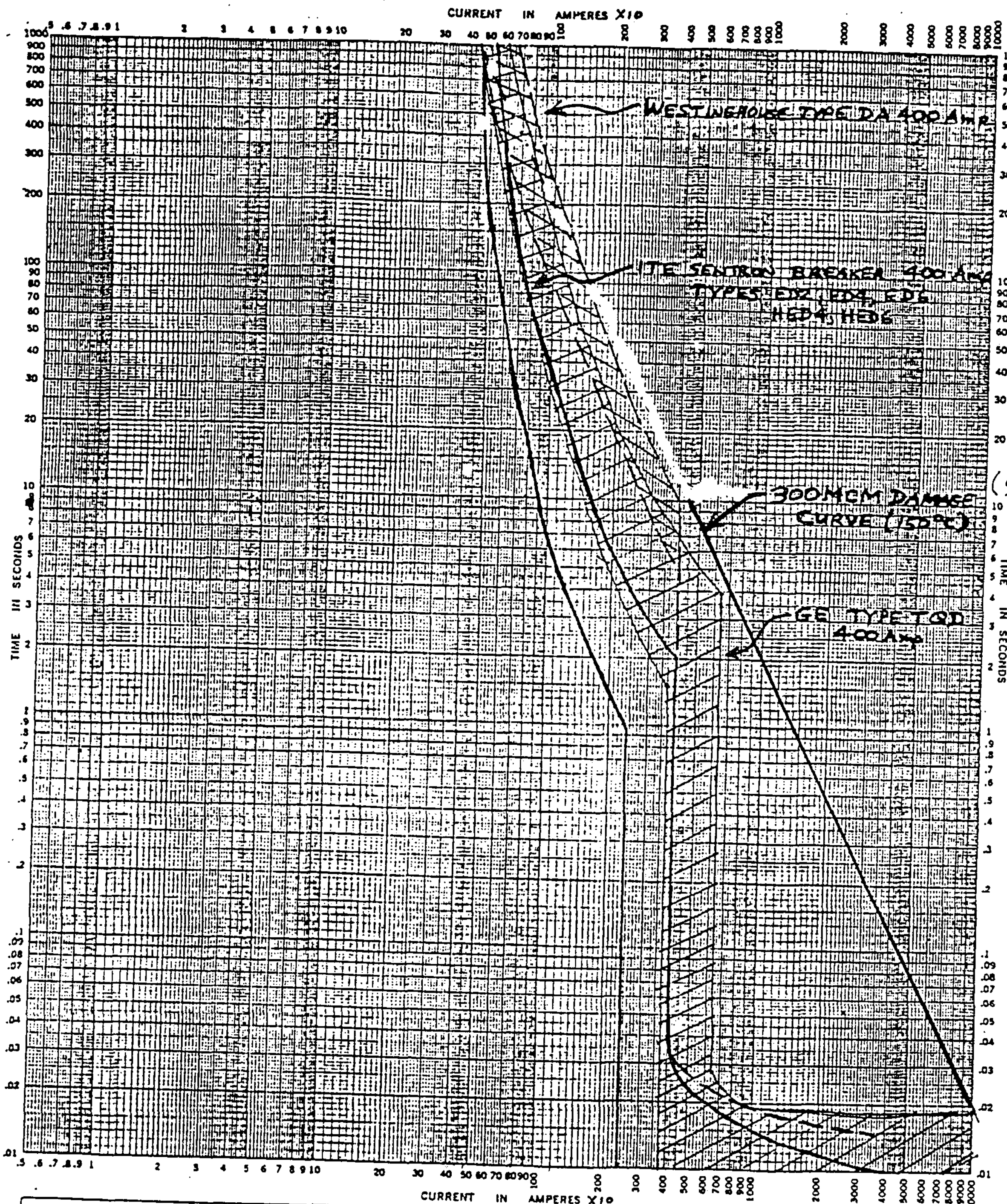
Attachment Fir 103B
Reg. Guide 1.75 Associated
Circuits and Appendix R
Analysis for Non-Class 1E
120V AC & 250V DC Circuits

Appendix A

NE Calculation No. WBPEVAR9001006

Prepared by N. Wright Date 6/23/92

Checked by [signature] Date 6-25-92



For ____ TIME-CURRENT CHARACTERISTIC CURVES – 400 A BREAKERS

BASIS FOR DATA Standards ____ Fuse Links. In ____

Dated ____

1. Tests made at ____ Volts a-c at ____ p-f., starting at 25C with no initial load ____
2. Curves are plotted to ____ Test points so variations should be ____

No. ____

Date ____

K•E TIME-CURRENT CHARACTERISTIC 48 5258
KEUFFEL & ESSER CO.

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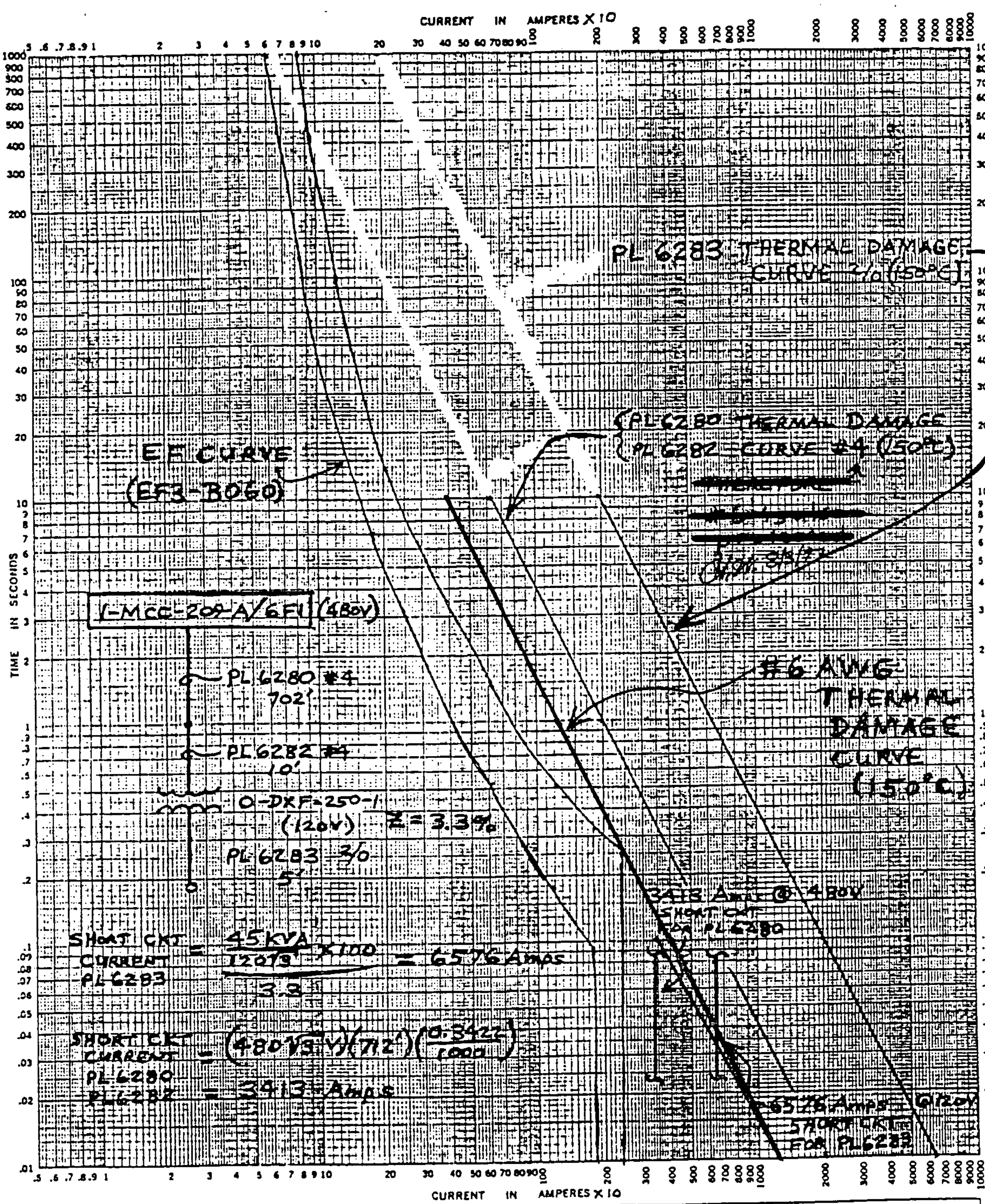
Attachment Fir 103B
Reg. Guide 1.75 Associated
Circuits and Appendix R
Analysis for Non-Class 1E
120V AC & 250V DC Circuits

Appendix A

NE Calculation No. WBPEVAR9001006

Prepared by A. Wright Date 6/23/92

Checked by [signature] Date 6-25-92



For EF3-BO60 TIME-CURRENT CHARACTERISTIC CURVES

Fuse Links In

BASIS FOR DATA Standards Data in TI07-0018 Dated

1. Tests made at ______ Volts a-c at ______ p.f., starting at 25C with no initial load ______

2. Curves are plotted to ______ Test points so variations should be ______

No. ______

Date ______

K•E TIME-CURRENT CHARACTERISTIC 48 5258
KEUFFEL & ESSER CO.

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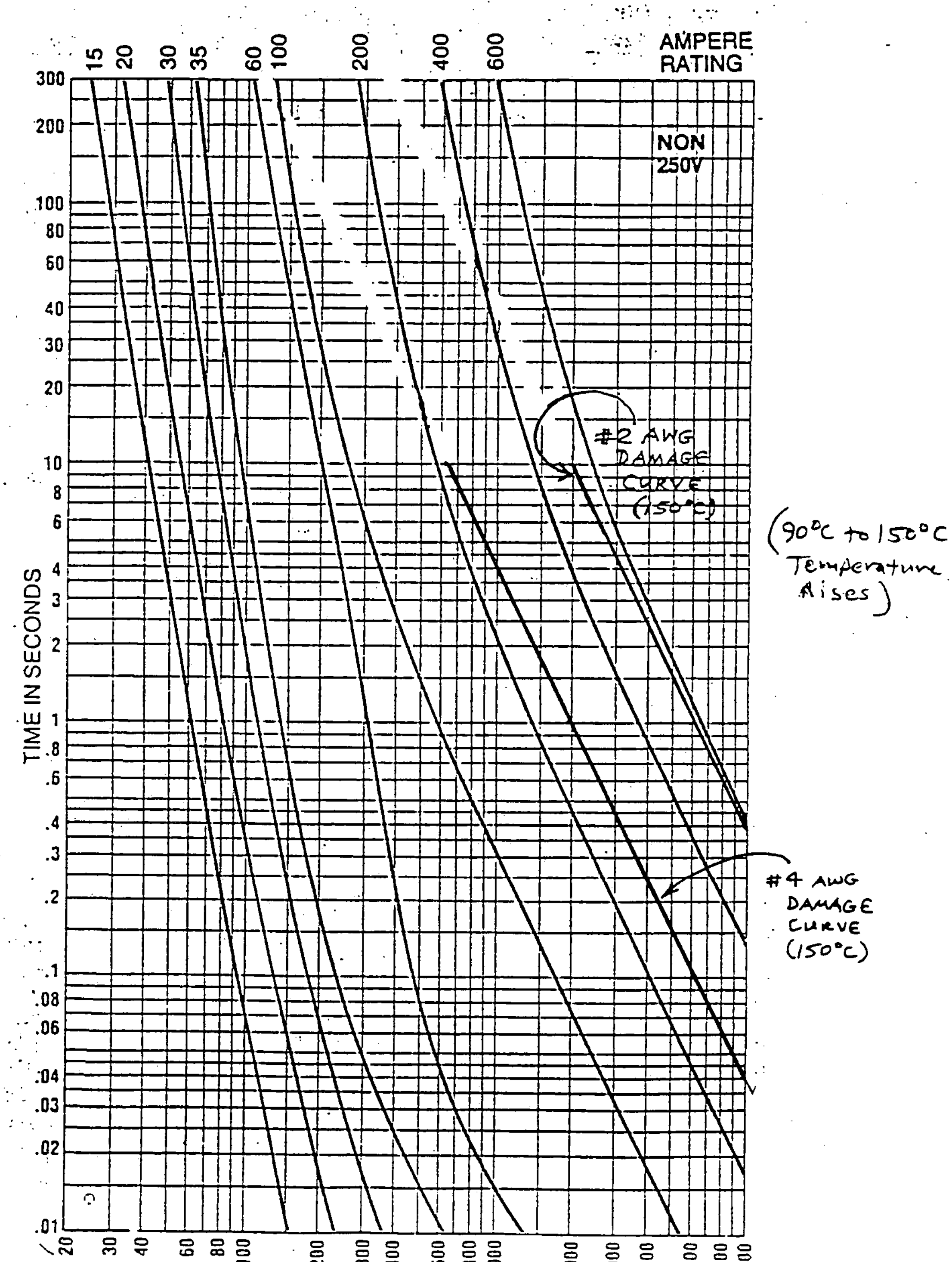
Buss

Time-Current Characteristic Curves—Average Melt



Form 151-3
10-22-84

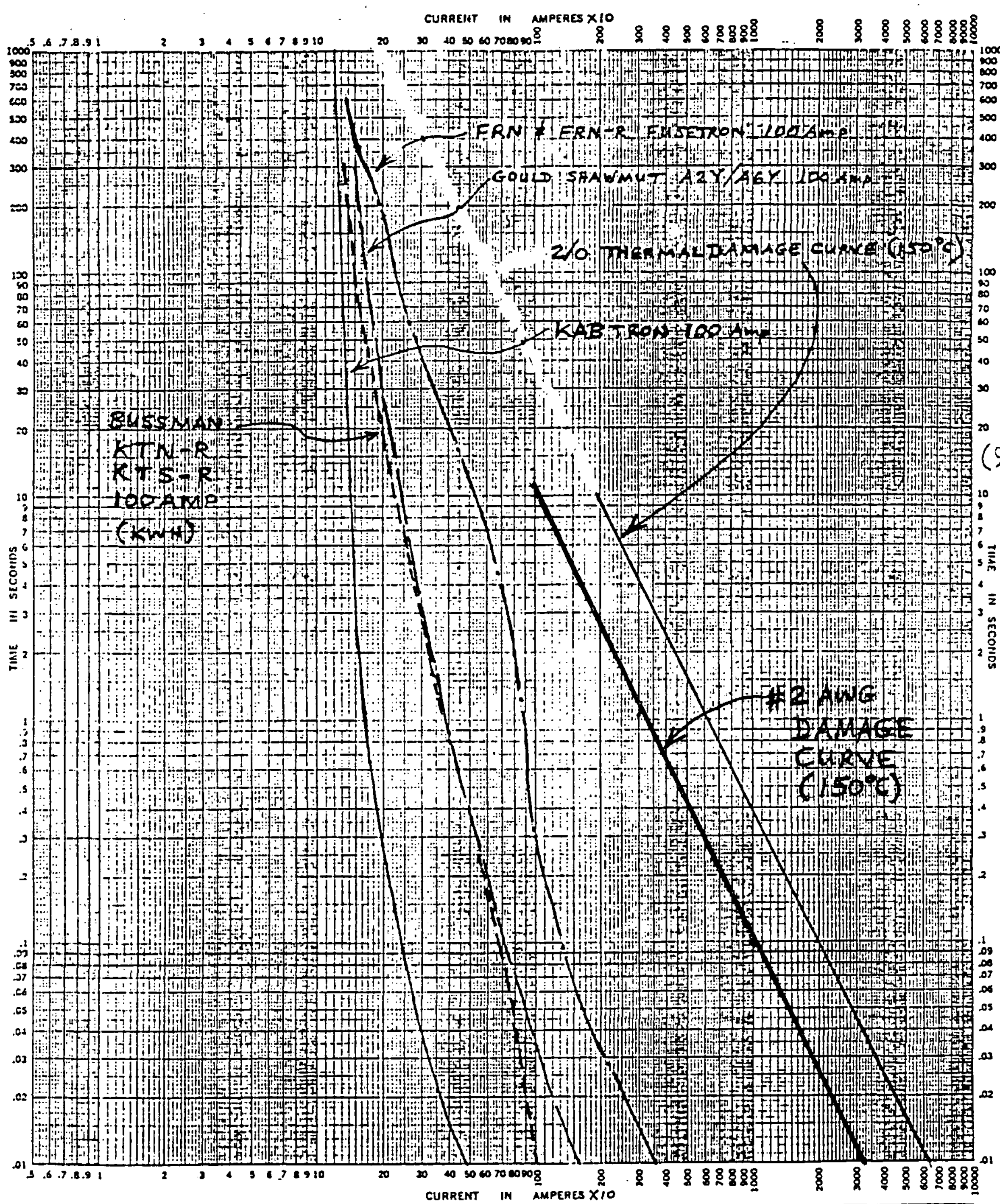
Attachment Fir 103B
Reg. Guide 1.75 Associated
Circuits and Appendix R
Analysis for Non-Class 1E
120V AC & 250V DC Circuits

Appendix A

NE Calculation No. WBPEVAR9001006

Prepared by A. Wright Date 6/25/92

Checked by [signature] Date 6-25-92



TIME-CURRENT CHARACTERISTIC CURVES

For __________ Fuse Links. In __________

BASIS FOR DATA Standards __________ Dated __________

1. Tests made at ______ Volts a-c at ______ p-f., starting at 25C with no initial load ______

2. Curves are plotted to ______ Test points so variations should be ______

No. ______

Date ______

K+E TIME-CURRENT CHARACTERISTIC 48 5258

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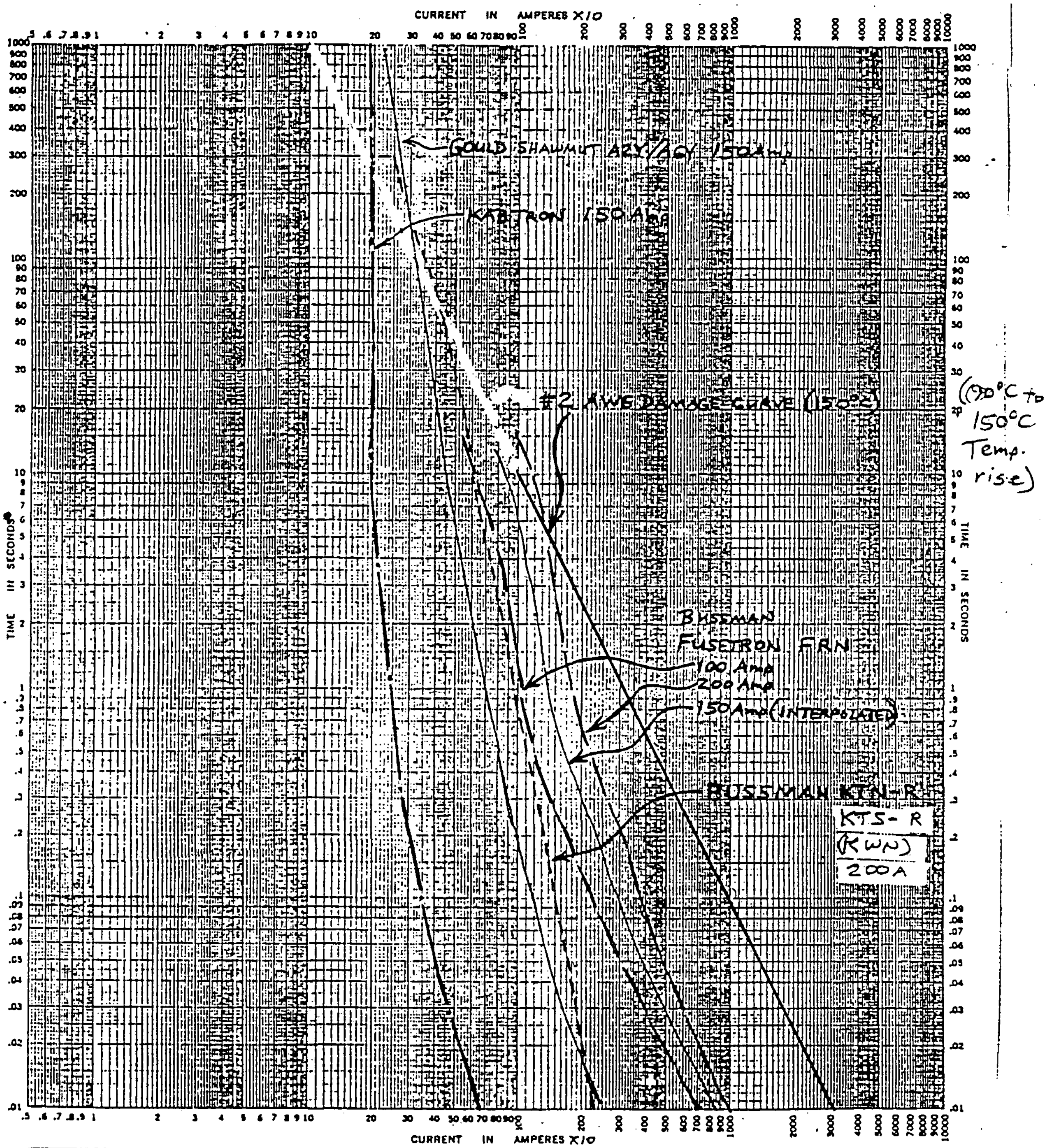


TIME-CURRENT CHARACTERISTIC CURVES For Fuses

For ________ Fuse Links. In ________

BASIS FOR DATA Standards ________ Dated ________

1. Tests made at ________ Volts a-c at ________ p-f., starting at 25C with no initial load ________

2. Curves are plotted to ________ Test points so variations should be ________

No. ________

Date ________

Attachment FIR 103B
Reg. Guide 1.75 Associated
Circuits and Appendix R
Analysis for Non-Class 1E
120V AC & 250V DC Circuits
Appendix A

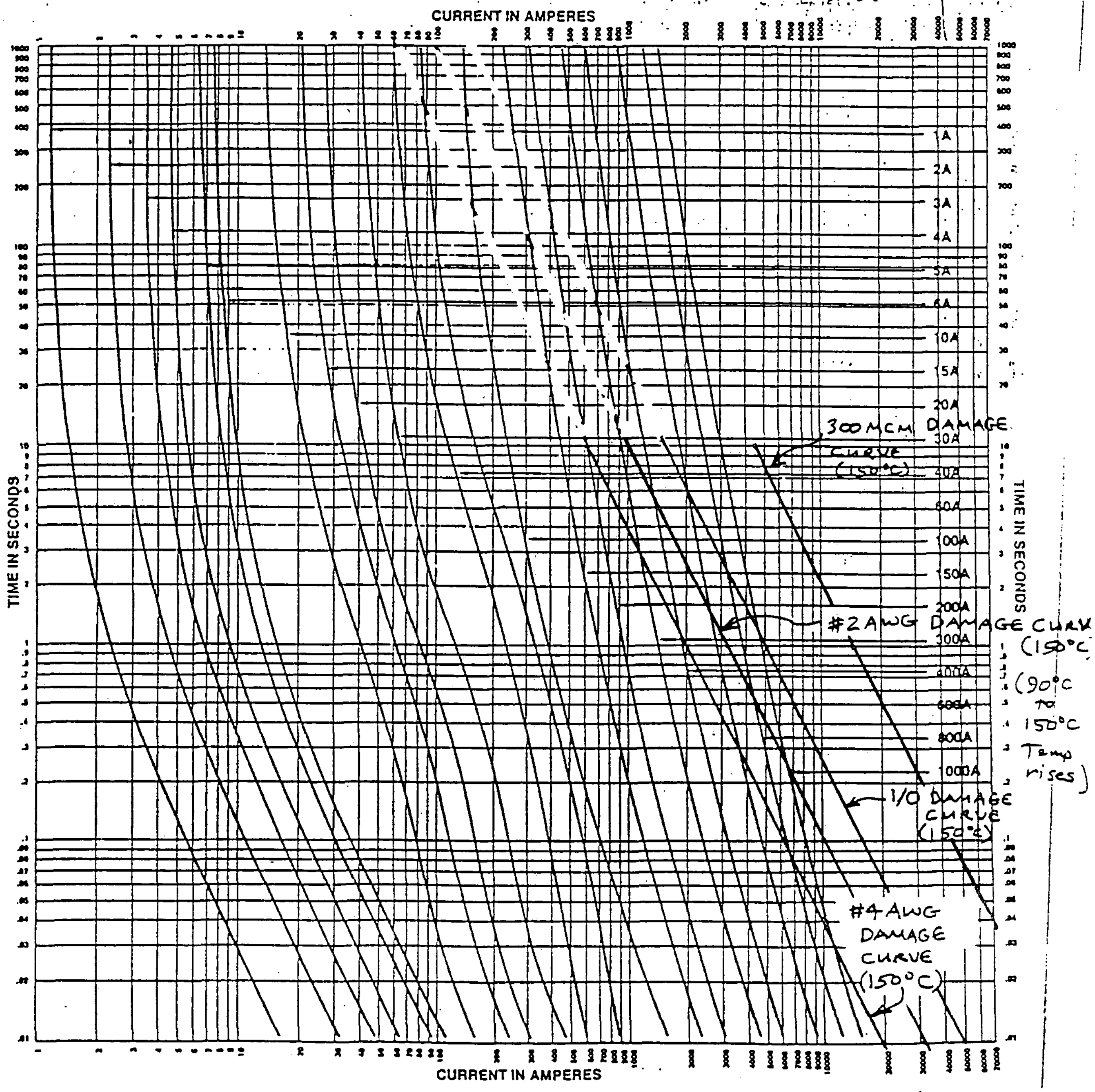
NE Calculation No. WBPEVAR9001006

Prepared by [signature] Date 6/23/92

Checked by [signature] Date 6-25-92

Amp-trap®
Form 600 Fuses
A2Y/A6Y

Melting Time—Current Data
1-600 Amperes, 250 or 600 Volts—Types 1, 3 or 5
650-1200 Amperes, 600 Volts—Types 4 or 5



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Attachment FIR 103B
Reg. Guide 1.75 Associated
Circuits and Appendix R
Analysis for Non-Class 1E
120V AC & 250V DC Circuits
Appendix A

NE Calculation No. WBPEVAR9001006

Prepared by [signature] Date 6/23/92

Checked by [signature] Date 6-25-92

Page 15 of 15

WBN-EEB-MS-TI07-0018

96

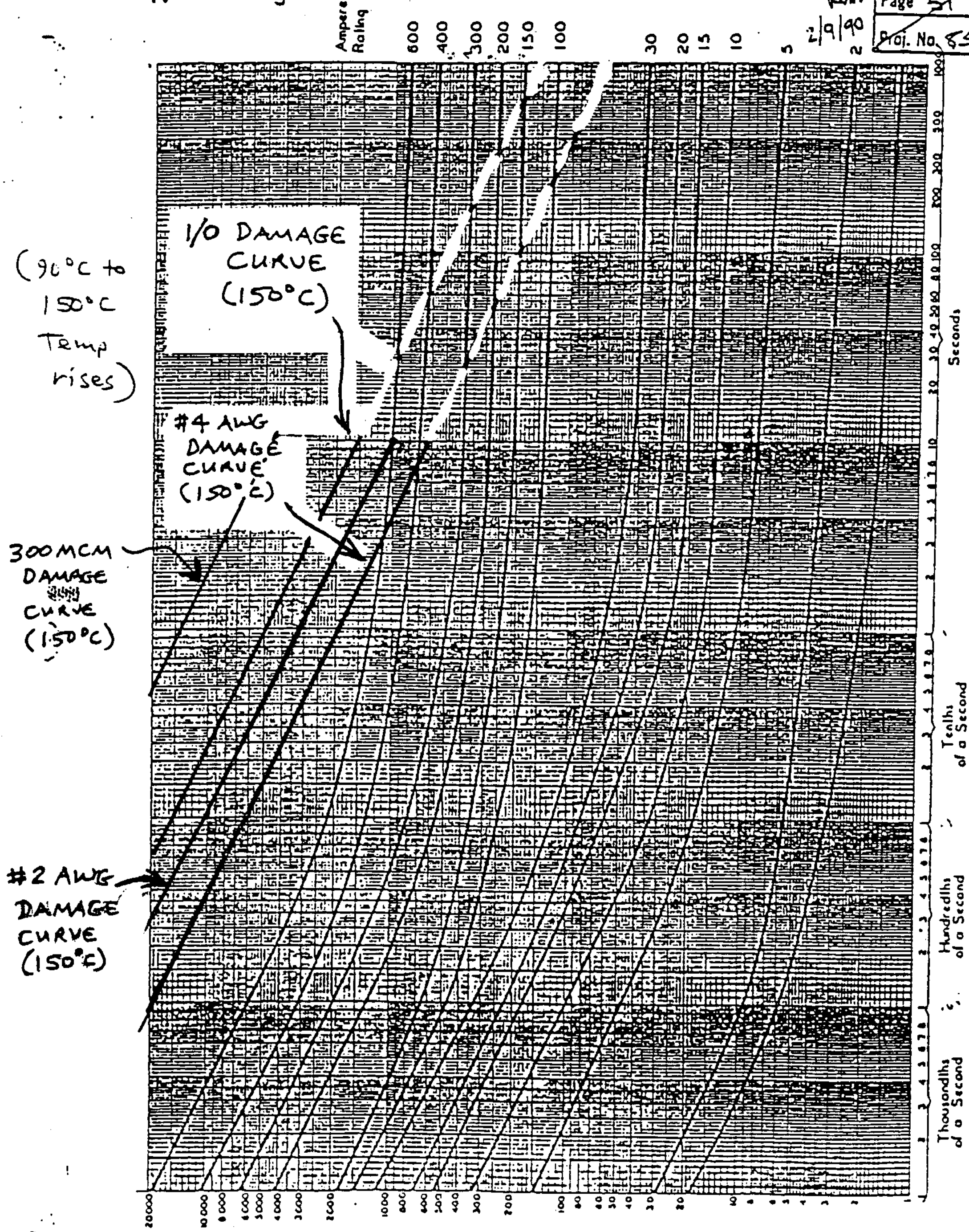
Calc. No. 8573-27-E16	
Rev. 0	Date
Page 51	
Proj. No. 8573-27	

[initials] 2/9/90

Time of Opening for KAB TRON Rectifier Fuses*
(Values are Approximate)

Appendix B, Attachment 7

(90°C to 150°C Temp rises)



Prepared [signature] Date 1/30/90
Verified [signature] Date 1/30/90

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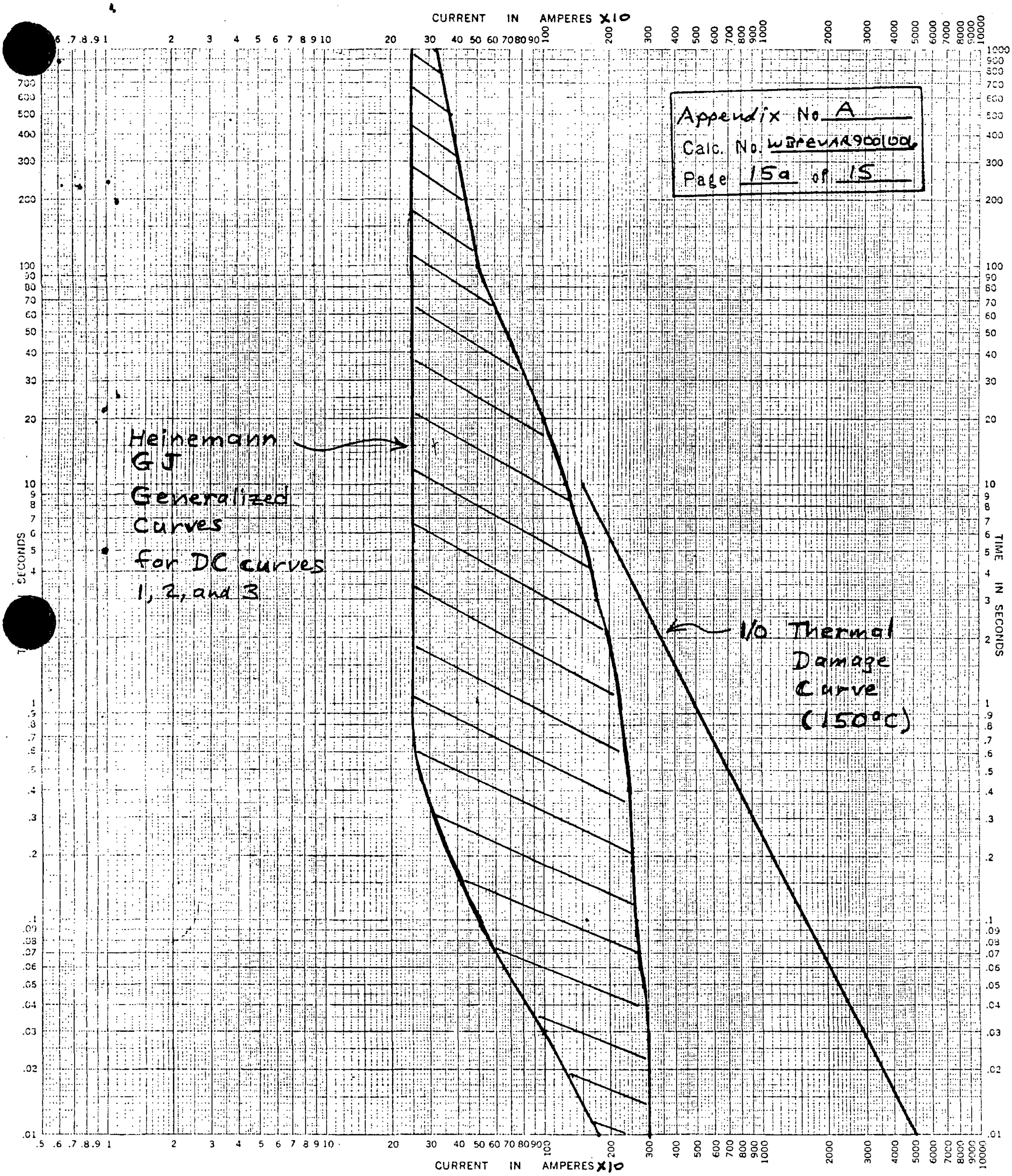
Attachment FIR 103B

Prepared By [signature] Date 8/4/92
Checked By [signature] Date 8-7-92

Appendix No. A
Calc. No. WBREVAR900100
Page 15a of 15



TIME-CURRENT CHARACTERISTIC CURVES

For Heinemann GJ Series Fuse Links. In

BASIS FOR DATA Standards Appendix C page 8C ~~Dated~~ DC curves

1. Tests made at ______ Volts a-c at ______ p-f., starting at 25C with no initial load ______
2. Curves are plotted to ______ Test points so variations should be ______

No. ______
Date ______

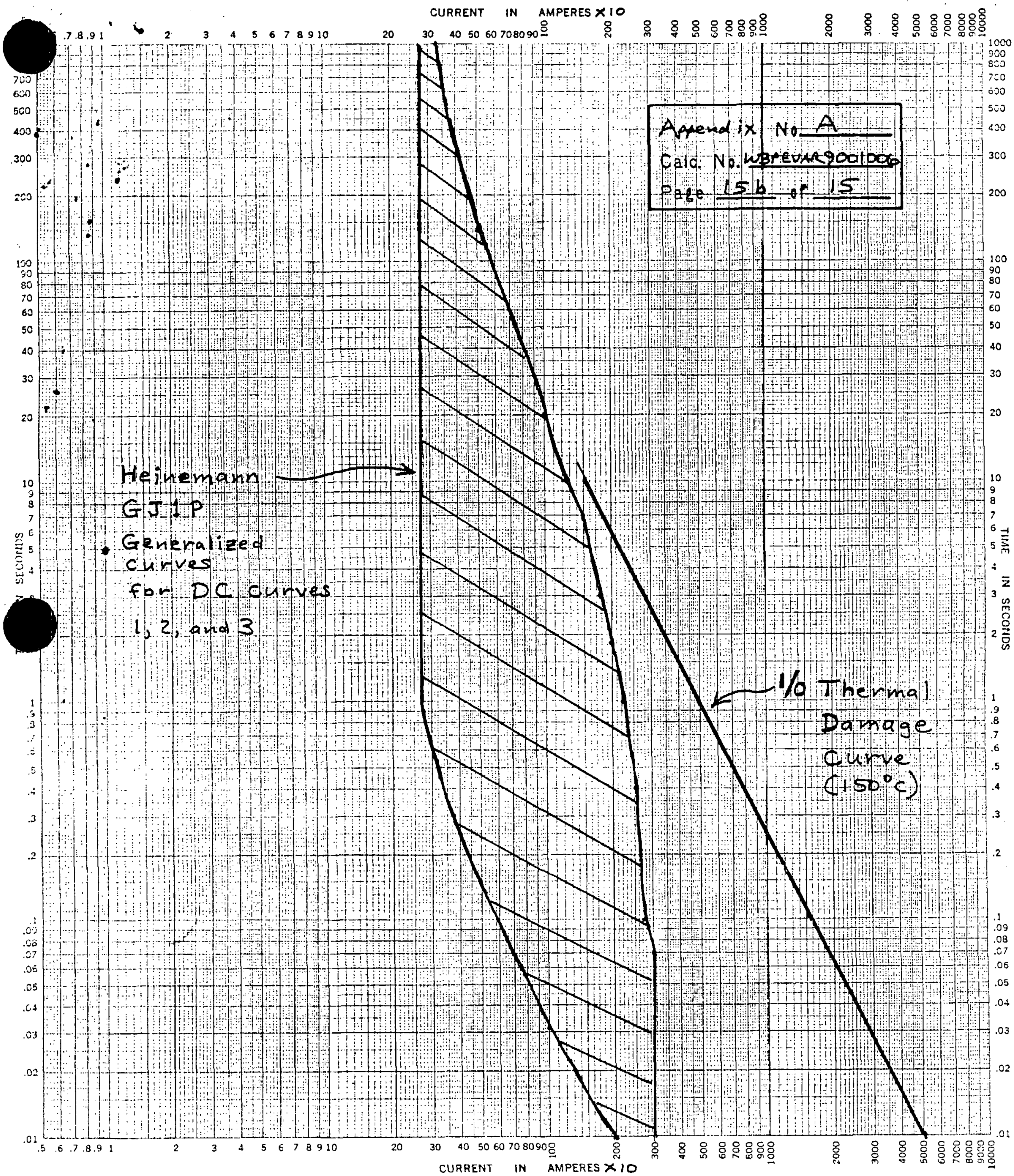
K•E TIME-CURRENT CHARACTERISTIC 48 5258
KEUFFEL & ESSER CO. MADE IN U.S.A.

THIS SHEET ADDED BY REV 10

Attachment FIR 103B

Prepared By C.Wright Date 8/4/92

Checked By [signature] Date 8-7-92



TIME-CURRENT CHARACTERISTIC CURVES

For Heinemann GJ1P Fuse Links. In

BASIS FOR DATA Standards Appendix C page 8d ~~Dated~~ DC curves

1. Tests made at ______ Volts a-c at ______ p-f., starting at 25C with no initial load ______
2. Curves are plotted to ______ Test points so variations should be ______

No. ______

Date ______

K•E TIME-CURRENT CHARACTERISTIC 48 5258
KEUFFEL & ESSER CO. MADE IN U.S.A.

THIS SHEET ADDED BY REV 10

ENGINEERING ASSESSMENT - Data from field:
C9, 24V and 48V Battery Board and Charger Room El. 692.0

0-CHGR-250-1

CB1 25 Amp Square D

CB2 250 Amp ~~(not available)~~ Heinemann

A. Wright 8/5/92
Dan Howe 8/5/92

F1 50 Amp ECN 50

F2 50 Amp FRN-R-50 Fusetron

F3 ---------------

F4 200 Amp Fusetron

Signed Alden Wright Date 4/30/92

Signed George Truett Date 4/30/92

Engineering Assessment - Data from field:
K-6C, K-6B 120 VAC Distribution Panel el. 711

0-DPL-226-1

BKR 25: Westinghouse EB1020

Signed A. Wright Date 8/5/92

Signed Dan Howe Date 8/5/92

Appendix B

<u>ENGINEERING ASSESSMENT</u> - Data from field:
C9, 24V and 48V Battery Board and Charger Room El. 692.0

0-BD-252-1 (Westinghouse Panel)

CB1	400 Amp Westinghouse NP 28313-F
CB2	400 Amp Westinghouse NP 28313-F
CB3	Not Available
F2	400 Amp TRON KAA400 Rectifier fuse

Signed Alden Wright Date 4/30/92
Signed George Truett Date 4/30/92

<u>ENGINEERING ASSESSMENT</u> - Data from field:
C9, 24V and 48V Battery Board and Charger Room El. 692.0

0-CHGR-253-1

CB1	10 Amp not available
CB2	125 Amp Westinghouse FB2125
F1	35 Amp Bussman
F2	40 Amp FRN Fusetron
F3	40 Amp FRN Fusetron
F4	200 Amp Buss Non 200

Signed Alden Wright Date 4/30/92

Signed George Truett Date 4/30/92

FROM:GAI-TRONICS TO: 615 3651142 APR 20, 1992 4:40PM P.01

P.O. Box 31
Reading, Pa 19603
April 20, 1992

Mr. Alen Wright
EBASCO
Phone # 615-365-1115
FAX # 615-365-1142

Dear Mr. Wright:

The GTC 650 family of amplifiers is FM (Factory Mutual) and CSA (Canadian Standards Association) Approved for use in Division 2, Class I, Groups A-B-C-D; Division 2, Class II, Groups F-G; and Division 2, Class III Hazardous Locations when installed in appropriate enclosures.

The 650 Speaker Amplifier will deliver 12 watts audio output into either an 8 or 16 ohm speaker load when powered from 120VAC. The output of the amplifier is AC (alternating current) coupled to the speaker with both a capacitor and a transformer. The short circuit current that can be delivered to the speaker terminals is limited by the output transformer losses (IR losses predominantly), amplifier current limiting (approx 1 ampere) prior to the output transformer, and ultimately by a .7 ampere power supply fuse.

Please call me if you require additional information or clarification.

Sincerely,

Robert F. Berg

Robert F. Berg
Product Support Engineer

cc
Tim Thompson

3101x

FUJITSU BUSINESS
COMMUNICATION SYSTEMS
3190 Miraloma Avenue, Anaheim, CA 92806
(714) 630-7721

FUJITSU

April 23, 1992

Mr. Alden Wright
Ebasco Services, Inc.
Wattsbar Nuclear Plant
Box 1232
Wattsbar Dam, Tennessee 37395

Dear Mr. Wright,

In response to your inquiry as to the current limiting function afforded by the F9600 system in the event of a short circuit being applied to the tip-ring pairs, I offer the following:

In the case of the tip/ring interface that powers single line station sets, a current limit circuit is provided which will limit the current to a value not exceeding 66 mA.

In the case of the tip/ring interface that powers the proprietary digital telephone sets, the maximum current that flows under normal operation is 50 mA. If a short circuit condition occurs, the maximum current output is folded back to a value not exceeding 10 mA. The load must be removed for the foldback circuit to reset.

The voltage supplied by both types of interfaces is taken directly from the system input voltage, filtered, and then distributed to each interface card. The system input voltage can range from -44VDC to -56VDC, measured at the system input terminals.

I hope the above information is sufficient for you. Please contact me if you require further information.

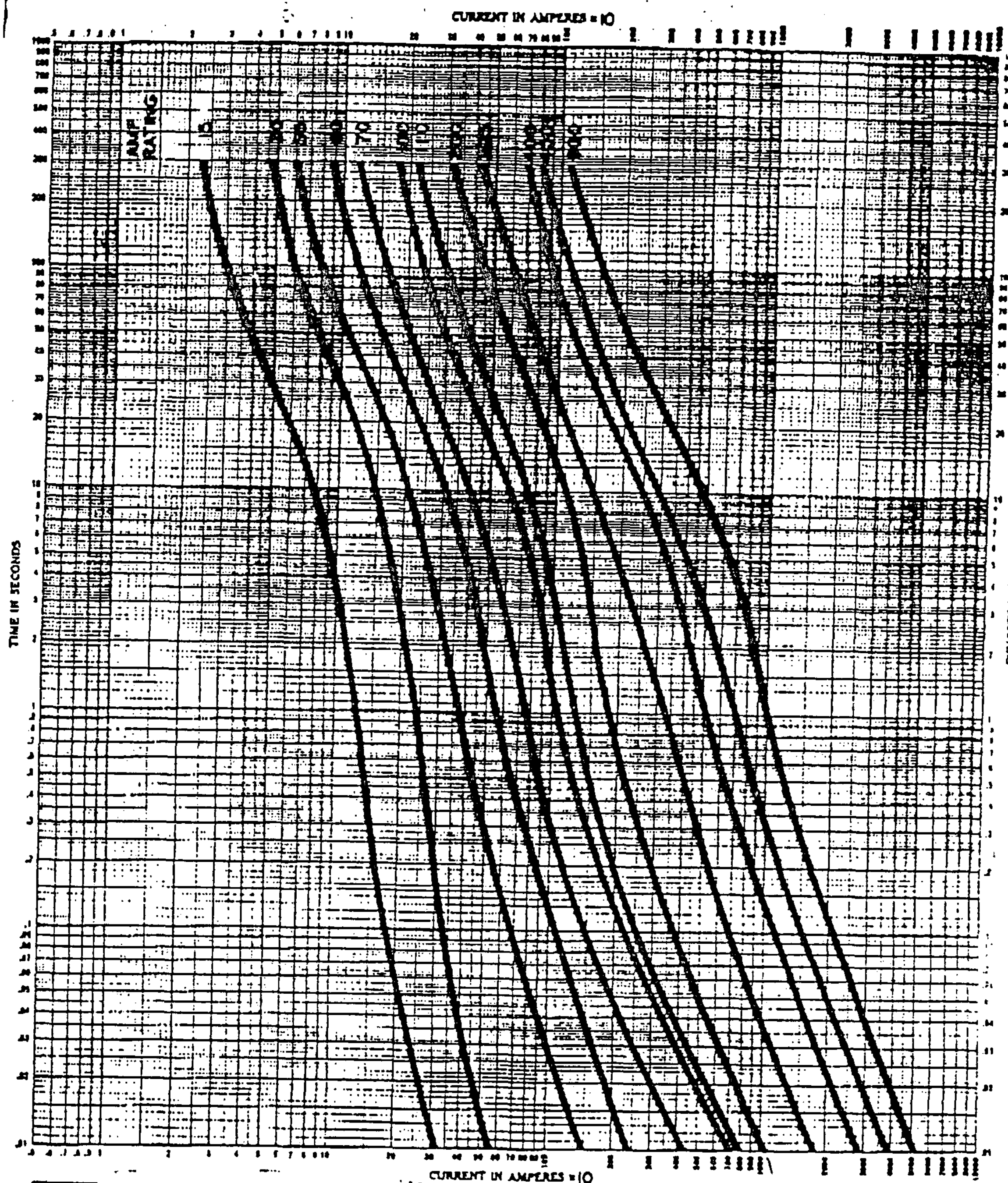
Sincerely,

John Herold

John Herold
Manager, Circuit Design
Hardware Development

/jh

[illegible] 08:31 AM FROM [illegible] TO [illegible] P02



TOTAL CLEARING TIME-CURRENT CHARACTERISTIC CURVES
for
FUSETRON FUSES
Type FRN 250 Volt

No. 50586
Date 3-15-63

Attachment FIR 103B
Reg. Guide 1.75 Associated
Circuits and Appendix R
Analysis for Non-Class 1E
120V AC & 250V DC Circuits
Appendix C

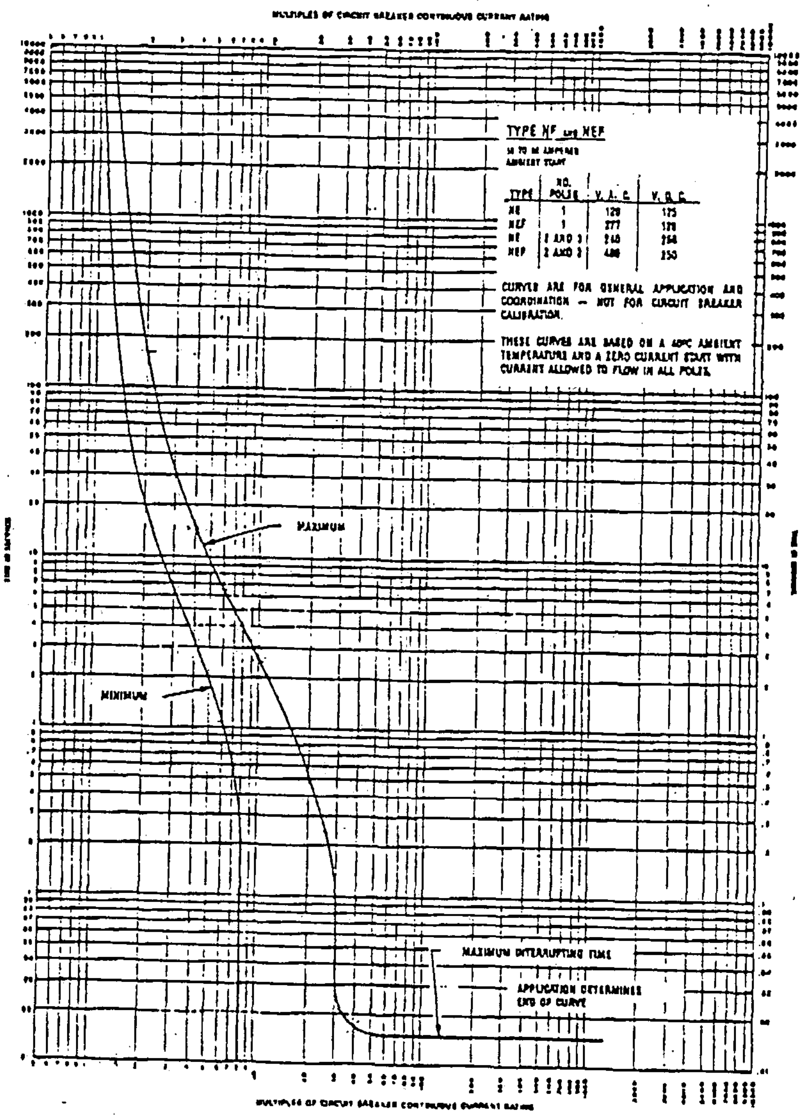
NE Calculation No. WBPEVAR9001006

SENT BY: XEROX Telecopier 7017; 4- 2-92 ; 8:49 ; 7044631299→ 615 3651142;# 8

Molded Case Circuit Breakers

Type NF and NEF

TIME-CURRENT CURVES



AMERICAN CIRCUIT BREAKER CORPORATION

3101x

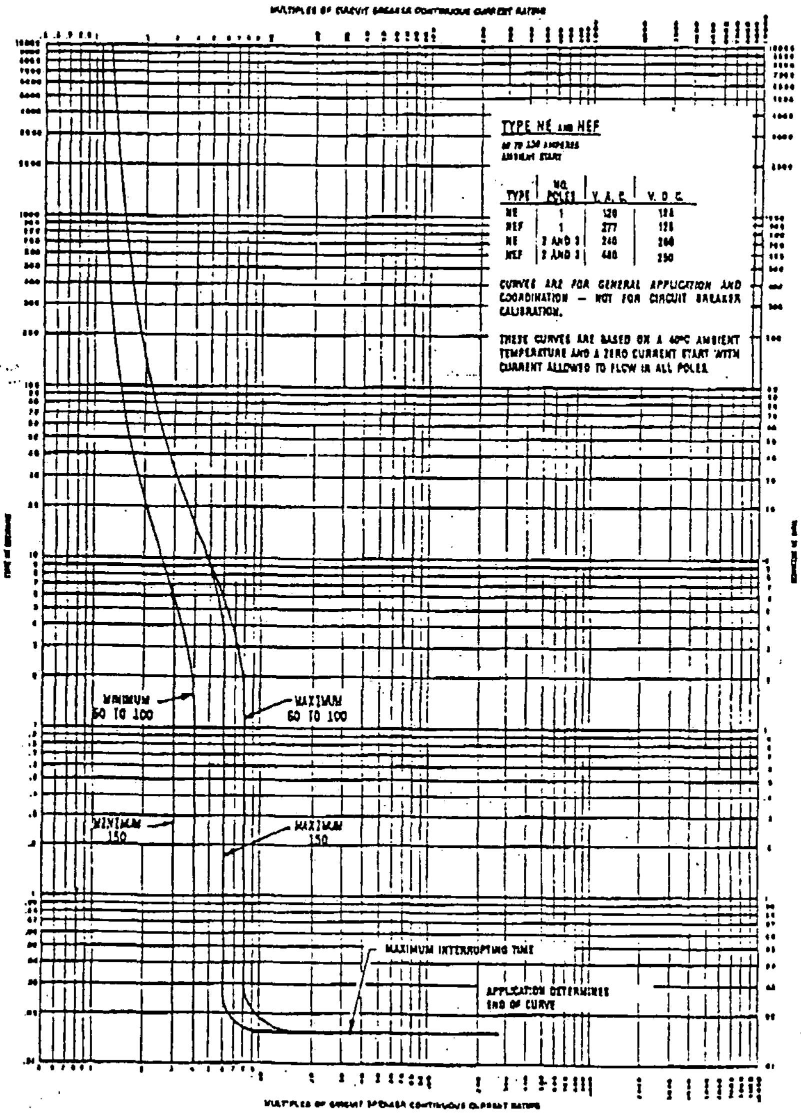
THIS PAGE ADDED BY REVISION 10

SENT BY: XEROX Telecopier 7017; 4- 2-92 ; 8:50 ; 7044631299→ 615 3651142;# 9

Molded Case Circuit Breakers

Type NE and NEF

TIME-CURRENT CURVES



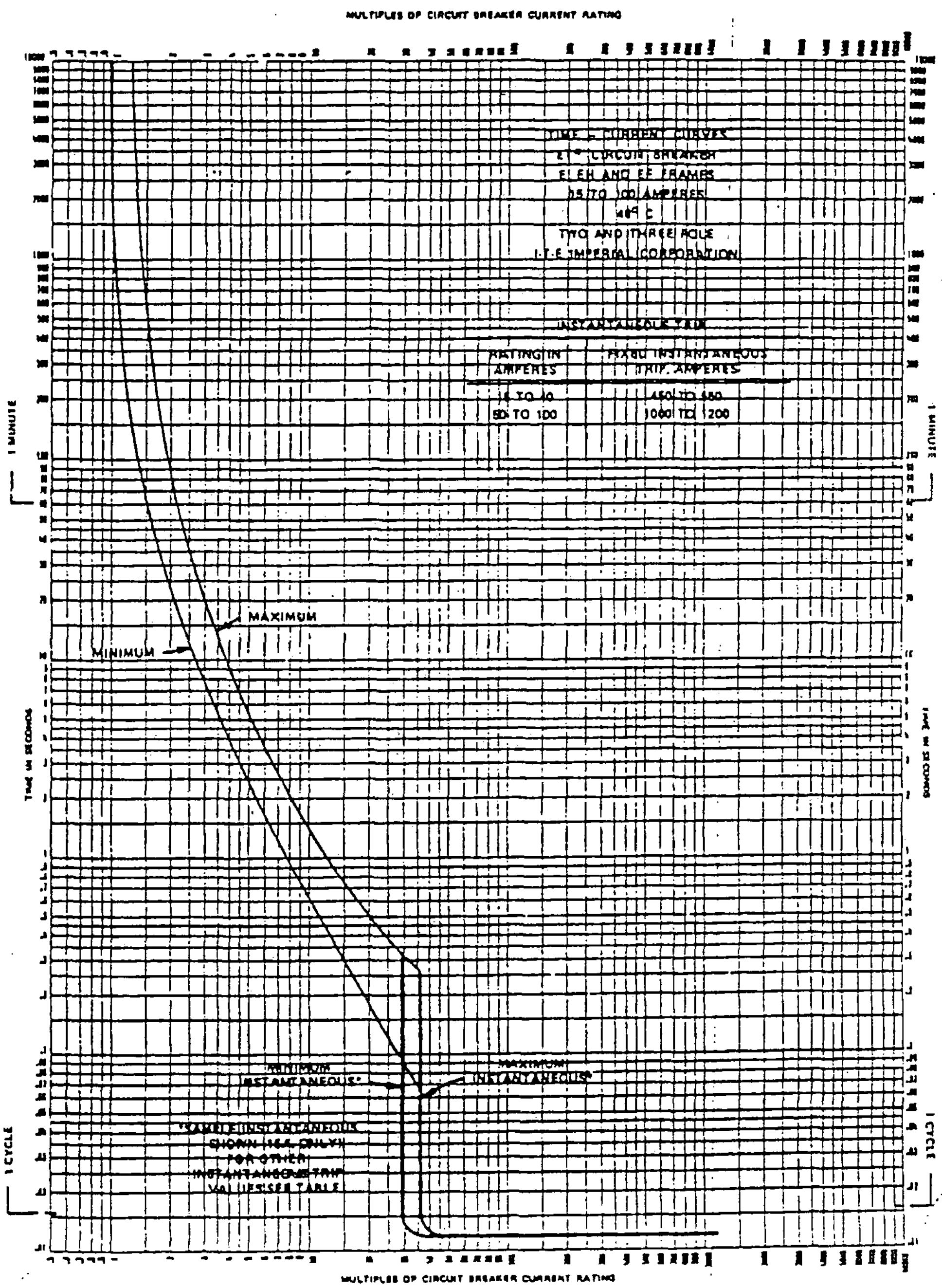
The information contained herein is general in nature and is not intended for specific construction, installation, or application purposes. ACBC reserves the right to make changes in specifications shown herein or add improvements at anytime without notice or obligation.

AMERICAN CIRCUIT BREAKER CORPORATION

04-07-1992 16:50 404 458 0879 SIEMENS INDUSTRIAL & OEM SALES P.02

MOLDED-CASE CIRCUIT BREAKERS

SECTION 2.0.3
PAGE
NOVEMBER, 19



I-T-E IMPERIAL CORPORATION
Printed in U. S. A.

LANTEK

Networking Products by GAI

12 May, 1992

Albert A. Weinstein
Burns and Roe Securacom, Inc.
700 Kinderkamack Road
Oradell, NJ 07649

Dear Al:

Regarding questions posed by Alden Wright (Ebasco) concerning power available at system interface components:

1. LIU supervised lines source a maximum of 500 µA at a maximum of 5VDC.

2. Cardreaders and keypads are powered by the LIU with onboard, current limiting regulator that come from the automotive industry. These regulators will source:

LIU-4	(MIC2954)	250mA at 5VDC
LIU-2	(LP2931)	100mA at 5VDC

   Larger current requirements cause these regulators to current limit at less than 130% as well as lower the output voltage.

3. The LIUs control Opto22 Gen4 modules to control large output devices. TVA utilization is entirely a DC output module. These modules are fused and optically isolated; they simply switch the associated output. One of two fuses is used:

TR-5-F 19373K-4A	4A fast blow
TR-5-T 19374K-3.15A	3.15A slow blow

   A data sheet for the DC5A module is inclosed.

4. PSA consists of a 750mA high accurate magnetic circuit breaker and 10VA transformer with output rated 12V @1A. The 12VDC filtered output is fused at 700mA (fastblow) for LIU input power.

5. PSS includes all of the components of PSA. The magnetic circuit breaker is increased to 2 Amp and a second power supply is added. A 55VA transformer

with output rated 24VDC (RMS, unregulated) @2.33A is provided for door solenoids, strikes, and magnetic latches. The 12VDC filtered output is also fused at 700mA (fastblow) for LIU input power.

6. Network connections are RS-485 from the VAX computers (BBQ22 and BBWireStar components) as well as LIUs. This interface limits currents to less than ±250mA at 5 VDC.

7. Terminals are connected with RS-232C. This interface limits currents to less than ±500mA at +12VDC to -12VDC.

Please call me if you have any questions.

Sincerely,

Jeffrey M. Gallup

Jeffrey M. Gallup
Systems Engineer

cc: Elio Sacoccio

11046/8-74

Appendix No.	C
Calc. No.	WBAEVAR 9001006
Page	8a of 8

RECORD OF TELEPHONE CONVERSATION

DATE 8/6/92
approx. 8:45 a.m.

TO ____________________
NAME/FILE NO.

FROM ____________________

CLIENT/PROJECT ____________________

SUBJECT Westinghouse Breakers EB1020 and EHB20

CHARGE: DEPT. NO. ________ CLIENT SYMBOL ________ OFS NO. ________

DISCUSSION WITH

Ron Marchak - Sales Engineer
Westinghouse Electrical Component Division
Phone (412) 937-6137

COMMENTS

According to Mr. Marchak,
The two breakers are the same physically and electrically except that the EHB20 has a higher interrupting current value. The breaker curves will be the same.

BY C. Wright (NAME) ESI Associate Engineer (TITLE) EE (DEPT. NO.)

CC:

THIS SHEET ADDED BY REV 10

11046/3-88

RECORD OF TELEPHONE CONVERSATION

Appendix No. C
Calc. No. WBPEVAR9001006
Page 8b of 8

DATE 8/6/92
approx. 8:30 a.m.

TO ____________________
NAME/FILE NO.

FROM ____________________

CLIENT/PROJECT ____________________

SUBJECT Heinemann Circuit Breakers GJ and GJ1P

CHARGE: DEPT. NO. ______ CLIENT SYMBOL ______ OFS NO. ______

DISCUSSION WITH

Wayne Rutherford - Regional Sales Administrator
Heinemann Electric Co.
P. O. Box 6800
Lawrenceville, N.J. 08648-0800
Phone (609) 882-4800

According to Mr. Rutherford, Heinemann makes only two breakers (as listed in the available literature for Heinemann Electric Co.) that are rated for 250 Amps: GJ series and GJ1P series.

CC:

BY A. Wright (NAME) ESI Associate Engineer (TITLE) EE (DEPT. NO.)

THIS SHEET ADDED BY REV 10

Appendix No. C
Calc. No. WBPEVAR 9001006
Page 8c of 8

HEINEMANN SERIES GJ CIRCUIT BREAKERS

Time Delay Curves and Applications

The curves shown indicate the magnitude and duration of overloads which will be tolerated before tripping occurs. By selecting the proper curve, breaker response can be closely matched to the safe operating limits of the equipment or circuitry.

Curve 1 allows the largest and most prolonged overload, needed to prevent nuisance tripping on motor circuits.

Curve 2, a medium delay, accommodates mixed loads consisting of lights, motors, and resistive heating, where the breaker is rated to the wiring instead of to any specific load.

Curve 3, permitting a very brief time delay period before tripping, is used for protection of transformers and electronic circuits.

Curves 10, 20 and 30
High-inrush — Time delays similar to Curves 1, 2 and 3 with high-inrush surge capabilities. Contact the factory for high-inrush applications.

Curve 100
High-inrush — For ferro-resonant power supplies, distribution transformers, data processing equipment, etc., which may draw starting surges as high as 3000% normal load. To accommodate brief surges of this magnitude for approximately half cycle of line current, or 8.3 millisec (long enough to get the equipment on line without tripping), high-inrush models are available. Contact the factory for high-inrush applications.

Non-time-delay breakers have no deliberately imposed delay, and will trip instantaneously at any load above 120% of rated current.

Ambient Effect on Time Delay
Breakers will hold 100% of rated current regardless of ambient temperature.

Time delay will decrease as ambient temperature is raised and increase as ambient temperature is lowered.

Tripping Specifications

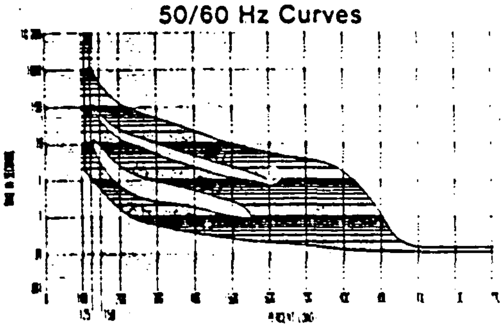
All time-delay curves shown are based on the fact that circuit breakers are not preloaded. (Breakers do not carry current prior to application of overload for calibration testing.) Curves are plotted at an ambient temperature of 77°F (25°C), with breakers in the standard wall-mount position.

All circuit breakers shall hold 100% rated load continuously. Breakers for 400 Hz operation may trip between 101% and 150% of rated load; must trip at 150% and above.

Other time-delay circuit breakers may trip between 101% and 125% of rated load; must trip at 125% and above, as shown on the time-delay curve selected.

Non-time-delay circuit breakers may trip instantaneously between 101% and 120% of rated load; must trip instantaneously at 120% and above. Non-time-delay 400 Hz breakers may trip instantaneously between 101% and 150% of rated load; must trip instantaneously at 150% and above.

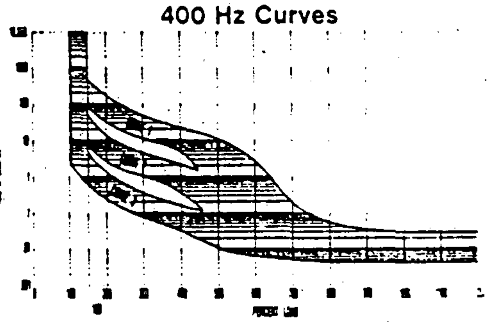
50/60 Hz Curves



Percent of rated current vs. trip delay at 25° C

%	Curve #	125%	150%	200%	400%	600%	800%	1000%
Delay Max (sec)	1	1000	330	120	20	5	1.7	05
Delay Min (sec)	1	100	48	20	4	[illegible]	013	010
Delay Max (sec)	2	95	38	12	2.0	7	2	05
Delay Min (sec)	2	13	6	2.1	46	[illegible]	013	010
Delay Max (sec)	3	7.2	2.5	65	17	[illegible]	055	045
Delay Min (sec)	3	8	4	15	032	[illegible]	[illegible]	010

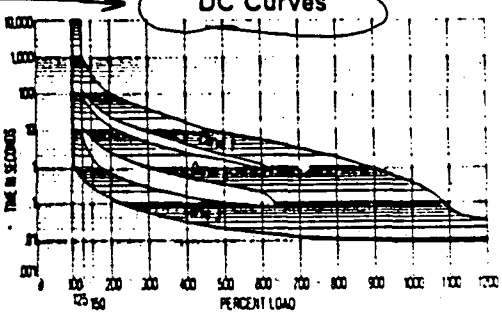
400 Hz Curves



Percent of rated current vs. trip delay at 25° C

%	Curve #	150%	200%	400%	600%	800%	1000%
Delay Max (sec)	1	480	170	20	2.7	05	028
Delay Min (sec)	1	80	30	4.3	03	[illegible]	004
Delay Max (sec)	2	60	15	2	40	015	028
Delay Min (sec)	2	7	2.5	35	02	[illegible]	004
Delay Max (sec)	3	5	1.4	15	05	[illegible]	028
Delay Min (sec)	3	6	23	03	006	004	004

DC Curves



Percent of rated current vs. trip delay at 25° C

%	Curve #	125%	150%	200%	400%	600%	800%	1000%
Delay Max (sec)	1	1100	360	150	20	6	1.7	065
Delay Min (sec)	1	110	60	22	4	1.1	02	008
Delay Max (sec)	2	110	40	15	3	8	25	055
Delay Min (sec)	2	12	6	2.5	5	18	01	008
Delay Max (sec)	3	10	2.0	8	19	08	047	038
Delay Min (sec)	3	44	25	13	03	015	01	008

THIS SHEET ADDED BY REV 10

Appendix No. C
Calc. No. WBPEVAR 9001006
Page 8d of 8

The width of the breaker is determined by the current rating.

100-225 Amps	1½" wide
250-400 Amps	3" wide
450-700 Amps	4½" wide

1. Breaker Type
2. Terminal Location:
   B = Back Connection
   H = Front Connection
3. Internal Circuit Construction (see Table A)
4. P = Without Metering Shunt
   M = With Metering Shunt
5. Terminal Configuration:
   D = Solderless Connector
   E = Bus Bar Connection
6. UL
7. Current Rating (add O before amp rating. Example: O700)
8. Curve (see Time-Delay Characteristics)

Curve	Code
1	01
2	02
3	03
P	0P

"M" is used as the second suffix to indicate the breaker is constructed with a metering shunt. Use suffix "P" only for breakers rated in excess of 250 Amps. Breakers up to 250 Amps without metering shunt are available as standard GJ1 type breakers. Please consult Heinemann Catalog, Bulletin GJ.

The fourth suffix indicates UL listing.

Multi-pole construction — consult factory.

An auxiliary switch, if supplied, will be located in the right pole space. If the auxiliary switch is supplied in a breaker which has a metering shunt, it will be single pole single throw (SPST). The single pole double throw (SPDT) auxiliary switch can be supplied only in a breaker without a metering shunt.

Table A

Code	Internal Circuit Construction
0	switch (no coil)
2*	series trip with SPDT auxiliary switch
3	series trip
98	series trip and mid trip
99	series trip and mid trip and SPST alarm switch

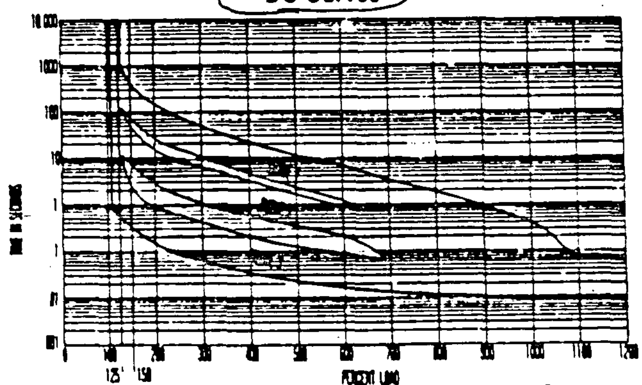
*Cannot be used on breaker containing metering shunt

Curve 3. Short Time-Delay
...permits a very brief delay period before tripping.

Curve P.
Non-Time-Delay Breakers are available for applications which cannot tolerate even brief transient overloads. These breakers have no time-delay mechanism other than that imposed by the coil self-inductance and the inertia of the mechanism.

Tripping Specifications
The time-delay curves at right depict breaker response time vs. percent of rated load with no preloading. The function is plotted at an ambient temperature of 77°F (25°C) with the breaker in a vertical or wall-mounted position. Series GJ1P circuit breakers will carry 100% of rated load continuously. Both time-delay and non-time-delay breakers may trip between 101% and 125% of rated load, and must trip at 125% and above.

DC Curves



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Attachment FIR103B
Reg. Guide 1.75 Associated
Circuits and Appendix R
Analysis for Non-Class 1E
120V AC & 250V DC Circuits
pendix D

NE Calculation No. WBPEVAR9001006

Prepared by C.V. Wright Date 7/9/92

Checked by M. Dolan Date 7/17/92

SYSTEM 250

CABLE	SIZE	POWER	SIGNAL	FUSE/BREAKER (F/BKR-AMPS)	SOURCE	PASS/FAIL
B174	1/0	48V		250(BKR)	3.5,3.35,6.8	~~Fail~~ Pass C.V.W. 8/6/92 M.D. 8/6/92
J134	18		Telephone		3.4, 6.10	Pass
J135	18		Telephone		3.4, 6.10	Pass
J136	18		Telephone		3.4, 6.10	Pass
PL6283	2/0	120VDC		EF3-B060(BKR)	3.10,3.36,3.47	Pass
T1	19		Telephone		3.4, 6.10	Pass
T200	2/0	48VDC		100(F)	3.4,3.47	Pass
T350	19		Telephone		3.4, 6.10	Pass
T351	19		Telephone		3.4, 6.10	Pass
T476	22		Telephone		3.4, 6.10	Pass
T477	22		Telephone		3.4, 6.10	Pass
T500	19		Telephone		3.4, 6.10	Pass
T600	19		Telephone		3.4, 6.10	Pass
T601	19		Telephone		3.4, 6.10	Pass
T653	19		Telephone		3.4, 6.10	Pass
T654	19		Telephone		3.4, 6.10	Pass
T655	19		Telephone		3.4, 6.10	Pass
T880	19		Telephone		3.4, 6.10	Pass
T940	19		Telephone		3.4, 6.10	Pass
[illegible]020	19		Telephone		3.4, 6.10	Pass
[illegible]100	4/0	48VDC		200 Fusetron (F)	3.5, 3.36,6.19	Pass
T1101	2	48VDC		50ECN50/FRN-R-50(F)	3.5,3.36,3.47	Pass
T1103	14		Alarm	3 Amp (F)	3.5,3.51,6.11	Pass
T1106	14		Alarm	3 Amp (F)	3.5,3.51,6.11	Pass
T1115	18		20HZ		3.4,6.9	Pass
T1116	14	24VDC		10(F)	3.5,6.4	Pass
T1117	14	48VDC		10(F)	3.5,6.4	Pass
T1120	6	120VAC		60(BKR) Hein. (CV3)	3.43, 6.17	Pass
T1140	19		Telephone		3.4, 6.10	Pass
T1180	19		Telephone		3.4, 6.10	Pass
T1181	18		Telephone		3.4, 6.10	Pass
T1375	19		Telephone		3.4, 6.10	Pass
T1376	18		Telephone		3.4, 6.10	Pass
T1377	18		Telephone		3.4, 6.10	Pass
T1378	18		Telephone		3.4, 6.10	Pass
T1379	18		Telephone		3.4, 6.10	Pass
T4764	19		Telephone		3.4, 6.10	Pass
OT4810	22		Telephone		3.4, 6.10	Pass
T4811	22		Telephone		3.4, 6.10	Pass
T4860	19		Telephone		3.4, 6.10	Pass
T5020	19		Telephone		3.4, 6.10	Pass
T5021	19		Telephone		3.4, 6.10	Pass
T5022	19		Telephone		3.4, 6.10	Pass
T5023	19		Telephone		3.4, 6.10	Pass
T5024	19SH		Telephone		3.4, 6.10	Pass
T5025	19		Telephone		3.4, 6.10	Pass
[illegible]026	19SH		Telephone		3.4, 6.10	Pass
[illegible]27	19		Telephone		3.4, 6.10	Pass
[illegible]117	22		Telephone		3.4, 6.10	Pass

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SYSTEM 250

CABLE	SIZE	POWER	SIGNAL	FUSE/BREAKER (F/BKR-AMPS)	SOURCE	PASS/FAIL
T5130	22		Telephone		3.4, 6.10	Pass
T5135	22SH		Telephone		3.4, 6.10	Pass
T5136	22SH		Telephone		3.4, 6.10	Pass
T5310	22SH		Telephone		3.4, 6.10	Pass
T5311	22SH		Telephone		3.4, 6.10	Pass
T5781	22		Telephone		3.4, 6.10	Pass
T5783	22		Telephone		3.4, 6.10	Pass
T5784	22		Telephone		3.4, 6.10	Pass
T5800	22		Telephone		3.4, 6.10	Pass
1T1	18		Telephone		3.4, 6.10	Pass
1T2	18		Telephone		3.4, 6.10	Pass
1T5	19		Telephone		3.4, 6.10	Pass
1T6	19		Telephone		3.4, 6.10	Pass
1T10	18		Telephone		3.4, 6.10	Pass
1T13	18		Telephone		3.4, 6.10	Pass
1T16	18		Telephone		3.4, 6.10	Pass
1T19	18		Telephone		3.4, 6.10	Pass
1T20	18		Telephone		3.4, 6.10	Pass
1T21	18		Telephone		3.4, 6.10	Pass
1T22	18		Telephone		3.4, 6.10	Pass
1T27	18		Telephone		3.4, 6.10	Pass
1T30	18		Telephone		3.4, 6.10	Pass
1T33	18		Telephone		3.4, 6.10	Pass
1T34	18		Telephone		3.4, 6.10	Pass
1T35	18		Telephone		3.4, 6.10	Pass
1T36	18		Telephone		3.4, 6.10	Pass
1T37	18		Telephone		3.4, 6.10	Pass
1T40	18		Telephone		3.4, 6.10	Pass
1T43	18		Telephone		3.4, 6.10	Pass
1T50	18		Telephone		3.4, 6.10	Pass
1T51	18		Telephone		3.4, 6.10	Pass
1T60	18		Telephone		3.4, 6.10	Pass
1T61	18		Telephone		3.4, 6.10	Pass
1T62	18		Telephone		3.4, 6.10	Pass
1T63	18		Telephone		3.4, 6.10	Pass
1T64	18		Telephone		3.4, 6.10	Pass
1T75	18		Telephone		3.4, 6.10	Pass
1T76	18		Telephone		3.4, 6.10	Pass
1T77	18		Telephone		3.4, 6.10	Pass
1T78	18		Telephone		3.4, 6.10	Pass
1T80	18		Telephone		3.4, 6.10	Pass
1T81	18		Telephone		3.4, 6.10	Pass
1T84	18		Telephone		3.4, 6.10	Pass
1T87	18		Telephone		3.4, 6.10	Pass
1T89	18		Telephone		3.4, 6.10	Pass
1T91	18		Telephone		3.4, 6.10	Pass
1T94	18		Telephone		3.4, 6.10	Pass
1T95	18		Telephone		3.4, 6.10	Pass

Attachment FIR103B
Reg. Guide 1.75 Associated
Circuits and Appendix R
Analysis for Non-Class 1E
120V AC & 250V DC Circuits
Appendix D

NE Calculation No. WBPEVAR9001006

Prepared by C.H. Wright Date 7/9/92

Checked by [illegible] Date 7/16/92

SYSTEM 250

CABLE	SIZE	POWER	SIGNAL	FUSE/BREAKER (F/BKR-AMPS)	SOURCE	PASS/FAIL
1T96	18		Telephone		3.4, 6.10	Pass
1T100	18		Telephone		3.4, 6.10	Pass
1T101	18		Telephone		3.4, 6.10	Pass
1T104	18		Telephone		3.4, 6.10	Pass
1T107	18		Telephone		3.4, 6.10	Pass
1T108	18		Telephone		3.4, 6.10	Pass
1T110	18		Relay		3.4, 6.10	Pass
1T111	18		Telephone		3.4, 6.10	Pass
1T112	12		Bell		3.4, 6.10	Pass
1T113	12		Light		3.4, 6.10	Pass
1T115	18		Telephone		3.4, 6.10	Pass
1T118	18		Telephone		3.4, 6.10	Pass
1T119	18		Telephone		3.4, 6.10	Pass
1T120	18		Telephone		3.4, 6.10	Pass
1T121	18		Telephone		3.4, 6.10	Pass
1T125	18		Telephone		3.4, 6.10	Pass
1T128	18		Relay		3.4, 6.10	Pass
1T129	18		Telephone		3.4, 6.10	Pass
1T130	12		Bell		3.4, 6.10	Pass
1T131	12		Light		3.4, 6.10	Pass
1T132	18		Telephone		3.4, 6.10	Pass
1T135	18		Telephone		3.4, 6.10	Pass
1T138	18		Telephone		3.4, 6.10	Pass
1T139	18		Telephone		3.4, 6.10	Pass
1T140	18		Telephone		3.4, 6.10	Pass
1T141	18		Telephone		3.4, 6.10	Pass
1T145	18		Telephone		3.4, 6.10	Pass
1T148	18		Telephone		3.4, 6.10	Pass
1T149	18		Telephone		3.4, 6.10	Pass
1T152	19		Telephone		3.4, 6.10	Pass
1T153	19		Telephone		3.4, 6.10	Pass
1T162	19		Telephone		3.4, 6.10	Pass
1T163	19		Telephone		3.4, 6.10	Pass
1T170	18		Telephone		3.4, 6.10	Pass
1T171	18		Telephone		3.4, 6.10	Pass
1T175	18		Telephone		3.4, 6.10	Pass
1T180	18		Telephone		3.4, 6.10	Pass
1T181	18		Telephone		3.4, 6.10	Pass
1T185	18		Telephone		3.4, 6.10	Pass
1T190	18		Telephone		3.4, 6.10	Pass
1T191	18		Telephone		3.4, 6.10	Pass
1T195	18		Telephone		3.4, 6.10	Pass
1T200	18		Telephone		3.4, 6.10	Pass
1T201	18		Telephone		3.4, 6.10	Pass
1T205	18		Telephone		3.4, 6.10	Pass
1T206	18		Telephone		3.4, 6.10	Pass
1T208	18		Telephone		3.4, 6.10	Pass
1T209	18		Telephone		3.4, 6.10	Pass
1T215	18		Telephone		3.4, 6.10	Pass

THIS PAGE ADDED BY REVISION 10

SYSTEM 250

CABLE	SIZE	POWER	SIGNAL	FUSE/BREAKER (F/BKR-AMPS)	SOURCE	PASS/FAIL
1T216	18		Telephone		3.4, 6.10	Pass
1T220	18		Telephone		3.4, 6.10	Pass
1T221	18		Telephone		3.4, 6.10	Pass
1T222	18		Telephone		3.4, 6.10	Pass
1T223	18		Telephone		3.4, 6.10	Pass
1T230	18		Telephone		3.4, 6.10	Pass
1T231	18		Telephone		3.4, 6.10	Pass
1T232	18		Telephone		3.4, 6.10	Pass
1T233	18		Telephone		3.4, 6.10	Pass
1T234	18		Telephone		3.4, 6.10	Pass
1T235	18		Telephone		3.4, 6.10	Pass
1T236	18		Telephone		3.4, 6.10	Pass
1T246	18		Telephone		3.4, 6.10	Pass
1T247	18		Telephone		3.4, 6.10	Pass
1T250	18		Telephone		3.4, 6.10	Pass
1T251	18		Telephone		3.4, 6.10	Pass
1T252	18		Telephone		3.4, 6.10	Pass
1T253	18		Telephone		3.4, 6.10	Pass
1T254	18		Telephone		3.4, 6.10	Pass
1T255	18		Telephone		3.4, 6.10	Pass
1T256	18		Telephone		3.4, 6.10	Pass
1T257	18		Telephone		3.4, 6.10	Pass
1T258	18		Telephone		3.4, 6.10	Pass
1T259	18		Telephone		3.4, 6.10	Pass
1T270*	18		Telephone		3.4, 6.10	Pass
1T271	18		Telephone		3.4, 6.10	Pass
1T280	18		Telephone		3.4, 6.10	Pass
1T283	18		Telephone		3.4, 6.10	Pass
1T284	18		Telephone		3.4, 6.10	Pass
1T287	18		Telephone		3.4, 6.10	Pass
1T305*	18		Telephone		3.4, 6.10	Pass
1T306	18		Telephone		3.4, 6.10	Pass
1T310	18		Relay		3.4, 6.10	Pass
1T311	18		Telephone		3.4, 6.10	Pass
1T312	12		Bell		3.4, 6.10	Pass
1T313	12		Light		3.4, 6.10	Pass
1T315	18		Telephone		3.4, 6.10	Pass

* A sequence of cables is out of order and is present elsewhere for System 250.

Prepared by A. Wright Date 7/9/92

Checked by [signature] Date 7/16/92

SYSTEM 250

CABLE	SIZE	POWER	SIGNAL	FUSE/BREAKER (F/BKR-AMPS)	SOURCE	PASS/FAIL
1T316	18		Telephone		3.4, 6.10	Pass
1T320	18		Telephone		3.4, 6.10	Pass
1T321	18		Relay		3.4, 6.10	Pass
1T322	18		Telephone		3.4, 6.10	Pass
1T323	12		Bell		3.4, 6.10	Pass
1T324	12		Light		3.4, 6.10	Pass
1T325	18		Telephone		3.4, 6.10	Pass
1T330	18		Telephone		3.4, 6.10	Pass
1T331	18		Telephone		3.4, 6.10	Pass
1T332	18		Telephone		3.4, 6.10	Pass
1T333	18		Telephone		3.4, 6.10	Pass
1T335	18		Telephone		3.4, 6.10	Pass
1T336	18		Telephone		3.4, 6.10	Pass
1T337	18		Telephone		3.4, 6.10	Pass
1T339	18		Telephone		3.4, 6.10	Pass
1T381	18		Telephone		3.4, 6.10	Pass
1T383	19		Telephone		3.4, 6.10	Pass
1T385	18		Telephone		3.4, 6.10	Pass
1T386	18		Telephone		3.4, 6.10	Pass
1T387	18		Telephone		3.4, 6.10	Pass
1T388	18		Telephone		3.4, 6.10	Pass
1T389	18		Telephone		3.4, 6.10	Pass
1T392	18		Telephone		3.4, 6.10	Pass
1T393	18		Telephone		3.4, 6.10	Pass
1T395	18		Telephone		3.4, 6.10	Pass
1T396	18		Telephone		3.4, 6.10	Pass
1T397	18		Telephone		3.4, 6.10	Pass
1T398	18		Telephone		3.4, 6.10	Pass
1T399	18		Telephone		3.4, 6.10	Pass
1T402	18		Telephone		3.4, 6.10	Pass
1T403	18		Telephone		3.4, 6.10	Pass
1T405	18		Telephone		3.4, 6.10	Pass
1T406	18		Telephone		3.4, 6.10	Pass
1T408	18		Telephone		3.4, 6.10	Pass
1T409	18		Telephone		3.4, 6.10	Pass
1T412	18		Telephone		3.4, 6.10	Pass
1T413	18		Telephone		3.4, 6.10	Pass
1T415	18		Telephone		3.4, 6.10	Pass
1T416	18		Telephone		3.4, 6.10	Pass
1T417	18		Telephone		3.4, 6.10	Pass
1T420	18		Telephone		3.4, 6.10	Pass
1T421	18		Telephone		3.4, 6.10	Pass
1T422	18		Telephone		3.4, 6.10	Pass
1T423	18		Telephone		3.4, 6.10	Pass
1T424	18		Telephone		3.4, 6.10	Pass
1T475	19		Telephone		3.4, 6.10	Pass
1T701	22		Telephone		3.4, 6.10	Pass

SYSTEM 250

CABLE	SIZE	POWER	SIGNAL	FUSE/BREAKER (F/BKR-AMPS)	SOURCE	PASS/FAIL
1T800	18		Telephone		3.4, 6.10	Pass
1T801	18		Telephone		3.4, 6.10	Pass
1T820	18		Telephone		3.4, 6.10	Pass
1T861	19		Telephone		3.4, 6.10	Pass
1T862	19		Telephone		3.4, 6.10	Pass
1T865	18		Telephone		3.4, 6.10	Pass
1T867	18		Telephone		3.4, 6.10	Pass
1T868	18		Telephone		3.4, 6.10	Pass
1T871	18		Telephone		3.4, 6.10	Pass
1T872	18		Telephone		3.4, 6.10	Pass
1T886	18		Telephone		3.4, 6.10	Pass
1T890	18		Telephone		3.4, 6.10	Pass
1T893	18		Telephone		3.4, 6.10	Pass
1T900	18		Telephone		3.4, 6.10	Pass
1T901	18		Telephone		3.4, 6.10	Pass
1T902	18		Telephone		3.4, 6.10	Pass
1T903	18		Telephone		3.4, 6.10	Pass
1T904	18		Telephone		3.4, 6.10	Pass
1T905	18		Telephone		3.4, 6.10	Pass
1T909	18		Telephone		3.4, 6.10	Pass
1T910	19		Telephone		3.4, 6.10	Pass
1T914	18		Telephone		3.4, 6.10	Pass
1T923*	18		Telephone		3.4, 6.10	Pass
1T924	18		Telephone		3.4, 6.10	Pass
1T927	18		Telephone		3.4, 6.10	Pass
1T928	18		Telephone		3.4, 6.10	Pass
1T930	18		Telephone		3.4, 6.10	Pass
1T935	18		Telephone		3.4, 6.10	Pass
1T940	18		Telephone		3.4, 6.10	Pass
1T941	18		Telephone		3.4, 6.10	Pass
1T948	19		Telephone		3.4, 6.10	Pass
1T955	18		Telephone		3.4, 6.10	Pass
1T956	18		Telephone		3.4, 6.10	Pass
1T957	18		Telephone		3.4, 6.10	Pass
1T960	18		Telephone		3.4, 6.10	Pass
1T961	18		Telephone		3.4, 6.10	Pass
1T970	18		Telephone		3.4, 6.10	Pass
1T972	18		Telephone		3.4, 6.10	Pass
1T985	18		Telephone		3.4, 6.10	Pass
1T993	18		Telephone		3.4, 6.10	Pass
1T996	18		Telephone		3.4, 6.10	Pass
1T997	18		Telephone		3.4, 6.10	Pass
1T1000	18		Telephone		3.4, 6.10	Pass
1T1001	18		Telephone		3.4, 6.10	Pass
1T1010	18		Telephone		3.4, 6.10	Pass
1T1015	18		Telephone		3.4, 6.10	Pass
1T1016	18		Telephone		3.4, 6.10	Pass

*A sequence of cables is out of order and is present elsewhere for System 250.

Attachment FIR103B
Reg. Guide 1.75 Associated
Circuits and Appendix R
Analysis for Non-Class 1E
120V AC & 250V DC Circuits
Appendix D

NE Calculation No. WBPEVAR9001006

Prepared by C.H. Wright Date 7/9/92

Checked by M. DoYac Date 7/17/92

SYSTEM 250

CABLE	SIZE	POWER	SIGNAL	FUSE/BREAKER (F/BKR-AMPS)	SOURCE	PASS/FAIL
1T1017	18		Telephone		3.4, 6.10	Pass
1T1030	18		Telephone		3.4, 6.10	Pass
1T1031	18		Telephone		3.4, 6.10	Pass
1T1032	18		Telephone		3.4, 6.10	Pass
1T1033	18		Telephone		3.4, 6.10	Pass
1T1041	18		Telephone		3.4, 6.10	Pass
1T1045	18		Telephone		3.4, 6.10	Pass
1T1051	18		Telephone		3.4, 6.10	Pass
1T1055	18		Telephone		3.4, 6.10	Pass
1T1056	18		Telephone		3.4, 6.10	Pass
1T1080	19		Telephone		3.4, 6.10	Pass
1T1081	19		Telephone		3.4, 6.10	Pass
1T1082	18		Telephone		3.4, 6.10	Pass
1T1083	18		Telephone		3.4, 6.10	Pass
1T1084	18		Telephone		3.4, 6.10	Pass
1T1085	18		Telephone		3.4, 6.10	Pass
1T1102	18		Telephone		3.4, 6.10	Pass
1T1103	18		Telephone		3.4, 6.10	Pass
1T1104	18		Telephone		3.4, 6.10	Pass
1T1105	18		Telephone		3.4, 6.10	Pass
1T1106	18		Telephone		3.4, 6.10	Pass
1T1107	18		Telephone		3.4, 6.10	Pass
1T1108	18		Telephone		3.4, 6.10	Pass
1T1109	18		Telephone		3.4, 6.10	Pass
1T1110	18		Telephone		3.4, 6.10	Pass
1T1111	18		Telephone		3.4, 6.10	Pass
1T1112	18		Telephone		3.4, 6.10	Pass
1T1113	18		Telephone		3.4, 6.10	Pass
1T1114	18		Telephone		3.4, 6.10	Pass
1T1115	18		Telephone		3.4, 6.10	Pass
1T1116	18		Telephone		3.4, 6.10	Pass
1T1117	18		Telephone		3.4, 6.10	Pass
1T1086	18		Telephone		3.4, 6.10	Pass
1T1087	18		Telephone		3.4, 6.10	Pass
1T1088	18		Telephone		3.4, 6.10	Pass
1T1089	18		Telephone		3.4, 6.10	Pass
1T1090	18		Telephone		3.4, 6.10	Pass
1T1091	18		Telephone		3.4, 6.10	Pass
1T1092	18		Telephone		3.4, 6.10	Pass
1T1093	18		Telephone		3.4, 6.10	Pass
1T1094	18		Telephone		3.4, 6.10	Pass
1T1095	18		Telephone		3.4, 6.10	Pass
1T1096	18		Telephone		3.4, 6.10	Pass
1T1097	18		Telephone		3.4, 6.10	Pass
1T1098	18		Telephone		3.4, 6.10	Pass
1T1099	18		Telephone		3.4, 6.10	Pass
1T1100	18		Telephone		3.4, 6.10	Pass
1T1101	18		Telephone		3.4, 6.10	Pass

SYSTEM 250

CABLE	SIZE	POWER	SIGNAL	FUSE/BREAKER (F/BKR-AMPS)	SOURCE	PASS/FAIL

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Attachment FIR103B
Reg. Guide 1.75 Associated
Circuits and Appendix R
Analysis for Non-Class 1E
120V AC & 250V DC Circuits
Appendix D

NE Calculation No. WBPEVAR9001006

Prepared by C. Wright Date 7/9/92

Checked by M. Doyai Date 7/17/92

SYSTEM 250

CABLE	SIZE	POWER	SIGNAL	FUSE/BREAKER (F/BKR-AMPS)	SOURCE	PASS/FAIL
1T1118	18		Telephone		3.4, 6.10	Pass
1T1119	18		Telephone		3.4, 6.10	Pass
1T1120	18		Telephone		3.4, 6.10	Pass
1T1121	18		Telephone		3.4, 6.10	Pass
1T1122	18		Telephone		3.4, 6.10	Pass
1T1123	18		Telephone		3.4, 6.10	Pass
1T1124	18		Telephone		3.4, 6.10	Pass
1T1125	18		Telephone		3.4, 6.10	Pass
1T1126	19		Telephone		3.4, 6.10	Pass
1T1127	19		Telephone		3.4, 6.10	Pass
1T1128	18		Telephone		3.4, 6.10	Pass
1T1129	12		Bell		3.4, 6.10	Pass
1T1130	12		Light		3.4, 6.10	Pass
1T1540	22		Telephone		3.4, 6.10	Pass
2PL6668	12	120V		15(BKR) Hein. CF	3.38,3.2,6.16	Pass
2T3	19		Telephone		3.4, 6.10	Pass
2T10	18		Telephone		3.4, 6.10	Pass
2T11	18		Telephone		3.4, 6.10	Pass
2T13	18		Telephone		3.4, 6.10	Pass
2T15	18		Telephone		3.4, 6.10	Pass
2T16	18		Telephone		3.4, 6.10	Pass
2T17	18		Telephone		3.4, 6.10	Pass
2T18	18		Telephone		3.4, 6.10	Pass
2T19	18		Telephone		3.4, 6.10	Pass
2T20	18		Telephone		3.4, 6.10	Pass
2T23	18		Telephone		3.4, 6.10	Pass
2T31	18		Telephone		3.4, 6.10	Pass
2T35	18		Telephone		3.4, 6.10	Pass
2T36	18		Telephone		3.4, 6.10	Pass
2T37	18		Telephone		3.4, 6.10	Pass
2T39	18		Telephone		3.4, 6.10	Pass
2T42	18		Telephone		3.4, 6.10	Pass
2T43	18		Telephone		3.4, 6.10	Pass
2T46	18		Telephone		3.4, 6.10	Pass
2T50	18		Telephone		3.4, 6.10	Pass
2T55	18		Telephone		3.4, 6.10	Pass
2T56	18		Telephone		3.4, 6.10	Pass
2T57	18		Telephone		3.4, 6.10	Pass
2T60	18		Telephone		3.4, 6.10	Pass
2T61	18		Telephone		3.4, 6.10	Pass
2T65	18		Telephone		3.4, 6.10	Pass
2T66	18		Telephone		3.4, 6.10	Pass
2T70	18		Telephone		3.4, 6.10	Pass
2T75	18		Telephone		3.4, 6.10	Pass
2T80	18		Telephone		3.4, 6.10	Pass
2T81	18		Telephone		3.4, 6.10	Pass
2T102	19		Telephone		3.4, 6.10	Pass
2T110	18		Telephone		3.4, 6.10	Pass

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SYSTEM 250

CABLE	SIZE	POWER	SIGNAL	FUSE/BREAKER (F/BKR-AMPS)	SOURCE	PASS/FAIL
2T111	18		Telephone		3.4, 6.10	Pass
2T114	18		Telephone		3.4, 6.10	Pass
2T117	18		Telephone		3.4, 6.10	Pass
2T120	18		Telephone		3.4, 6.10	Pass
2T121	18		Telephone		3.4, 6.10	Pass
2T122	18		Telephone		3.4, 6.10	Pass
2T125	18		Telephone		3.4, 6.10	Pass
2T128	18		Telephone		3.4, 6.10	Pass
2T129	18		Telephone		3.4, 6.10	Pass
2T132	18		Telephone		3.4, 6.10	Pass
2T134	18		Telephone		3.4, 6.10	Pass
2T135	18		Telephone		3.4, 6.10	Pass
2T139	18		Telephone		3.4, 6.10	Pass
2T140	18		Telephone		3.4, 6.10	Pass
2T141	18		Telephone		3.4, 6.10	Pass
2T145	18		Telephone		3.4, 6.10	Pass
2T146	18		Telephone		3.4, 6.10	Pass
2T148	18		Telephone		3.4, 6.10	Pass
2T150	18		Telephone		3.4, 6.10	Pass
2T151	18		Telephone		3.4, 6.10	Pass
2T153	18		Telephone		3.4, 6.10	Pass
2T155	18		Telephone		3.4, 6.10	Pass
2T157	18		Telephone		3.4, 6.10	Pass
2T162	19		Telephone		3.4, 6.10	Pass
2T165	18		Telephone		3.4, 6.10	Pass
2T172	18		Telephone		3.4, 6.10	Pass
2T180	18		Telephone		3.4, 6.10	Pass
2T181	18		Telephone		3.4, 6.10	Pass
2T182	18		Telephone		3.4, 6.10	Pass
2T183	18		Telephone		3.4, 6.10	Pass
2T185	18		Telephone		3.4, 6.10	Pass
2T190	18		Telephone		3.4, 6.10	Pass
2T191	18		Telephone		3.4, 6.10	Pass
2T194	18		Telephone		3.4, 6.10	Pass
2T195	18		Telephone		3.4, 6.10	Pass
2T196	18		Telephone		3.4, 6.10	Pass
2T197	18		Telephone		3.4, 6.10	Pass
2T199	18		Telephone		3.4, 6.10	Pass
2T200	18		Telephone		3.4, 6.10	Pass
2T201	18		Telephone		3.4, 6.10	Pass
2T202	18		Telephone		3.4, 6.10	Pass
2T203	18		Telephone		3.4, 6.10	Pass
2T204	18		Telephone		3.4, 6.10	Pass
2T205	18		Telephone		3.4, 6.10	Pass
2T210	18		Telephone		3.4, 6.10	Pass

SYSTEM 250

CABLE	SIZE	POWER	SIGNAL	FUSE/BREAKER (F/BKR-AMPS)	SOURCE	PASS/FAIL
2T211	18		Telephone		3.4, 6.10	Pass
2T215	18		Telephone		3.4, 6.10	Pass
2T220	18		Telephone		3.4, 6.10	Pass
2T221	18		Telephone		3.4, 6.10	Pass
2T225	18		Telephone		3.4, 6.10	Pass
2T227	18		Telephone		3.4, 6.10	Pass
2T230	18		Telephone		3.4, 6.10	Pass
2T231	18		Telephone		3.4, 6.10	Pass
2T232	18		Telephone		3.4, 6.10	Pass
2T233	18		Telephone		3.4, 6.10	Pass
2T234	18		Telephone		3.4, 6.10	Pass
2T235	18		Telephone		3.4, 6.10	Pass
2T245	18		Telephone		3.4, 6.10	Pass
2T246	18		Telephone		3.4, 6.10	Pass
2T250	18		Telephone		3.4, 6.10	Pass
2T251	18		Telephone		3.4, 6.10	Pass
2T255	18		Telephone		3.4, 6.10	Pass
2T280	18		Telephone		3.4, 6.10	Pass
2T281	18		Telephone		3.4, 6.10	Pass
2T285	18		Telephone		3.4, 6.10	Pass
2T286	18		Telephone		3.4, 6.10	Pass
2T287	18		Telephone		3.4, 6.10	Pass
2T288	18		Telephone		3.4, 6.10	Pass
2T289	18		Telephone		3.4, 6.10	Pass
2T295	18		Telephone		3.4, 6.10	Pass
2T296	18		Telephone		3.4, 6.10	Pass
2T297	18		Telephone		3.4, 6.10	Pass
2T298	18		Telephone		3.4, 6.10	Pass
2T302	18		Relay		3.4, 6.10	Pass
2T303	18		Telephone		3.4, 6.10	Pass
2T304	12		Bell		3.4, 6.10	Pass
2T305	12		Light		3.4, 6.10	Pass
2T307	18		Telephone		3.4, 6.10	Pass
2T308	18		Telephone		3.4, 6.10	Pass
2T309	18		Telephone		3.4, 6.10	Pass
2T312	18		Telephone		3.4, 6.10	Pass
2T316	18		Telephone		3.4, 6.10	Pass
2T317	18		Telephone		3.4, 6.10	Pass
2T321	18		Telephone		3.4, 6.10	Pass
2T322	18		Telephone		3.4, 6.10	Pass
2T325	18		Telephone		3.4, 6.10	Pass
2T326	18		Telephone		3.4, 6.10	Pass
2T327	18		Telephone		3.4, 6.10	Pass
2T331	18		Telephone		3.4, 6.10	Pass
2T335	18		Telephone		3.4, 6.10	Pass
2T383	19		Telephone		3.4, 6.10	Pass
2T385	18		Telephone		3.4, 6.10	Pass
2T386	18		Telephone		3.4, 6.10	Pass

SYSTEM 250

CABLE	SIZE	POWER	SIGNAL	FUSE/BREAKER (F/BKR-AMPS)	SOURCE	PASS/FAIL
2T387	18		Telephone		3.4, 6.10	Pass
2T388	18		Telephone		3.4, 6.10	Pass
2T389	18		Telephone		3.4, 6.10	Pass
2T392	18		Telephone		3.4, 6.10	Pass
2T393	18		Telephone		3.4, 6.10	Pass
2T395	18		Telephone		3.4, 6.10	Pass
2T396	18		Telephone		3.4, 6.10	Pass
2T397	18		Telephone		3.4, 6.10	Pass
2T398	18		Telephone		3.4, 6.10	Pass
2T399	18		Telephone		3.4, 6.10	Pass
2T402	18		Telephone		3.4, 6.10	Pass
2T403	18		Telephone		3.4, 6.10	Pass
2T405	18		Telephone		3.4, 6.10	Pass
2T406	18		Telephone		3.4, 6.10	Pass
2T408	18		Telephone		3.4, 6.10	Pass
2T409	18		Telephone		3.4, 6.10	Pass
2T412	18		Telephone		3.4, 6.10	Pass
2T413	18		Telephone		3.4, 6.10	Pass
2T415	18		Telephone		3.4, 6.10	Pass
2T416	18		Telephone		3.4, 6.10	Pass
2T417	18		Telephone		3.4, 6.10	Pass
2T420	18		Telephone		3.4, 6.10	Pass
2T421	18		Telephone		3.4, 6.10	Pass
2T422	18		Telephone		3.4, 6.10	Pass
2T423	18		Telephone		3.4, 6.10	Pass
2T424	18		Telephone		3.4, 6.10	Pass
2T475	19		Telephone		3.4, 6.10	Pass
2T800	18		Telephone		3.4, 6.10	Pass
2T801	18		Telephone		3.4, 6.10	Pass
2T820	22 SH		Telephone		3.4, 6.10	Pass
2T841	22		Telephone		3.4, 6.10	Pass
2T842	22		Telephone		3.4, 6.10	Pass
2T843	19		Telephone		3.4, 6.10	Pass
2T845	19		Telephone		3.4, 6.10	Pass
2T850	18		Telephone		3.4, 6.10	Pass
2T851	18		Telephone		3.4, 6.10	Pass
2T852	18		Telephone		3.4, 6.10	Pass
2T860	18		Telephone		3.4, 6.10	Pass
2T863	18		Telephone		3.4, 6.10	Pass
2T864	18		Telephone		3.4, 6.10	Pass
2T865	18		Telephone		3.4, 6.10	Pass
2T866	18		Telephone		3.4, 6.10	Pass
2T867	18		Telephone		3.4, 6.10	Pass
2T870	18		Telephone		3.4, 6.10	Pass
2T871	18		Telephone		3.4, 6.10	Pass
2T872	18		Telephone		3.4, 6.10	Pass
2T879	18		Telephone		3.4, 6.10	Pass
2T880	18		Telephone		3.4, 6.10	Pass

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SYSTEM 250

CABLE	SIZE	POWER	SIGNAL	FUSE/BREAKER (F/BKR-AMPS)	SOURCE	PASS/FAIL
2T882	18		Telephone		3.4, 6.10	Pass
2T883	18		Telephone		3.4, 6.10	Pass
2T884	18		Telephone		3.4, 6.10	Pass
2T887	18		Telephone		3.4, 6.10	Pass
2T888	18		Telephone		3.4, 6.10	Pass
2T889	18		Telephone		3.4, 6.10	Pass
2T892	18		Telephone		3.4, 6.10	Pass
2T893	18		Telephone		3.4, 6.10	Pass
2T895	18		Telephone		3.4, 6.10	Pass
2T896	18		Telephone		3.4, 6.10	Pass
2T897	18		Telephone		3.4, 6.10	Pass
2T898	18		Telephone		3.4, 6.10	Pass
2T899	18		Telephone		3.4, 6.10	Pass
2T900	18		Telephone		3.4, 6.10	Pass
2T901	18		Telephone		3.4, 6.10	Pass
2T902	18		Telephone		3.4, 6.10	Pass
2T903	18		Telephone		3.4, 6.10	Pass
2T904	18		Telephone		3.4, 6.10	Pass
2T905	19		Telephone		3.4, 6.10	Pass
[illegible]16	18		Telephone		3.4, 6.10	Pass
[illegible]25	19		Telephone		3.4, 6.10	Pass
2T928	18		Telephone		3.4, 6.10	Pass
2T929	18		Telephone		3.4, 6.10	Pass
2T930	18		Telephone		3.4, 6.10	Pass
2T935	18		Telephone		3.4, 6.10	Pass
2T936	18		Telephone		3.4, 6.10	Pass
2T940	18		Telephone		3.4, 6.10	Pass
2T941	18		Telephone		3.4, 6.10	Pass
2T942	18		Telephone		3.4, 6.10	Pass
2T943	18		Telephone		3.4, 6.10	Pass
2T945	18		Telephone		3.4, 6.10	Pass
2T947	18		Telephone		3.4, 6.10	Pass
2T950	18		Telephone		3.4, 6.10	Pass
2T955	18		Telephone		3.4, 6.10	Pass
2T962	18		Telephone		3.4, 6.10	Pass
2T963	18		Telephone		3.4, 6.10	Pass
2T966	18		Telephone		3.4, 6.10	Pass
2T969	18		Telephone		3.4, 6.10	Pass
2T970	18		Telephone		3.4, 6.10	Pass
2T980	24		Telephone		3.4, 6.10	Pass
2T981	18		Telephone		3.4, 6.10	Pass
2T982	18		Telephone		3.4, 6.10	Pass
2T999	18		Telephone		3.4, 6.10	Pass
2T1000	22		Telephone		3.4, 6.10	Pass
2T1002	19		Telephone		3.4, 6.10	Pass
2T1010	19		Telephone		3.4, 6.10	Pass
[illegible]012	19		Telephone		3.4, 6.10	Pass

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SYSTEM 250

CABLE	SIZE	POWER	SIGNAL	FUSE/BREAKER (F/BKR-AMPS)	SOURCE	PASS/FAIL
2T1080	19		Telephone		3.4, 6.10	Pass
2T1081	19		Telephone		3.4, 6.10	Pass
2T1082	18		Telephone		3.4, 6.10	Pass
2T1083	18		Telephone		3.4, 6.10	Pass
2T1084	18		Telephone		3.4, 6.10	Pass
2T1085	18		Telephone		3.4, 6.10	Pass
2T1086	18		Telephone		3.4, 6.10	Pass
2T1087	18		Telephone		3.4, 6.10	Pass
2T1088	18		Telephone		3.4, 6.10	Pass
2T1089	18		Telephone		3.4, 6.10	Pass
2T1090	18		Telephone		3.4, 6.10	Pass
2T1091	18		Telephone		3.4, 6.10	Pass
2T1092	18		Telephone		3.4, 6.10	Pass
2T1093	18		Telephone		3.4, 6.10	Pass
2T1094	18		Telephone		3.4, 6.10	Pass
2T1095	18		Telephone		3.4, 6.10	Pass
2T1096	18		Telephone		3.4, 6.10	Pass
2T1097	18		Telephone		3.4, 6.10	Pass
2T1098	18		Telephone		3.4, 6.10	Pass
2T1099	18		Telephone		3.4, 6.10	Pass
2T1100	18		Telephone		3.4, 6.10	Pass
2T1101	18		Telephone		3.4, 6.10	Pass
2T1102	18		Telephone		3.4, 6.10	Pass
2T1103	18		Telephone		3.4, 6.10	Pass
2T1104	18		Telephone		3.4, 6.10	Pass
2T1105	18		Telephone		3.4, 6.10	Pass
2T1106	18		Telephone		3.4, 6.10	Pass
2T1107	18		Telephone		3.4, 6.10	Pass
2T1108	18		Telephone		3.4, 6.10	Pass
2T1109	18		Telephone		3.4, 6.10	Pass
2T1110	18		Telephone		3.4, 6.10	Pass
2T1111	18		Telephone		3.4, 6.10	Pass
2T1112	18		Telephone		3.4, 6.10	Pass
2T1113	18		Telephone		3.4, 6.10	Pass
2T1114	18		Telephone		3.4, 6.10	Pass
2T1115	18		Telephone		3.4, 6.10	Pass
2T1116	18		Telephone		3.4, 6.10	Pass
2T1117	18		Telephone		3.4, 6.10	Pass
2T1118	18		Telephone		3.4, 6.10	Pass
2T1119	18		Telephone		3.4, 6.10	Pass
2T1120	18		Telephone		3.4, 6.10	Pass
2T1121	18		Telephone		3.4, 6.10	Pass
2T1122	18		Telephone		3.4, 6.10	Pass
2T1123	18		Telephone		3.4, 6.10	Pass
2T1124	18		Telephone		3.4, 6.10	Pass
2T1125	18		Telephone		3.4, 6.10	Pass

SYSTEM 250

CABLE	SIZE	POWER	SIGNAL	FUSE/BREAKER (F/BKR-AMPS)	SOURCE	PASS/FAIL
2T1126	19		Telephone		3.4, 6.10	Pass
2T1127	19		Telephone		3.4, 6.10	Pass
2T1300	22		Telephone		3.4, 6.10	Pass
2T1301	22		Telephone		3.4, 6.10	Pass
2T1311	18		Relay		3.4, 6.10	Pass
2T1312	18		Telephone		3.4, 6.10	Pass
2T1313	12		Bell		3.4, 6.10	Pass
2T1314	12		Light		3.4, 6.10	Pass
T1140	19		Telephone		3.4, 6.10	Pass
T1180	19		Telephone		3.4, 6.10	Pass
T4764	19		Telephone		3.4, 6.10	Pass
1T260	18		Telephone		3.4, 6.10	Pass
1T261	18		Telephone		3.4, 6.10	Pass
1T265	18		Telephone		3.4, 6.10	Pass
1T266	18		Telephone		3.4, 6.10	Pass
1T288	18		Telephone		3.4, 6.10	Pass
1T287	18		Telephone		3.4, 6.10	Pass
1T292	18		Telephone		3.4, 6.10	Pass
1T293	18		Telephone		3.4, 6.10	Pass
1T294	18		Telephone		3.4, 6.10	Pass
1T295	18		Telephone		3.4, 6.10	Pass
1T296	18		Telephone		3.4, 6.10	Pass
1T297	18		Telephone		3.4, 6.10	Pass
1T920	18		Telephone		3.4, 6.10	Pass
2T170	18		Telephone		3.4, 6.10	Pass
2T171	18		Telephone		3.4, 6.10	Pass
2T220	18		Telephone		3.4, 6.10	Pass
2T221	18		Telephone		3.4, 6.10	Pass
2T285	18		Telephone		3.4, 6.10	Pass
2T286	18		Telephone		3.4, 6.10	Pass
2T287	18		Telephone		3.4, 6.10	Pass
2T288	18		Telephone		3.4, 6.10	Pass
2T289	18		Telephone		3.4, 6.10	Pass
2T295	18		Telephone		3.4, 6.10	Pass
2T296	18		Telephone		3.4, 6.10	Pass
2T297	18		Telephone		3.4, 6.10	Pass
2T298	18		Telephone		3.4, 6.10	Pass

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CABLE	SIZE	POWER	SIGNAL	FUSE/BREAKER (F/BKR-AMPS)	SOURCE	PASS/FAIL
LTA1	300 MCM	24VDC		400(F) TRON KAA400	3.9,3.35,6.19	Pass
LTA2	300 MCM	24VDC		400(BKR)	3.9,6.19,3.35	Pass
LTA3	4/0 MCM	24VDC		150(BKR)	3.9,6.19,3.35	Pass
LTA4	300 MCM	24VDC		400(BKR)	3.9,6.19,3.35	Pass
LTB3	4/0	24VDC		150(BKR)	3.9,6.19,3.35	Pass
LTA5	18		ALARM		3.9,6.9	Pass
LTA6	18		ALARM		3.9,6.9	Pass
LTA7	18		ALARM		3.9,6.9	Pass
LTA8	18		ALARM		3.9,6.9	Pass
LTA9	18		ALARM		3.9,6.9	Pass

(Cap Speakers)

CABLE	SIZE	POWER	SIGNAL	FUSE/BREAKER (F/BKR-AMPS)	SOURCE	PASS/FAIL
LTA10	18		AUDIO	5(F) MAX	6.11	PASS
LTA11	16	24VDC		5(F) MAX	6.11	PASS
LTA14	18		AUDIO	5(F) MAX	6.11	PASS
LTA15	16	24VDC		5(F) MAX	6.11	PASS
LTA19	16	24VDC		5(F) MAX	6.11	PASS
LTA22	18		AUDIO	5(F) MAX	6.11	PASS
LTA23	16	24VDC		5(F) MAX	6.11	PASS
LTA24	16	24VDC		5(F) MAX	6.11	PASS
LTA25	16		AUDIO	5(F) MAX	6.11	PASS
LTA26	16	24VDC		5(F) MAX	6.11	PASS
LTA27	16		AUDIO	5(F) MAX	6.11	PASS
LTA28	16	24VDC		5(F) MAX	6.11	PASS
LTA29	16		AUDIO	5(F) MAX	6.11	PASS
LTA30	18		AUDIO	5(F) MAX	6.11	PASS
LTA31	16	24VDC		5(F) MAX	6.11	PASS
LTA35	18		AUDIO	5(F) MAX	6.11	PASS
LTA36	16	24VDC		5(F) MAX	6.11	PASS
LTA42	16			5(F) MAX	6.11	PASS
LTA43	16			5(F) MAX	6.11	PASS
LTA44	19SH	24VDC	AUDIO	5(F) MAX	6.11	PASS
LTA47	18	24VDC		5(F) MAX	6.11	PASS
LTA48	16		AUDIO	5(F) MAX	6.11	PASS
LTA51	18		AUDIO	5(F) MAX	6.11	PASS
LTA52	16	24VDC		5(F) MAX	6.11	PASS
LTA53	18		AUDIO	5(F) MAX	6.11	PASS
LTA55	18		AUDIO	5(F) MAX	6.11	PASS
LTA56	16	24VDC		5(F) MAX	6.11	PASS

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CABLE	SIZE	POWER	SIGNAL	FUSE/BREAKER (F/BKR-AMPS)	SOURCE	PASS/FAIL
LTA68	18		Audio	5(F) MAX	6.11	PASS
LTA69	16	24VDC		5(F) MAX	6.11	PASS
LTA72	18		Audio	5(F) MAX	6.11	PASS
LTA73	16	24VDC		5(F) MAX	6.11	PASS
LTA78	18		Audio	5(F) MAX	6.11	PASS
LTA79	16	24VDC		5(F) MAX	6.11	PASS
LTA86	18		Audio	5(F) MAX	6.11	PASS
LTA87	16	24VDC		5(F) MAX	6.11	PASS
LTA90	18		Audio	5(F) MAX	6.11	PASS
LTA91	16	24VDC		5(F) MAX	6.11	PASS
LTA100	16			5(F) MAX	6.11	PASS
LTA105	18		Audio	5(F) MAX	6.11	PASS
LTA106	16	24VDC		5(F) MAX	6.11	PASS
LTA120	18		Audio	5(F) MAX	6.11	PASS
LTA121	16	24VDC		5(F) MAX	6.11	PASS
LTA124	18		Audio	5(F) MAX	6.11	PASS
LTA125	16	24VDC		5(F) MAX	6.11	PASS
LTA128	18		Audio	5(F) MAX	6.11	PASS
LTA129	16	24VDC		5(F) MAX	6.11	PASS
LTA131	18		Audio	5(F) MAX	6.11	PASS
LTA132	16	24VDC		5(F) MAX	6.11	PASS
LTA136	18		Audio	5(F) MAX	6.11	PASS
LTA137	16	24VDC		5(F) MAX	6.11	PASS
LTA140	18		Audio	5(F) MAX	6.11	PASS
LTA141	16	24VDC		5(F) MAX	6.11	PASS
LTA143	18		Audio	5(F) MAX	6.11	PASS
LTA144	16	24VDC		5(F) MAX	6.11	PASS
LTA146	18		Audio	5(F) MAX	6.11	PASS
LTA147	16	24VDC		5(F) MAX	6.11	PASS
LTA149	18		Audio	5(F) MAX	6.11	PASS
LTA150	16	24VDC		5(F) MAX	6.11	PASS
LTA157	18		Audio	5(F) MAX	6.11	PASS
LTA159	18		Audio	5(F) MAX	6.11	PASS
LTA160	12	24VAC		5(F) MAX	6.11	PASS
LTA161	18		Audio	5(F) MAX	6.11	PASS
LTA162	16	24VDC		5(F) MAX	6.11	PASS
LTA164	18		Audio	5(F) MAX	6.11	PASS
LTA173	18		Audio	5(F) MAX	6.11	PASS
LTA174	16	24VDC		5(F) MAX	6.11	PASS
LTA176	18		Audio	5(F) MAX	6.11	PASS
LTA177	16	24VDC		5(F) MAX	6.11	PASS
LTA180	18		Audio	5(F) MAX	6.11	PASS
LTA181	16	24VDC		5(F) MAX	6.11	PASS
LTA184	18		Audio	5(F) MAX	6.11	PASS
LTA185	16	24VDC		5(F) MAX	6.11	PASS
LTA186	18		Audio	5(F) MAX	6.11	PASS
LTA187	16	24VDC		5(F) MAX	6.11	PASS

Attachment FIR103B
Reg. Guide 1.75 Associated
Circuits and Appendix R
Analysis for Non-Class 1E
120V AC & 250V DC Circuits
Appendix D

NE Calculation No. WBPEVAR9001006

Prepared by C.W. Wright Date 7/9/92

Checked by M.E. Masuo Date 7/17/92

SYSTEM 252

CABLE	SIZE	POWER	SIGNAL	FUSE/BREAKER (F/BKR-AMPS)	SOURCE	PASS/FAIL
LTA193	18		Audio	5(F) MAX	6.11	PASS
LTA194	16	24VDC		5(F) MAX	6.11	PASS
LTA200	18		Audio	5(F) MAX	6.11	PASS
LTA201	16	24VDC		5(F) MAX	6.11	PASS
LTA204	18		Audio	5(F) MAX	6.11	PASS
LTA205	16	24VDC		5(F) MAX	6.11	PASS
LTA212	18		Audio	5(F) MAX	6.11	PASS
LTA213	16	24VDC		5(F) MAX	6.11	PASS
LTA218	18		Audio	5(F) MAX	6.11	PASS
LTA219	16	24VDC		5(F) MAX	6.11	PASS
LTA222	18		Audio	5(F) MAX	6.11	PASS
LTA223	16	24VDC		5(F) MAX	6.11	PASS
LTA225	18		Audio	5(F) MAX	6.11	PASS
LTA226	16	24VDC		5(F) MAX	6.11	PASS
LTA228	18		Audio	5(F) MAX	6.11	PASS
LTA229	16	24VDC		5(F) MAX	6.11	PASS
LTA240	18		Audio	5(F) MAX	6.11	PASS
LTA241	16	24VDC		5(F) MAX	6.11	PASS
LTA243	18		Audio	5(F) MAX	6.11	PASS
LTA244	16	24VDC		5(F) MAX	6.11	PASS
LTA247	18		Audio	5(F) MAX	6.11	PASS
LTA248	16	24VDC		5(F) MAX	6.11	PASS
LTA251	18		Audio	5(F) MAX	6.11	PASS
LTA252	16	24VDC		5(F) MAX	6.11	PASS
LTA255	18		Audio	5(F) MAX	6.11	PASS
LTA256	16	24VD		5(F) MAX	6.11	PASS
LTA260	18		Audio	5(F) MAX	6.11	PASS
LTA261	16	24VDC		5(F) MAX	6.11	PASS
LTA263	18		Audio	5(F) MAX	6.11	PASS
LTA264	16	24VDC		5(F) MAX	6.11	PASS
LTA267	18		Audio	5(F) MAX	6.11	PASS
LTA268	16	24VDC		5(F) MAX	6.11	PASS
LTA269	18		Audio	5(F) MAX	6.11	PASS
LTA270	16	24VDC		5(F) MAX	6.11	PASS
LTA271	18		Audio	5(F) MAX	6.11	PASS
LTA272	16	24VDC		5(F) MAX	6.11	PASS
LTA280	18		Audio	5(F) MAX	6.11	PASS
LTA281	16	24VDC		5(F) MAX	6.11	PASS
LTA283	18		Audio	5(F) MAX	6.11	PASS
LTA284	16	24VDC		5(F) MAX	6.11	PASS
LTA300	18		Audio	5(F) MAX	6.11	PASS
LTA301	16	24VDC		5(F) MAX	6.11	PASS
LTA302	18		Audio	5(F) MAX	6.11	PASS
LTA303	14	24VDC		5(F) MAX	6.11	PASS
LTA304	18		Audio	5(F) MAX	6.11	PASS
LTA305	16	24VDC		5(F) MAX	6.11	PASS
LTA306	18		Audio	5(F) MAX	6.11	PASS
LTA307	14	24VDC		5(F) MAX	6.11	PASS

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Attachment FIR103B
Reg. Guide 1.75 Associated
Circuits and Appendix R
Analysis for Non-Class 1E
120V AC & 250V DC Circuits
Appendix D

NE Calculation No. WBPEVAR9001006

Prepared by CH. Wright Date 7/9/92

Checked by M. L. Madeo Date 7/17/92

SYSTEM 252

CABLE	SIZE	POWER	SIGNAL	FUSE/BREAKER (F/BKR-AMPS)	SOURCE	PASS/FAIL
LTA312	18		Audio	5(F) MAX	6.11	PASS
LTA313	16	24VDC		5(F) MAX	6.11	PASS
LTA314	18		Audio	5(F) MAX	6.11	PASS
LTA315	14	24VDC		5(F) MAX	6.11	PASS
LTA316	18		Audio	5(F) MAX	6.11	PASS
LTA317	16	24VDC		5(F) MAX	6.11	PASS
LTA318	18		Audio	5(F) MAX	6.11	PASS
LTA319	14	24VDC		5(F) MAX	6.11	PASS
LTA320	18		Audio	5(F) MAX	6.11	PASS
LTA321	16	24VDC		5(F) MAX	6.11	PASS
LTA322	18		Audio	5(F) MAX	6.11	PASS
LTA323	14	24VDC		5(F) MAX	6.11	PASS
LTA324	18		Audio	5(F) MAX	6.11	PASS
LTA325	16	24VDC		5(F) MAX	6.11	PASS
LTA328	18		Audio	5(F) MAX	6.11	PASS
LTA329	16	24VDC		5(F) MAX	6.11	PASS
LTA332	18		Audio	5(F) MAX	6.11	PASS
LTA333	16	24VDC		5(F) MAX	6.11	PASS
LTA334	18		Audio	5(F) MAX	6.11	PASS
LTA335	14	24VDC		5(F) MAX	6.11	PASS
LTA336	18		Audio	5(F) MAX	6.11	PASS
LTA337	16	24VDC		5(F) MAX	6.11	PASS
LTA338	18		Audio	5(F) MAX	6.11	PASS
LTA339	14	24VDC		5(F) MAX	6.11	PASS
LTA340	18		Audio	5(F) MAX	6.11	PASS
LTA341	14	24VDC		5(F) MAX	6.11	PASS
LTA342	18		Audio	5(F) MAX	6.11	PASS
LTA343	14	24VDC		5(F) MAX	6.11	PASS
LTA344	18		Audio	5(F) MAX	6.11	PASS
LTA345	16	24VDC		5(F) MAX	6.11	PASS
LTA346	18		Audio	5(F) MAX	6.11	PASS
LTA347	14	24VDC		5(F) MAX	6.11	PASS
LTA348	18		Audio	5(F) MAX	6.11	PASS
LTA349	16	24VDC		5(F) MAX	6.11	PASS
LTA350	18		Audio	5(F) MAX	6.11	PASS
LTA351	14	24VDC		5(F) MAX	6.11	PASS
LTA352	18		Audio	5(F) MAX	6.11	PASS
LTA353	16	24VDC		5(F) MAX	6.11	PASS
LTA356	18		Audio	5(F) MAX	6.11	PASS
LTA357	16	24VDC		5(F) MAX	6.11	PASS
LTA360	18		Audio	5(F) MAX	6.11	PASS
LTA361	16	24VDC		5(F) MAX	6.11	PASS
LTA364	18		Audio	5(F) MAX	6.11	PASS
LTA368	18		Audio	5(F) MAX	6.11	PASS
LTA369	16	24VDC		5(F) MAX	6.11	PASS
LTA372	18		Audio	5(F) MAX	6.11	PASS
LTA373	16	24VDC		5(F) MAX	6.11	PASS

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SYSTEM 252

CABLE	SIZE	POWER	SIGNAL	FUSE/BREAKER (F/BKR-AMPS)	SOURCE	PASS/FAIL
LTA376	18		Audio	5(F) MAX	6.11	PASS
LTA377	16	24VDC		5(F) MAX	6.11	PASS
LTA380	18		Audio	5(F) MAX	6.11	PASS
LTA381	16	24VDC		5(F) MAX	6.11	PASS
LTA384	18		Audio	5(F) MAX	6.11	PASS
LTA388	18		Audio	5(F) MAX	6.11	PASS
LTA390	18			5(F) MAX	6.11	PASS
LTA391	10			5(F) MAX	6.11	PASS
LTA392	18		Audio	5(F) MAX	6.11	PASS
LTA393	16	24VDC		5(F) MAX	6.11	PASS
LTA401	16			5(F) MAX	6.11	PASS
LTA404	18		Audio	5(F) MAX	6.11	PASS
LTA405	16	24VDC		5(F) MAX	6.11	PASS
LTA408	18		Audio	5(F) MAX	6.11	PASS
LTA409	16	24VDC		5(F) MAX	6.11	PASS
LTA412	18		Audio	5(F) MAX	6.11	PASS
LTA413	16	24VDC		5(F) MAX	6.11	PASS
LTA416	18		Audio	5(F) MAX	6.11	PASS
LTA417	16	24VDC		5(F) MAX	6.11	PASS
LTA420	18		Audio	5(F) MAX	6.11	PASS
LTA421	16	24VDC		5(F) MAX	6.11	PASS
LTA424	18		Audio	5(F) MAX	6.11	PASS
LTA425	16	24VDC		5(F) MAX	6.11	PASS
LTA428	18		Audio	5(F) MAX	6.11	PASS
LTA430	18		Audio	5(F) MAX	6.11	PASS
LTA431	10	24VDC		5(F) MAX	6.11	PASS
LTA432	18		Audio	5(F) MAX	6.11	PASS
LTA433	16	24VDC		5(F) MAX	6.11	PASS
LTA436	18		Audio	5(F) MAX	6.11	PASS
LTA437	16	24VDC		5(F) MAX	6.11	PASS
LTA438	18		Audio	5(F) MAX	6.11	PASS
LTA439	10	24VDC		5(F) MAX	6.11	PASS
LTA440	18		Audio	5(F) MAX	6.11	PASS
LTA442	18		Audio	5(F) MAX	6.11	PASS
LTA443	16	24VDC		5(F) MAX	6.11	PASS
LTA444	18		Audio	5(F) MAX	6.11	PASS
LTA445	16	24VDC		5(F) MAX	6.11	PASS
LTA448	18		Audio	5(F) MAX	6.11	PASS
LTA449	16	24VDC		5(F) MAX	6.11	PASS
LTA452	18		Audio	5(F) MAX	6.11	PASS
LTA453	16	24VDC		5(F) MAX	6.11	PASS
LTA456	18		Audio	5(F) MAX	6.11	PASS
LTA458	18		Audio	5(F) MAX	6.11	PASS
LTA459	10	24VDC				

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CABLE	SIZE	POWER	SIGNAL	FUSE/BREAKER (F/BKR-AMPS)	SOURCE	PASS/FAIL
LTA460	18		Audio	5(F) MAX	6.11	PASS
LTA461	16	24VDC		5(F) MAX	6.11	PASS
LTA462	18		Audio	5(F) MAX	6.11	PASS
LTA463	16	24VDC		5(F) MAX	6.11	PASS
LTA464	18		Audio	5(F) MAX	6.11	PASS
LTA465	16	24VDC		5(F) MAX	6.11	PASS
LTA466	18		Audio	5(F) MAX	6.11	PASS
LTA467	16	24VDC		5(F) MAX	6.11	PASS
LTA472	18		Audio	5(F) MAX	6.11	PASS
LTA473	16	24VDC		5(F) MAX	6.11	PASS
LTA474	18		Audio	5(F) MAX	6.11	PASS
LTA475	16	24VDC		5(F) MAX	6.11	PASS
LTA480	18		Audio	5(F) MAX	6.11	PASS
LTA481	16	24VDC		5(F) MAX	6.11	PASS
LTA482	18		Audio	5(F) MAX	6.11	PASS
LTA483	16	24VDC		5(F) MAX	6.11	PASS
LTA484	18		Audio	5(F) MAX	6.11	PASS
LTA485	16	24VDC		5(F) MAX	6.11	PASS
LTA486	18		Audio	5(F) MAX	6.11	PASS
[illegible]487	16	24VDC		5(F) MAX	6.11	PASS
[illegible]A488	18		Audio	5(F) MAX	6.11	PASS
LTA489	16	24VDC		5(F) MAX	6.11	PASS
LTA492	18		Audio	5(F) MAX	6.11	PASS
LTA493	16	24VDC		5(F) MAX	6.11	PASS
LTA496	18		Audio	5(F) MAX	6.11	PASS
LTA497	16	24VDC		5(F) MAX	6.11	PASS
LTA498	18		Audio	5(F) MAX	6.11	PASS
LTA499	14	24VDC		5(F) MAX	6.11	PASS
LTA504	18		Audio	5(F) MAX	6.11	PASS
LTA505	16	24VDC		5(F) MAX	6.11	PASS
LTA506	18		Audio	5(F) MAX	6.11	PASS
LTA507	16	24VDC		5(F) MAX	6.11	PASS
LTA508	18		Audio	5(F) MAX	6.11	PASS
LTA509	16	24VDC		5(F) MAX	6.11	PASS
LTA510	18		Audio	5(F) MAX	6.11	PASS
LTA511	16	24VDC		5(F) MAX	6.11	PASS
LTA512	18		Audio	5(F) MAX	6.11	PASS
LTA513	16	34VDC		5(F) MAX	6.11	PASS
LTA514	18		Audio	5(F) MAX	6.11	PASS
LTA515	16	24VDC		5(F) MAX	6.11	PASS
LTA516	18		Audio	5(F) MAX	6.11	PASS
LTA517	16	24VDC		5(F) MAX	6.11	PASS
LTA518	18		Audio	5(F) MAX	6.11	PASS
LTA519	16	24VDC		5(F) MAX	6.11	PASS
LTA520	18		Audio	5(F) MAX	6.11	PASS
LTA521	16	24VDC		5(F) MAX	6.11	PASS
[illegible]522	18		Audio	5(F) MAX	6.11	PASS
[illegible]523	16	24VDC		5(F) MAX	6.11	PASS

SYSTEM 252

CABLE	SIZE	POWER	SIGNAL	FUSE/BREAKER (F/BKR-AMPS)	SOURCE	PASS/FAIL
LTA524	18		Audio	5(F) MAX	6.11	PASS
LTA525	16	24VDC		5(F) MAX	6.11	PASS
LTA528	18		Audio	5(F) MAX	6.11	PASS
LTA529	16	24VDC		5(F) MAX	6.11	PASS
LTA532	18		Audio	5(F) MAX	6.11	PASS
LTA536	18		Audio	5(F) MAX	6.11	PASS
LTA537	16	24VDC		5(F) MAX	6.11	PASS
LTA540	18		Audio	5(F) MAX	6.11	PASS
LTA541	16	24VDC		5(F) MAX	6.11	PASS
LTA544	18		Audio	5(F) MAX	6.11	PASS
LTA545	16	24VDC		5(F) MAX	6.11	PASS
LTA548	18		Audio	5(F) MAX	6.11	PASS
LTA549	16	24VDC		5(F) MAX	6.11	PASS
LTA552	18		Audio	5(F) MAX	6.11	PASS
LTA556	18		Audio	5(F) MAX	6.11	PASS
LTA560	18		Audio	5(F) MAX	6.11	PASS
LTA562	18		Audio	5(F) MAX	6.11	PASS
LTA563	12	24VDC		5(F) MAX	6.11	PASS
LTA566	18		Audio	5(F) MAX	6.11	PASS
LTA567	16	24VDC		5(F) MAX	6.11	PASS
LTA568	18		Audio	5(F) MAX	6.11	PASS
LTA569	16	24VDC		5(F) MAX	6.11	PASS
LTA572	18		Audio	5(F) MAX	6.11	PASS
LTA573	16	24VDC		5(F) MAX	6.11	PASS
LTA576	18		Audio	5(F) MAX	6.11	PASS
LTA577	16	24VDC		5(F) MAX	6.11	PASS
LTA580	12			5(F) MAX	6.11	PASS
LTA581	18		Audio	5(F) MAX	6.11	PASS
LTA590	14	24VDC		5(F) MAX	6.11	PASS
LTA591	18		Audio	5(F) MAX	6.11	PASS
LTA595	14	24VDC		5(F) MAX	6.11	PASS
LTA596	18		Audio	5(F) MAX	6.11	PASS
LTA600	14	24VDC		5(F) MAX	6.11	PASS
LTA601	18		Audio	5(F) MAX	6.11	PASS
LTA605	14	24VDC		5(F) MAX	6.11	PASS
LTA606	18		Audio	5(F) MAX	6.11	PASS
LTA610	14	24VDC		5(F) MAX	6.11	PASS
LTA611	18		Audio	5(F) MAX	6.11	PASS
LTA615	14	24VDC		5(F) MAX	6.11	PASS
LTA616	18		Audio	5(F) MAX	6.11	PASS
LTA620	14	24VDC		5(F) MAX	6.11	PASS
LTA621	18		Audio	5(F) MAX	6.11	PASS
LTA625	14	24VDC		5(F) MAX	6.11	PASS
LTA626	18		Audio	5(F) MAX	6.11	PASS
LTA630	14	24VDC		5(F) MAX	6.11	PASS
LTA631	18		Audio	5(F) MAX	6.11	PASS

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CABLE	SIZE	POWER	SIGNAL	FUSE/BREAKER (F/BKR-AMPS)	SOURCE	PASS/FAIL
LTA635	14	24VDC		5(F) MAX	6.11	PASS
LTA636	18		Audio	5(F) MAX	6.11	PASS
LTA640	10	24VDC		5(F) MAX	6.11	PASS
LTA641	18		Audio	5(F) MAX	6.11	PASS
LTA645	10	24VDC		5(F) MAX	6.11	PASS
LTA646	18		Audio	5(F) MAX	6.11	PASS
LTA650	10	24VDC		5(F) MAX	6.11	PASS
LTA651	18		Audio	5(F) MAX	6.11	PASS
LTA655	10	24VDC		5(F) MAX	6.11	PASS
LTA656	18		Audio	5(F) MAX	6.11	PASS
LTA660	16	24VDC		5(F) MAX	6.11	PASS
LTA661	18		Audio	5(F) MAX	6.11	PASS
LTA664	16	24VDC		5(F) MAX	6.11	PASS
LTA665	18		Audio	5(F) MAX	6.11	PASS
LTA669	16	24VDC		5(F) MAX	6.11	PASS
LTA670	18		Audio	5(F) MAX	6.11	PASS
LTA673	16	24VDC		5(F) MAX	6.11	PASS
LTA674	18		Audio	5(F) MAX	6.11	PASS
LTA678	16	24VDC		5(F) MAX	6.11	PASS
LTA679	18		Audio	5(F) MAX	6.11	PASS
LTA683	16	24VDC		5(F) MAX	6.11	PASS
LTA684	18		Audio	5(F) MAX	6.11	PASS
LTA688	12	24VDC		5(F) MAX	6.11	PASS
LTA689	18		Audio	5(F) MAX	6.11	PASS
LTA694	16	24VDC		5(F) MAX	6.11	PASS
LTA695	18		Audio	5(F) MAX	6.11	PASS
LTA699	16	24VDC		5(F) MAX	6.11	PASS
LTA700	18		Audio	5(F) MAX	6.11	PASS
LTA704	16	24VDC		5(F) MAX	6.11	PASS
LTA705	18		Audio	5(F) MAX	6.11	PASS
LTA709	16	24VDC		5(F) MAX	6.11	PASS
LTA710	18		Audio	5(F) MAX	6.11	PASS
LTA712	16	24VDC		5(F) MAX	6.11	PASS
LTA713	18		Audio	5(F) MAX	6.11	PASS
LTA714	16	24VDC		5(F) MAX	6.11	PASS
LTA715	18		Audio	5(F) MAX	6.11	PASS
LTA719	16	24VDC		5(F) MAX	6.11	PASS
LTA720	18		Audio	5(F) MAX	6.11	PASS
LTA724	16	24VDC		5(F) MAX	6.11	PASS
LTA725	18		Audio	5(F) MAX	6.11	PASS
LTA729	16	24VDC		5(F) MAX	6.11	PASS
LTA730	18		Audio	5(F) MAX	6.11	PASS
LTA734	16	24VDC		5(F) MAX	6.11	PASS
LTA735	18		Audio	5(F) MAX	6.11	PASS
LTA739	16	24VDC		5(F) MAX	6.11	PASS
LTA740	18		Audio	5(F) MAX	6.11	PASS
LTA744	16	24VDC		5(F) MAX	6.11	PASS

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CABLE	SIZE	POWER	SIGNAL	FUSE/BREAKER (F/BKR-AMPS)	SOURCE	PASS/FAIL
LTA745	18		Audio	5(F) MAX	6.11	PASS
LTA749	16	24VDC		5(F) MAX	6.11	PASS
LTA750	18		Audio	5(F) MAX	6.11	PASS
LTA754	16	24VDC		5(F) MAX	6.11	PASS
LTA755	18		Audio	5(F) MAX	6.11	PASS
LTA764	12	24VDC		5(F) MAX	6.11	PASS
LTA765	18		Audio	5(F) MAX	6.11	PASS
LTA770	16	24VDC		5(F) MAX	6.11	PASS
LTA771	18		Audio	5(F) MAX	6.11	PASS
LTA775	16	24VDC		5(F) MAX	6.11	PASS
LTA776	16	24VDC		5(F) MAX	6.11	PASS
LTA780	16	24VDC		5(F) MAX	6.11	PASS
LTA781	18		Audio	5(F) MAX	6.11	PASS
LTA785	12	24VDC		5(F) MAX	6.11	PASS
LTA786	18		Audio	5(F) MAX	6.11	PASS
LTA789	12	24VDC		5(F) MAX	6.11	PASS
LTA790	18		Audio	5(F) MAX	6.11	PASS
LTA795	12	24VDC		5(F) MAX	6.11	PASS
LTA796	18		Audio	5(F) MAX	6.11	PASS
LTA800	16	24VDC		5(F) MAX	6.11	PASS
LTA801	18		Audio	5(F) MAX	6.11	PASS
LTA944	16	24VDC		5(F) MAX	6.11	PASS
LTA945	16	24VDC		5(F) MAX	6.11	PASS
LTA948	16	24VDC		5(F) MAX	6.11	PASS
LTA949	16	24VDC		5(F) MAX	6.11	PASS
LTA952	16	24VDC		5(F) MAX	6.11	PASS
LTA953	16	24VDC		5(F) MAX	6.11	PASS
LTA956	16	24VDC		5(F) MAX	6.11	PASS
LTA957	16	24VDC		5(F) MAX	6.11	PASS
LTA960	16	24VDC		5(F) MAX	6.11	PASS
LTA961	16	24VDC		5(F) MAX	6.11	PASS
LTA964	18		Audio	5(F) MAX	6.11	PASS
LTA965	16	24VDC		5(F) MAX	6.11	PASS
LTA966	18		Audio	5(F) MAX	6.11	PASS
LTA967	16	24VDC		5(F) MAX	6.11	PASS
LTA968	18		Audio	5(F) MAX	6.11	PASS
LTA969	16	24VDC		5(F) MAX	6.11	PASS
LTA972	18		Audio	5(F) MAX	6.11	PASS
LTA973	16	24VDC		5(F) MAX	6.11	PASS
LTA976	18		Audio	5(F) MAX	6.11	PASS
LTA977	16	24VDC		5(F) MAX	6.11	PASS
LTA980	18		Audio	5(F) MAX	6.11	PASS
LTA981	16	24VDC		5(F) MAX	6.11	PASS
LTA984	18		Audio	5(F) MAX	6.11	PASS
LTA985	16	24VDC		5(F) MAX	6.11	PASS
LTA988	18		Audio	5(F) MAX	6.11	PASS
LTA989	16	24VDC		5(F) MAX	6.11	PASS
LTA990	18		Audio	5(F) MAX	6.11	PASS

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Attachment FIR103B
Reg. Guide 1.75 Associated
Circuits and Appendix R
Analysis for Non-Class 1E
120V AC & 250V DC Circuits
Appendix D

NE Calculation No. WBPEVAR9001006

Prepared by C.Wright Date 7/9/92

Checked by M.L. Madeo Date 7/17/92

SYSTEM 252

CABLE	SIZE	POWER	SIGNAL	FUSE/BREAKER (F/BKR-AMPS)	SOURCE	PASS/FAIL
LTA991	16	24VDC		5(F) MAX	6.11	PASS
LTA992	18		Audio	5(F) MAX	6.11	PASS
LTA993	16	24VDC		5(F) MAX	6.11	PASS
LTA995	18		Audio	5(F) MAX	6.11	PASS
LTA1000	10 & 8	125VDC		5(F) MAX	6.11	PASS
LTA1001	10 & 8	125VDC		5(F) MAX	6.11	PASS
LTA1002	22			5(F) MAX	6.11	PASS
LTA1180	8			5(F) MAX	6.11	PASS
LTA1181	22			5(F) MAX	6.11	PASS
LTA1240	16	24VDC		5(F) MAX	6.11	PASS
LTA1241	18		Audio	5(F) MAX	6.11	PASS
LTA1245	18		Audio	5(F) MAX	6.11	PASS
LTA1246	16	24VDC		5(F) MAX	6.11	PASS
LTA1260	22			5(F) MAX	6.11	PASS
LTA1261	12			5(F) MAX	6.11	PASS
LTA1380	18		Audio	5(F) MAX	6.11	PASS
LTA1381	18		Audio	5(F) MAX	6.11	PASS
LTA1382	18		Audio	5(F) MAX	6.11	PASS
LTA1383	16	24VDC		5(F) MAX	6.11	PASS
LTA1384	16	24VDC		5(F) MAX	6.11	PASS
LTA1385	16	24VDC		5(F) MAX	6.11	PASS
LTA1386	18		Audio	5(F) MAX	6.11	PASS
LTA1387	14	24VDC		5(F) MAX	6.11	PASS
LTA1410	10			5(F) MAX	6.11	PASS
LTA1411	10			5(F) MAX	6.11	PASS
LTA1412	22			5(F) MAX	6.11	PASS
LTA1413	18		Audio	5(F) MAX	6.11	PASS
LTA1414	16	24VDC		5(F) MAX	6.11	PASS
LTA1415	18		Audio	5(F) MAX	6.11	PASS
LTA1416	16	24VDC		5(F) MAX	6.11	PASS
LTA1421	22SH		Audio	5(F) MAX	6.11	PASS
LTA1461	10			5(F) MAX	6.11	PASS
LTA1462	10			5(F) MAX	6.11	PASS
LTA1500	10			5(F) MAX	6.11	PASS
LTA1501	10			5(F) MAX	6.11	PASS
LTA1502	12			5(F) MAX	6.11	PASS
LTA1503	10			5(F) MAX	6.11	PASS
LTA1504	10			5(F) MAX	6.11	PASS
LTA1505	10			5(F) MAX	6.11	PASS
LTA1506	10			5(F) MAX	6.11	PASS
LTA1507	10			5(F) MAX	6.11	PASS
LTA1508	12			5(F) MAX	6.11	PASS
LTA1509	12			5(F) MAX	6.11	PASS
LTA1510	18			5(F) MAX	6.11	PASS
LTA1511	12			5(F) MAX	6.11	PASS
LTA1512	12			5(F) MAX	6.11	PASS
LTA1513	10			5(F) MAX	6.11	PASS

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NE Calculation No. WBPEVAR9001006

Prepared by A. Wright Date 7/9/92

Checked by M. L. Makuo Date 7/17/92

SYSTEM 252

CABLE	SIZE	POWER	SIGNAL	FUSE/BREAKER (F/BKR-AMPS)	SOURCE	PASS/FAIL
LTA640	10	24VDC		5(F) MAX	6.11	PASS
LTA641	18		Audio	5(F) MAX	6.11	PASS
LTA645	10	24VDC		5(F) MAX	6.11	PASS
LTA646	18		Audio	5(F) MAX	6.11	PASS
LTA650	10	24VDC		5(F) MAX	6.11	PASS
LTA651	18		Audio	5(F) MAX	6.11	PASS
LTA655	10	24VDC		5(F) MAX	6.11	PASS
LTA656	18		Audio	5(F) MAX	6.11	PASS
LTA803	10	24VDC		5(F) MAX	6.11	PASS
LTA804	18		Audio	5(F) MAX	6.11	PASS
LTA806	10	24VDC		5(F) MAX	6.11	PASS
LTA807	18		Audio	5(F) MAX	6.11	PASS
LTA818	18		Audio	5(F) MAX	6.11	PASS
LTA819	10	24VDC		5(F) MAX	6.11	PASS
LTA1514	14			5(F) MAX	6.11	PASS
LTA1515	10			5(F) MAX	6.11	PASS
LTA810	14	125VDC		5(F) MAX	6.11	PASS
LTA811	18		Audio	5(F) MAX	6.11	PASS
LTA884	18		Audio	5(F) MAX	6.11	PASS
LTA885	16	24VDC		5(F) MAX	6.11	PASS
LTA888	18		Audio	5(F) MAX	6.11	PASS
LTA889	16	24VDC		5(F) MAX	6.11	PASS
LTA892	18		Audio	5(F) MAX	6.11	PASS
LTA893	16	24VDC		5(F) MAX	6.11	PASS
LTA900	18		Audio	5(F) MAX	6.11	PASS
LTA901	16	24VDC		5(F) MAX	6.11	PASS
LTA908	18		Audio	5(F) MAX	6.11	PASS
LTA912	18		Audio	5(F) MAX	6.11	PASS
LTA913	16	24VDC		5(F) MAX	6.11	PASS
LTA916	18		Audio	5(F) MAX	6.11	PASS
LTA917	16	24VDC		5(F) MAX	6.11	PASS
LTA924	18		Audio	5(F) MAX	6.11	PASS
LTA925	16	24VDC		5(F) MAX	6.11	PASS
LTA928	18		Audio	5(F) MAX	6.11	PASS
LTA929	16	24VDC		5(F) MAX	6.11	PASS
LTA930	18		Audio	5(F) MAX	6.11	PASS
LTA931	14	24VDC		5(F) MAX	6.11	PASS
LTA932	16	24VDC		5(F) MAX	6.11	PASS
LTA933	18		Audio	5(F) MAX	6.11	PASS
LTA934	16	24VDC		5(F) MAX	6.11	PASS
LTA935	18		Audio	5(F) MAX	6.11	PASS
LTA940	16	24VDC		5(F) MAX	6.11	PASS
LTA941	16	24VDC		5(F) MAX	6.11	PASS

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120V AC & 250V DC Circuits
Appendix D

NE Calculation No. WBPEVAR9001006

Prepared by CA Wright Date 7/9/92

Checked by M. L. Madeo Date 8/17/92

SYSTEM 252

CABLE	SIZE	POWER	SIGNAL	FUSE/BREAKER (F/BKR-AMPS)	SOURCE	PASS/FAIL
(Strobe Lights and Relays)						
M1060	10	Relay			6.14	PASS
M1061	12		Relay		6.14	PASS
M1063	14	Light			6.14	PASS
M1064	10	Relay			6.14	PASS
M1065	12		Relay		6.14	PASS
M1067	14	Light			6.14	PASS
M1076	10	Relay			6.14	PASS
M1077	12		Relay		6.14	PASS
M1079	14	Light			6.14	PASS
M1068	10	Relay			6.14	PASS
M1069	12		Relay		6.14	PASS
M1071	14	Light			6.14	PASS
M1072	10	Relay			6.14	PASS
M1073	12		Relay		6.14	PASS
M1075	14	Light			6.14	PASS
M1080	10	Relay			6.14	PASS
M1081	12		Relay		6.14	PASS
M1083	14	Light			6.14	PASS
M1084	10	Relay			6.14	PASS
M1085	12		Relay		6.14	PASS
M1087	14	Light			6.14	PASS
M1088	10	Relay			6.14	PASS
M1089	12		Relay		6.14	PASS
M1091	14	Light			6.14	PASS
M1092	10	Relay			6.14	PASS
M1093	12		Relay		6.14	PASS
M1094	14	Light			6.14	PASS
M1096	10	Relay			6.14	PASS
M1097	12		Relay		6.14	PASS
M1098	14	Light			6.14	PASS
M1099	14	Light			6.14	PASS
M1116	12	Relay			6.14	PASS
M1120	14	Light			6.14	PASS
M1121	14		X		6.14	PASS
M1122	14		X		6.14	PASS
M1123	14		X		6.14	PASS
M1124	14		X		6.14	PASS

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CABLE	SIZE	POWER	SIGNAL	FUSE/BREAKER (F/BKR-AMPS)	SOURCE	PASS/FAIL
B172	2	24VDC		125(F)West. FB2125	3.5,3.35,3.47	Pass
B173	2	24VDC		125(F)West. FB2125	3.5,3.35,3.47	Pass
MS3	2	24VDC		35(F) Bussman	3.5,3.35,6.20	Pass
MS5	2/0	24VDC		200 Buss Non	3.5,3.35,3.47	Pass
M160	Unknown		Antenna		3.21,6.22	Pass
M161	12	24VDC		15A West. EHB(BKR)	3.20,6.16	Pass
M162	12	120VDC		15A Hein. CV3(BKR)	3.22,6.16	Pass
M163	18		Alarm		3.23,6.9	Pass
M164	12	120VAC(See M161)			3.21	Pass
M165	12	120VAC(See M164)			3.21	Pass
M166	18		Audio		3.21,6.9	Pass
M167	18		Audio		3.21,6.9	Pass
M301	12	120VAC		15A Hein. KU793	3.17,3.2,6.16	Pass
M508	12	120VAC		15A Hein. KU793	3.17,3.27,3.2,6.16	Pass
M509	12	120VAC		15A Hein. KU793	3.17,3.27,3.2,6.16	Pass
M510	12	120VAC(See M509)		(see M509)	3.27,6.16	Pass
M511	12	120VAC		15A BKR	3.24,3.26,3.27,6.16	Pass
[illegible]3	12	120VAC		15A BKR	3.25,6.16	Pass
[illegible]	18				6.9	Pass
[illegible]16	18				6.9	Pass
M537	Unknown		Antenna		6.22	Pass
M848	12	120VAC(See M162)			3.21,3.28,6.16	Pass
M896	18		Audio		3.21,6.9	Pass
M920	12	120VAC(See M848)			3.28,3.29,6.16	Pass
M921	18		x		6.9	Pass
~~M923~~	~~18~~		~~x~~		~~6.9~~	~~Pass~~ [illegible] 8/5/9
M924	19		x		6.9	Pass
M925	19		x		6.9	Pass
M926	19SH		x		6.9	Pass
M927	12	120VAC(See M920)			3.30,3.31	Pass
M929	12	120VAC(See M927)			3.30,3.31	Pass
M930	19		Audio		6.9	Pass
M931	14	120VAC (See M162)			3.22,3.29	Pass
M1160	19		x		6.9	Pass
M1161	22		x		6.9	Pass

SYSTEM 253

CABLE	SIZE	POWER	SIGNAL	FUSE/BREAKER (F/BKR-AMPS)	SOURCE	PASS/FAIL
M460	12	RCU PSS		20(BKR)	3.4,3.53,6.6	Pass
M461	12	RCU PSS		See M460	3.4,3.54,6.6	Pass
M462	12	RCU PSS		See M460	3.4,3.54.6.6	Pass
M463	12	RCU PSS(EMER)		20(BKR)	3.4,3.54,6.6	Pass
M464	10	RCU PSS(EMER)		See M463	3.4,3.54,6.6	Pass
M465	10	RCU PSS(EMER)		See M463	3.4,3.54,6.6	Pass
M466	10	RCU PSS(EMER)		See M463	3.4,3.54,6.6	Pass
M1162	19SH		x		6.9	Pass
M1163	22SH		x		6.9	Pass
M1164	19SH		x		6.9	Pass
M1180	19		x		6.9	Pass
MS31	4	24VDC		40A Fusetron FRN	3.5,3.35	Pass
MS6	14	Alarm		3 Amp (F)	3.5,3.51,6.11	Pass
MS7	14	Alarm (See MS6)		3 Amp (F)	3.5,3.51,6.11	Pass
MS8	14	Alarm (See MS6)		3 Amp (F)	3.5,3.51,6.11	Pass
M196	12	120VAC		15A BKR	3.24,6.16	Pass
M198	12	120VAC		15A BKR	3.24,6.16	Pass
M471	12	120VAC		15A BQ1-B015	3.33,6.16	Pass
M472	12	120VAC		15A BQ1-B015	3.34,6.16	Pass
M475	12	120VAC		15A BQ1-B015	3.34,6.16	Pass
M478	12	120VAC		15A BKR	3.25,6.16	Pass
M479	12	120VAC		15A BKR	3.25,6.16	Pass
M480	12	120VAC		15A BKR	3.25,6.16	Pass
M492	12	120VAC		15A BKR	3.25,6.16	Pass

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CABLE	SIZE	POWER	SIGNAL	FUSE/BREAKER (F/BKR-AMPS)	SOURCE	PASS/FAIL
PL5039	14		UPS ALARM		6.15	Pass
PL5029	2	x		30A(BKR)	Per Ref. 3.42	Pass
PL5031	6	x		60A(BKR)	Per Ref. 3.42	Pass
T660	18		Printer		6.15	Pass
T965	19 SH		SAS		6.15	Pass
T1580	12	LIU 87		10(F) Max	6.12	Pass
T1631	14	XFMR Sup. C49		10(F) Max	6.12	Pass
T1640	14	XFMR Sup. C56		10(F) Max	6.12	Pass
T1643	14		C56 ELHNGE	10(F) Max	6.12	Pass
T1671	14	XFMR Sup. A140		10(F) Max	6.12	Pass
T1674	14		A140 ELHNGE	10(F) Max	6.15	Pass
T1692	14	120V Sup		10(F) Max	6.12	Pass
T1700	14	120V Splice		10(F) Max	6.12	Pass
T1725	14	XFMR Sup A114		10(F) Max	6.12	Pass
T1728	14		A114 ELHNGE	10(F) Max	6.15	Pass
T1731	14	XFMR Sup A113		10(F) Max	6.12	Pass
T1734	14		A113 EL STK	10(F) Max	6.15	Pass
T1745	14	XFMR Sup A103		10(F) Max	6.12	Pass
T1748	14		A103 EL STK	10(F) Max	6.15	Pass
T1750	14	XFMR Sup A117		10(F) Max	6.12	Pass
T1753	14		A117 ELHNGE	10(F) Max	6.15	Pass
T1755	14	XFMR Sup A118		10(F) Max	6.12	Pass
T1758	14		A118 ELHNGE	10(F) Max	6.15	Pass
T1791	14	XFMR Sup A58		10(F) Max	6.12	Pass
T1794	14		A58 ELHNGE	10(F) Max	6.15	Pass
T1800	14	XFMR Sup A56		10(F) Max	6.12	Pass
T1803	14		A56 ELHNGE	10(F) Max	6.15	Pass
T1806	14	XFMR Sup A119		10(F) Max	6.12	Pass
T1809	14		A119 EL STK	10(F) Max	6.15	Pass
T1860	14	120V Sup A194		10(F) Max	6.12	Pass
T1875	14	120V Splice		10(F) Max	6.12	Pass
T1900	14	XFMR Sup A172		10(F) Max	6.12	Pass
T1903	14		A172 ELHNGE	10(F) Max	6.15	Pass
T1910	14	XFMR Sup D5		10(F) Max	6.12	Pass
T1913	14		D5 ELHNGE	10(F) Max	6.15	Pass
T1916	14	XFMR Sup D33		10(F) Max	6.12	Pass
T1960	14	XFMR Sup A120		10(F) Max	6.12	Pass
T1963	14		A120 ELHNGE	10(F) Max	6.15	Pass
T1976	14	XFMR Sup A107		10(F) Max	6.12	Pass
T2361	19SH		SAS CONT D5		6.15	Pass
T2372	19SH		SAS CONT D3		6.15	Pass

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CABLE	SIZE	POWER	SIGNAL	FUSE/BREAKER (F/BKR-AMPS)	SOURCE	PASS/FAIL
T1979	14		A107 EL STK	10(F) MAX	6.15	PASS
T2005	14	XFMR C10		10(F) MAX	6.12	PASS
T2008	14		C10 EL HNGE		6.15	PASS
T2011	14	XFMR C50		10(F) MAX	6.12	PASS
T2016	14	XFMR C55		10(F) MAX	6.12	PASS
T2019	14		C55 EL HNGE		6.15	PASS
T2040	14	TSC SUPPLY		10(F) MAX	6.12	PASS
T2060	14	XFMR C23		10(F) MAX	6.12	PASS
T2063	14		C23 EL HNGE		6.15	PASS
T2144	19SH		C49 CAS		6.15	PASS
T2145	19SH		C49 SAS		6.15	PASS
T2157	19SH		C56 CAS		6.15	PASS
T2158	19SH		C56 SAS		6.15	PASS
T2252	19SH		C10 CAS		6.15	PASS
T2253	19SH		C10 SAS		6.15	PASS
T2262	19SH		C50 CAS		6.15	PASS
T2263	19SH		C50 SAS		6.15	PASS
T2275	19SH		C55 CAS		6.15	PASS
T2276	19SH		C55 SAS		6.15	PASS
T2308	19SH		TSC CAS		6.15	PASS
T2309	19SH		TSC SAS		6.15	PASS
T2321	19SH		C23 CAS		6.15	PASS
T2322	19SH		C23 SAS		6.15	PASS
T2338	14	SUPPLY C13			6.12	PASS
T2344	14		C13 EL HNGE		6.15	PASS
T2348	19SH		C13 CAS		6.15	PASS
T2349	19SH		C13 SAS		6.15	PASS
T2599	19SH		A120 CAS		6.15	PASS
T2600	19SH		A120 SAS		6.15	PASS
T2634	19SH		A107 CAS		6.15	PASS
T2635	19SH		A107 SAS		6.15	PASS
T2646	19SH		A172 CAS		6.15	PASS
T2647	19SH		A172 SAS		6.15	PASS
T2697	19SH		SAS SPLICE		6.15	PASS
T2698	19SH		SAS SPLICE		6.15	PASS
T2748	19SH		A119 CAS		6.15	PASS
T2749	19SH		A119 SAS		6.15	PASS
T2762	19SH		A56 CAS		6.15	PASS
T2763	19SH		A56 SAS		6.15	PASS
T2774	19SH		A58 CAS		6.15	PASS
T2775	19SH		A58 SAS		6.15	PASS
T2847	19SH		A118 CAS		6.15	PASS
T2848	19SH		A118 SAS		6.15	PASS
T2860	19SH		A117 CAS		6.15	PASS
T2861	19SH		A117 SAS		6.15	PASS
T2872	19SH		A103 CAS		6.15	PASS
T2873	19SH		A103 SAS		6.15	PASS
T2895	19SH		A113 CAS		6.15	PASS

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CABLE	SIZE	POWER	SIGNAL	FUSE/BREAKER (F/BKR-AMPS)	SOURCE	PASS/FAIL
T2896	19SH		A113 SAS		6.15	PASS
T2907	19SH		A114 CAS		6.15	PASS
T2908	19SH		A114 SAS		6.15	PASS
T2955	19SH		SPLICE		6.15	PASS
T2956	19SH		SPLICE		6.15	PASS
T2967	19SH		A152 SPLICE		6.15	PASS
T3004	19SH		A140 CAS		6.15	PASS
T3005	19SH		A140 SAS		6.15	PASS
T3101	19SH		CAS CONT		6.15	PASS
T3102	19SH		SAS CONT		6.15	PASS
T3104	19SH		CAS CONT		6.15	PASS
T3105	19SH		SAS CONT		6.15	PASS
T3111	19SH		CAS CONT		6.15	PASS
T3112	19SH		SAS CONT		6.15	PASS
T3114	19SH		CAS CONT		6.15	PASS
T3115	19SH		SAS CONT		6.15	PASS
T3120	19SH		D43 STAT		6.15	PASS
T3121	19SH		D43 STAT		6.15	PASS
[illegible]125	14	MUX SUPPLY		10(F) MAX	6.12	PASS
[illegible]130	19SH		D41 CONT		6.15	PASS
[illegible]3133	14		D41 CONT		6.15	PASS
T3142	19SH		D61 CONT		6.15	PASS
T3143	19SH		D61 CONT		6.15	PASS
T3145	14		D61 CONT		6.15	PASS
T3157	19SH		D19 CONT		6.15	PASS
T3158	19SH		D19 CONT		6.15	PASS
T3160	14		D19 CONT		6.15	PASS
T3172	19SH		D20 CONT		6.15	PASS
T3173	19SH		D20 CONT		6.15	PASS
T3175	14	120V D20		10(F) MAX	6.12	PASS
T3580	14		A207 EL HNGE		6.15	PASS
T3582	14	XFMR A207		10(F) MAX	6.12	PASS
T3621	14	XFMR C19		10(F) MAX	6.12	PASS
T3622	19SH		C19 CAS		6.15	PASS
T3623	19SH		C19 SAS		6.15	PASS
T3629	14		C19 EL HNGE	10(F) MAX	6.15	PASS
T3630	20SH		C19 EL HNGE		6.15	PASS
T3640	19SH		C27 CAGE MW		6.15	PASS
T3641	19SH		C27 CAGE MW		6.15	PASS
T3642	22SH		C27 CAGE MW		6.15	PASS
T3644	19SH		C31 CAGE MW		6.15	PASS
T3645	19SH		C31 CAGE MW		6.15	PASS
T3646	20SH		C31 CAGE MW		6.15	PASS
T3648	19SH		C32 CAGE MW		6.15	PASS
T3649	19SH		C32 CAGE MW		6.15	PASS
[illegible]3650	20SH		C32 CAGE MW		6.15	PASS
[illegible]552	19SH		C65 CAGE MW		6.15	PASS

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CABLE	SIZE	POWER	SIGNAL	FUSE/BREAKER (F/BKR-AMPS)	SOURCE	PASS/FAIL
T3653	19SH		C65 CAGE MW		6.15	PASS
T3654	20SH		C65 CAGE MW		6.15	PASS
T3656	19SH		C66 CAGE MW		6.15	PASS
T3657	19SH		C66 CAGE MW		6.15	PASS
T3658	20SH		C66 CAGE MW		6.15	PASS
T4042	19sh		D15 STAT		6.15	PASS
T4043	19SH		D15 STAT		6.15	PASS
T4046	19SH		D16 STAT		6.15	PASS
T4047	19SH		D16 STAT		6.15	PASS
T4050	19SH		D17 STAT		6.15	PASS
T4051	19SH		D17 STAT		6.15	PASS
T4054	19SH		D18 STAT		6.15	PASS
T4055	19SH		D18 STAT		6.15	PASS

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CABLE	SIZE	POWER	SIGNAL	FUSE/BREAKER (F/BKR-AMPS)	SOURCE	PASS/FAIL
T4083	19SH		DA100 STAT		6.15	PASS
T4084	19SH		DA100 STAT		6.15	PASS
T4085	18		DA100 STAT		6.15	PASS
T4087	19SH		A102 STAT		6.15	PASS
T4088	19SH		A102 STAT		6.15	PASS
T4089	18		A102 STAT		6.15	PASS
T4091	19SH		A104 STAT		6.15	PASS
T4092	19SH		A104 STAT		6.15	PASS
T4093	18		A104 STAT		6.15	PASS
T4095	19SH		A106 STAT		6.15	PASS
T4096	19SH		A106 STAT		6.15	PASS
T4097	18		A106 STAT		6.15	PASS
T4103	19SH		A207 STAT		6.15	PASS
T4104	19SH		A207 STAT		6.15	PASS
T4107	19SH		A209 STAT		6.15	PASS
T4108	19SH		A209 STAT		6.15	PASS
T4109	18		A209 STAT		6.15	PASS
T4496	19		AP5 SAS		6.15	PASS
[illegible]011	19SH		RAD CONT		6.15	PASS
[illegible]00	14		C49 EL HNGE	10(F) MAX	6.12	PASS
[illegible]302	14		C50 EL HNGE	10(F) MAX	6.12	PASS
T5852	18		INTERCOM		6.15	PASS
T5853	18		INTERCOM		6.15	PASS
T5854	18		INTERCOM		6.15	PASS
T5855	18		INTERCOM		6.15	PASS
T5856	18		INTERCOM		6.15	PASS
T5857	18		INTERCOM		6.15	PASS
T5858	18		INTERCOM		6.15	PASS
T5859	18		INTERCOM		6.15	PASS
T5860	18		INTERCOM		6.15	PASS
T5861	18		INTERCOM		6.15	PASS
T5862	18		INTERCOM		6.15	PASS
T5863	18		INTERCOM		6.15	PASS
T5864	18		INTERCOM		6.15	PASS
T5865	18		INTERCOM		6.15	PASS
T5866	18		INTERCOM		6.15	PASS
T5867	18		INTERCOM		6.15	PASS
T5873	18		INTERCOM		6.15	PASS
T5884	18		INTERCOM		6.15	PASS
T5885	18		INTERCOM		6.15	PASS
T5886	18		INTERCOM		6.15	PASS
T5888	18		INTERCOM		6.15	PASS

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CABLE	SIZE	POWER	SIGNAL	FUSE/BREAKER (F/BKR-AMPS)	SOURCE	PASS/FAIL
T5889	18		INTERCOM		6.15	PASS
T5890	18		INTERCOM		6.15	PASS
T5891	18		INTERCOM		6.15	PASS
T5892	18		INTERCOM		6.15	PASS
T5893	18		INTERCOM		6.15	PASS
T6004	14	LIU A102		10(F) MAX	6.12	PASS
T6005	14		A102 EL STK		6.15	PASS
T6008	14	LIU A104		10(F) MAX	6.12	PASS
T6009	14		A104 EL STK		6.15	PASS
T6013	14	LIU A100		10(F) MAX	6.12	PASS
T6014	14		A100 EL STK		6.15	PASS
T6018	14		A106 EL STK		6.15	PASS
T6021	14	LIU C27		10(F) MAX	6.12	PASS
T6022	14		C27 EL STK		6.15	PASS
T6025	14	LIU C32		10(F) MAX	6.12	PASS
T6026	14		C32 EL STK		6.15	PASS
T6029	14	LIU C31		10(F) MAX	6.12	PASS
T6030	14		C31 EL STK		6.15	PASS
T6033	14	LIU C66		10(F) MAX	6.12	PASS
T6034	14		C66 EL STK		6.15	PASS
T6037	14	LIU C65		10(F) MAX	6.12	PASS
T6038	16		C65 EL STK		6.15	PASS
T6047	14	LIU U2 PL1		10(F) MAX	6.12	PASS
T6048	18		A58 INTERCOM		6.15	PASS
T6052	14	LIU U1 PL1		10(F) MAX	6.12	PASS
T6053	19SH		AI1 SAS		6.15	PASS
T6058	14	AI1 LOCK		10(F) MAX	6.12	PASS
T6069	18		VALVE CLOSET		6.15	PASS
T6073	14	LIU U1 PL2			6.12	PASS
T6074	18		AI1 INTERCOM		6.15	PASS
T6078	14	LIU U2 PL2		10(F) MAX	3.19	PASS
T6079	19SH		AI1 CAS		6.15	PASS
T6083	14	LIU DP1		10(F) MAX	6.12	PASS
T6088	14	LIU DP2		10(F) MAX	6.12	PASS
T6093	14	LIU D15		10(F) MAX	6.12	PASS
T6098	14	LIU D16		10(F) MAX	6.12	PASS
T6101	20SH		HATCH 5		6.15	PASS
T6102	14				6.15	PASS
T6103	14	LIU D17		10(F) MAX	6.12	PASS
T6108	14	LIU D18		10(F) MAX	6.12	PASS
T6126	14	LIU A106		10(F) MAX	6.12	PASS
T6130	14	LIU A209		10(F) MAX	6.12	PASS
T6142	14	CHEM LAB		10(F) MAX	6.12	PASS
T6154	19SH		FSF		6.15	PASS
T6157	14	FSF		10(F) MAX	6.12	PASS

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CABLE	SIZE	POWER	SIGNAL	FUSE/BREAKER (F/BKR-AMPS)	SOURCE	PASS/FAIL
T964	19SH		CAS		3.4,6.15	PASS
T965	19SH		SAS		3.4,6.15	PASS
T966	18		W9 STAT		3.4,6.15	PASS
T967	22		IPS HATCH		3.4,6.15	PASS
T1920	14	W4 120V			3.4,6.12	PASS
T1923	14	WR EL STK			3.4,6.12	PASS
T5872	18		INTERCOM		3.4,6.15	PASS
T5887	18		INTERCOM		3.4,6.15	PASS
T6042	14	LIU W9			3.4,6.12	PASS
T6043	14	W9 EL. STK			3.4,6.12	PASS
T6199	19SH		CAS		3.4,6.15	PASS
T6200	19SH		CAS		3.4,6.15	PASS
T6208	14	LIU			3.4,6.12	PASS
T6209	19SH		SAS W9		3.4,6.15	PASS
T6210	19SH		CAS W9		3.4,6.15	PASS
T6211	14	LIU			3.4,6.12	PASS
T6163	14	ACCOUNT		10(F) MAX	6.12	PASS
T6167	20SH		HATCH 4		6.15	PASS
T6168	14	L1U H4		10(F) MAX	6.12	PASS
T6171	20SH		ACC. S.E.		6.15	PASS
T6174	14	ACC. S.E.			6.15	PASS
T6191	6	DOOR		10(F) MAX	3.19	PASS
T6192	18		MAG. SW		6.15	PASS
T6202	14	HATCH 5			6.15	PASS
T6206	19SH		ACC. W.A.		6.15	PASS
T6213	14	UPS		10(F) MAX	6.12	PASS
T6390	14	PROG.			6.15	PASS
T6391	14	COMP SAS			6.15	PASS
T6392	14	EXP. CAB.			6.15	PASS
T6393	14	CONSOLE			6.15	PASS
T6394	14	#2 PRINT			6.15	PASS
T6395	14	L. PRINT			6.15	PASS
T6396	14	#1 PRINT			6.15	PASS
T6397	14	REPEATERS			6.15	PASS
T6475	18CX		SAS CAM.		6.15	PASS
T6493	14	CCTV CAM			6.15	PASS
TV40	14	120 VAC		15A Hein KU793	3.2, 3.17 ~~3.5~~,6.16	PASS CH.W. 7/8/92
TV41	16	CAM & LGT		3 Amp	3.53,3.5,3.51,6.11	PASS
T6190	18		MAG. SW		6.15	PASS

THIS PAGE ADDED BY REVISION 10

SQUARE D CO/ SORGEL 09E D 8525574 0000805 9 A-39-03

CLASS 7431

JUNE, 1982

Watchdog® TRANSFORMERS
THREE PHASE, VENTILATED
600 VOLTS AND BELOW, 60 HERTZ

115°C TEMPERATURE RISE

KVA	Catalog Number 208Y-120V. Secondary	Catalog Number 240V. Delta Secondary	A	B	C	D	E	F	G	H	J	K	L	M	Guar. Sound Level in DB's	Fig.	Wgt.	② Av. % Z	② X/R
30	30T3HF	30T6HF	26	24	15	22	11	8	18	7	.625	1.125	—	4.5	45	1	360	4.2	1.28
45	45T3HF	45T6HF	30	30	20	28	15	11.25	24	9	5.5	1.125	—	5.0	45	1	590	3.3	1.51
75	75T3HF	75T6HF	37	30	20	28	15	11.25	24	10.5	1.25	1.125	—	7.5	50	2	600	4.0	1.64
112.5	112T3HF	112T6HF	42	36	24	33	22	—	28	11	5	—	14	8.5	50	2	1050	4.0	1.49
150	150T3HF	150T6HF	42	36	24	33	22	—	28	11	5	—	14	8.5	50	2	1350	4.4	2.19
225	225T3HF	225T6HF	48	48	29.5	45	28	—	40	13	5.75	—	18	10	55	2	2000	2.7	2.00
300	300T3HF	300T6HF	48	44	29.5	45	28	—	40	13	5.75	—	18	10	55	2	2500	3.0	2.14
500	500T68HF	500T63HF	60	56	36	52	34	—	47	14	1.25	—	28	12.5	60	2	4200	3.7	2.12

80°C TEMPERATURE RISE

KVA	Catalog Number 208Y-120V. Secondary	Catalog Number 240V. Delta Secondary	A	B	C	D	E	F	G	H	J	K	L	M	Guar. Sound Level in DB's	Fig.	Wgt.	② Av. % Z	② X/R
30	30T3HB	30T6HB	26	24	15	22	11	[illegible]	18	4	.625	[illegible]	—	4.5	45	[illegible]	380	[illegible]	[illegible]
45	45T3HB	45T6HB	30	30	20	28	15	11.25	24	9	5.5	1.125	—	5.0	45	1	605	3.3	1.67
75	75T3HB	75T6HB	[illegible]	30	20	28	15	[illegible]	24	10.5	1.25	1.125	—	7.5	50	2	705	4.0	1.82
112.5	112T3HB	112T6HB	42	36	24	33	22	—	28	11	5	—	14	8.5	50	2	1065	4.0	1.88
150	150T3HB	150T6HB	42	36	24	33	22	—	28	11	5	—	14	8.5	50	2	1365	4.4	2.45
225	225T3HB	225T6HB	48	44	29.5	45	28	—	40	13	5.75	—	18	10	55	2	2015	2.7	2.28
300	300T3HB	300T6HB	58	48	29.5	45	28	—	40	13	5.75	—	18	10	55	2	2875	3.0	2.48
500	500T90HB	500T91HB	60	56	36	52	34	—	47	14	1.25	—	28	12.5	60	2	4600	3.2	2.13

DIMENSIONAL DIAGRAMS

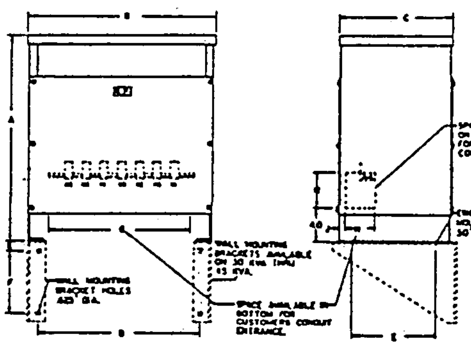


Figure 1

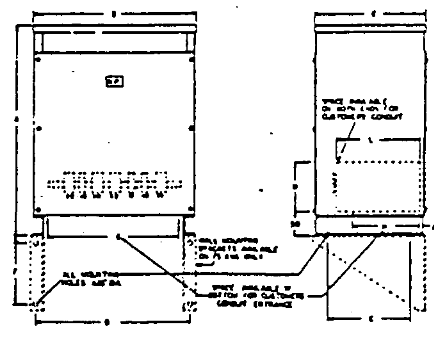
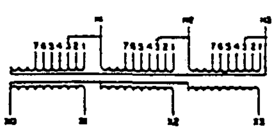
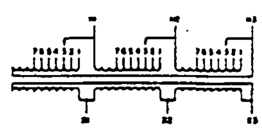


Figure 2

WIRING DIAGRAMS


SECONDARY 240 V. DELTA
6 TAPS
(4 TAPS ON 500 KVA)


SECONDARY 208Y/120 V.
6 TAPS
(4 TAPS ON 500 KVA)

BOLD TYPE Catalog Numbers normally stocked at Central Warehouse and selected redistribution centers.
① Layout drawings are for planning only. Do not use for construction. Contact your local Square D office for certified drawings.
② X/R and % Z values are average only and may vary with design changes. Contact your local Square D office for exact values.
Lugs: furnished by customer.

4047

3101x

THIS PAGE ADDED BY REVISION 10

Attachment FIR103C
Reg. Guide 1.75 Associated
Circuits and Appendix R
Analysis for Non-Class 1E
120V AC & 250V DC Circuits

Calculation No. WBPEVAR9001006

Prepared by [signature] Date 8-15-92

Checked by Robert J. [signature] Date 8/15/92

Sheet 1

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RV

This Attachment contains 37 total pages.

1.0 PURPOSE AND SCOPE - Attachment FIR 103C

1.1 Purpose

The purpose of this attachment is to verify that control/signal or power cable leaving any vendor skid or package connected to a 480V MCC in the Aux building, the diesel building, or the intake pumping station will not degrade the integrity of any Class 1E cables.

Power and control cables going to vendor skids or packages are accounted for in calculation WBPEVAR9001006. Control or power cables leaving skids or packages are not accounted for in calculation WPBEVAR9001006.

Attachment FIR 103C verifies that any cables leaving a vendor skid or package will not degrade the integrity of any class 1E cables by virtue of fuse protection, circuit breaker protection, isolation and/or separation from Class 1E cables.

Control or sensing signals from skids or packages derive their power through a step/down isolation transformer on the skid or package. Control or sensing cables leaving a vendor skid or package are, generally, not shown on the main one line drawings.

Power for motors or heaters can be routed through a vendor skid or package if the package contains a line starter to control the motor or heater in lieu of controlling the motor by actuation of the MCC breaker.

Power cables from a vendor skid or package to a motor or other controlled element are generally shown on main one line drawings but not the routing. The cable is shown the same on the drawing if the motor or element was mounted on or adjacent to the skid or if the motor or element is located several feet away from the skid.

1.2 Scope

The scope of this attachment is vendor skids or packages connected to 480V Motor Control Centers (MCCs) in :

1. Auxiliary Building.
2. Diesel Buildings.
3. Intake pumping station.

And are shown on the main one line drawings as:

1. Having a control unit outside the MCC and/or
2. Do not utilize the fused control power from the respective MCC.

Not included in this attachment are:

1. LIGHTING PANELS

   Each conductor leaving a lighting panel is protected by a single circuit breaker. Each panel circuit breaker is coordinated with the main breaker of the distribution panel which in turn is coordinated with the 480V MCC breaker. Lighting panels are analyzed in paragraph 6.2 of the baseline calculation.

2. BATTERY CHARGERS

   The 125 volt DC system is 1E and the 250 volt DC system is analyzed in the baseline calculation.

3. INVERTERS

   120 volt AC associated circuits are analyzed in the baseline calculation.

4. WATER HEATERS.

   Thermostatic controls are affixed to the water tank.

5. HEAT TRACE SYSTEMS.

   The output from a step down transformer goes directly to a distribution panel which utilizes a breaker on each individual circuit to protect the circuit conductor. In addition, each branch circuit breaker is coordinated with the distribution panel main circuit breaker which in turn is coordinated with the 480V MCC breaker.

2.0 CRITERIA

Assurance is required that any cable leaving a vendor skid or package will not degrade any 1E cable. Assurance is given by any cable leaving a skid meeting the following criteria:

1. The cable is protected by a fuse on the low side of a 480V/120VAC step down transformer. R11

2. The cable is low energy which will prevent degradation of its own insulation. (This applies to 10VAC and 24VAC thermostat control cable.)

3. 480VAC cables have been analyzed in baseline calculation WBN EEB-MSTI15-0011.

Determination of the application of the above three criteria to any cables leaving skids or packages to degrade 1E cables is performed using drawings to the maximum extend possible. Walkdown inspections are used when drawings do not provide sufficient data to assure that a cable leaving a skid or package will not degrade any 1E cable.

The analysis must determine that the criteria of WB-DC-30-5 is met for each individual case/cable.

Assurance requirements are determined in the following general categories:

1. No cables leave the skid or package.

   This category of skids and packages includes cranes and hoists that utilize a pendent control cable. The pendent control cable leaves the skid but is separated from any 1E cable.

   No chance of Class 1E cable degradation exists. Therefore, no analysis is required.

2. Cables leaving a skid for annunciation.

   The annunciator system supplies it's own power to dry contacts on skids and packages. The power supplied by the annunciator system had been analyzed.

   Therefore, no analysis is required.

3. 480 volt power leaving a skid.

   480 volt power only leaves a skid going to a motor or a heater load in the case where there is a line starter located on the skid. Baseline calculation WBN EEB-MS-TI15-0011 addresses 480 volt power through the line starter to the equipment.

   Therefore, no analysis is required.

4. Low voltage control or signal cable.

   Low voltage is less than 120 volts AC. This includes the 10 volt or 24 volt cable that is part of the thermostat circuit for some air conditioning units.

   Analysis is not required.

5. Cable leaving a skid and connected to a control power source such as:

   1. Power supplied by a 120VAC step down transformer located on the skid.

   2. Power supplied by a 230VAC step down transformer located on the skid.

   Analysis is required.

3.0 SOURCES OF INPUT/REFERENCES

3.1 WBPEVAR9001006, "Reg. Guide 1.75 Associated Circuits and Appendix R Analysis of Non-Class 1E 120 VAC & 250 VDC Circuits."

3.2 WB-DC-30-5, R6.

3.3 WB-DC-30-4, R9.

3.4 TVA Electrical Design Guide DG-E12.6.2, R0

3.5 TVA Electrical Design Guide DG-E2.4.6, R0

3.6 TVA Electrical Design Standard DS-E12.1.6, R1

3.7 Reference Drawings (Appendix B)

3.8 EAI-3.15 R4 Cable and Conduit Record Development and Issue Procedure

3.9 CCRS (Cable, Conduit and Cable Tray)

4.0 DESIGN INPUT DATA

N/A

5.0 ASSUMPTIONS - Justification of Assumptions

5.1 Unverified - None

5.2 Justified - None

6.0 METHODOLOGY

The methodology used to verify that control/signal or power cables leaving any vendor skid or package in the Aux building, the Diesel building or the Intake Pumping Station will not degrade the integrity of any Class 1E cables includes the following:

Main one line drawings were used to identify and list in table form all vendor skids or packages connected to Motor Control Centers (MCCs) located in:

1. Auxiliary Building
2. Diesel Buildings
3. Intake Pumping Station

And are shown on the main one line drawings as:

1. Having a control unit outside the MCC and/or
2. Do not utilize the fused control power from the respective MCC.

Not included in this attachment are:

1. Lighting panels

   Individual breakers for each circuit leaving the panel and they are analyzed in paragraph 6.2 of baseline calculation.

2. Battery chargers

   120 volt DC system is a 1E system and the 250 volt DC system is analyzed in the baseline calculation.

3. Inverters

   120 volt AC associated circuits are analyzed in the baseline calculation.

4. Water Heaters

   Thermostatic controls are affixed to the water tank.

5. Heat trace systems

   The output from a step down transformer goes directly to a distribution panel which utilizes breakers on each circuit leaving the panel.

The table was expanded to include cable identification numbers derived from System Diagram drawings.

Given the cable identification numbers, the CCRS was utilized to obtain the conduit identification number which was added to the table and, which enabled a cross check to be made to determine if the cable leaving a skid was the sole conductor in the conduit.

The information being added to the table provided obvious answers to the purpose of this attachment. For instance, a skid or package that did not have any cables leaving could not degrade the performance of any 1E cables. To capture and utilize this information the table was expanded to include a field for category. By utilizing a category system for each skid, package, and/or cable the table provided a one line status for each item to evaluate the risk to 1E cables on a one by one basis.

The least exposure to a 1E cable by a cable leaving a skid is the case when no cable leaves a skid. This case is classified as Category 1 and no further data is required. For cases where there is a cable leaving a skid the cable number is listed. Where there is more than one cable leaving a skid, each cable is listed separately. For each cable (except 480 volt) leaving a skid sufficient data is entered to assure there is no exposure to any 1E cable. All 480 volt cables leaving a skid or package are listed on this attachment but they are analyzed in WBN EEB-MS-TI05-0011.

The categories utilized on the table are as follows:

1. No cables leaving the skid or package. Therefore do not have associated circuits.

   This includes all self contained skids or packages and cranes or hoists that have only a pendent control cable connected directly to the package.

2. Cable leaving skid or control panel is from 10VAC or 24VAC step down transformer located on skid or control panel and is in conduit.

3. Cable leaving skid or package is protected by a circuit breaker.

4. Cable leaving skid or package goes directly to a local distribution panel.

5. Cable leaving skid or control panel is 480VAC.

6. Cable leaving skid or package is from 120VAC step down transformer located on skid or control panel and is in conduit.

7. Cable leaving skid or package is protected by a fuse.

8. Cable leaving skid or package is in conduit and cable tray.

9. Cable leaving skid or package is separated from or does not have 1E conduit or tray in the vicinity (Meets or exceeds separation criteria of one inch - WB-DC-30-4).

10. Cable leaving skid or package is a part of the annunciator system.

    Annunciator cables are adequately protected by the annunciator system. The skid or package contains dry contacts which are utilized by the annunciator system to detect motor run/stop, high/low conditions, etc. The power in the cables is supplied by the annunciator system which is self protecting.

11. Skid or package walked down.

    To complete the table and status for each item, schematic diagram drawings and vendor drawings were utilized to identify protection for each cable leaving a skid or package.

    In the cases where the drawings did not provide sufficient information to assure that a cable leaving a skid or package did not degrade 1E cable (Satisfied in category system), walkdowns were performed. Walkdowns of skids or packages provided information about protection, voltage levels, separation, location, etc. that could determine the categories to be used for the particular skid or package.

    An example of such an item is the thermostats for the room heaters in the Diesel building; the thermostat is 120 volt AC, located directly below the heater, is connected by a single conduit, has a 15 amp fuse on the primary side of the 480/120 volt step down transformer and is not directly fused. Analysis of the heat that could be generated in the conduit if a short occurred at the thermostat was not required because the walkdown provided information that there are no 1E cables in the vicinity that could be damaged if the thermostat cable did short and heat up the conduit in which it is contained. In addition, the capacity of the 120 volt control transformer, the wiring, and the low power available make the thermostat circuit self limiting.

7.0 <u>ANALYSIS</u>

Thirty-six cables did not pass the criteria of this attachment:

> The 36 cables that did not pass the criteria are identified with a "NO" in the pass criteria column on Attachment A.

R11

These 36 cables did not pass the criteria because:

1. A protective fuse on the cable could not be confirmed.

2. The cable does not have a protective fuse.

Corrective action

Action to correct the 36 identified cables has been initiated in the form of a DCN. DCN M-20174-A will assure that each cable is protected with a fuse by determining the presence of an existing fuse or installing a 5 amp protective fuse to the circuit. 5 amp or less

R11

Fused Circuits

The maximum fuse for cables leaving skids or packages is 10 amp. Any cable #14 or larger is within known bounds and need not be analyzed per baseline calculation.

8.0 SUMMARY OF RESULTS

Number of skid or packages identified from one line drawings and checked for cable leaving:	242
Number of skids found to be self contained:	156
Number of cables leaving skids:	168
Number of Conduits:	326
Number of Walkdowns performed:	31

Walkdown provided answers in the following areas:

Separation criteria (Category 9)	21 cases
Fuse on secondary (Category 7)	4 cases
Inaccessible heaters (Ceiling)	5 cases
Conduit contact (Non 1E-1E)	1 case

Number of skids (cables) that did not pass criteria: 36

See Attachment A, "NO" in pass criteria column

9.0 CONCLUSIONS

This attachment determined that EAI-3.15, paragraph 7.3.2.3 and WB-DC-30-4, paragraph 4.1.2.4 have been followed for cables leaving vendor skids or packages.

7.3.2.3 "Cables for nonsafety-related functions shall not be routed in conduit used for safety-related circuits except at terminal equipment where only one conduit entrance is available."

There were no mix of safety and non-safety cables in any conduit examined for this attachment nor was there any mixing of cables at terminal equipment for the skids examined.

Action to correct the 36 identified cables has been initiated in the form of a DCN. DCN M-20174-A will assure that each cable is protected with a fuse by determining the presence of an existing 5 amp or less fuse or installing a 5 amp protective fuse to the circuit. R11

10.0 APPENDICES

Appendix A "Vendor Package Matrix" (Table)

Appendix B "Drawing List"

Appendix C "Walkdown List"

PREPARED BY: R. Katz DATE 8-6-92
CHECKED BY: [signature] DATE 8-7-92

APPENDIX A

Page No. 1
08/06/92

ATTACHMENT FIR103C - CALC NO. WPBEVAR9001006
REG GUIDE 1.75 ASSOCIATED CIRCUITS
AND APPENDIX R ANALYSIS FOR NON 1E
120V AC AND 250V DC CIRCUITS

MCC	DESCRIPTION	DRAWING	REV	EQUIPMENT	U DES	SYS	DESIG	CABLE	CAT	CONDUIT	CABLE SIZE	FUSE SIZE-AMPS	PASS CRITERIA
0-MCC-266-1	480V INTAKE PUMPING STATION BD	35N713- 1	R1	AIR HTR	0 -HTR	- 30	-714/3	PLW405	6,7	PLW3043,3044,3046	14	0.8	YES
0-MCC-266-1	480V INTAKE PUMPING STATION BD	35N713- 1	R1	AIR HTR	0 -HTR	- 30	-714/3	PLW404	6,7	PLW3041	14	0.8	YES
0-MCC-266-1	480V INTAKE PUMPING STATION BD	35N713- 1	R1	AIR HTR	0 -HTR	- 30	-714/3	PLW406	6,7	PLW3042,3043	14	0.8	YES
0-MCC-266-1	480V INTAKE PUMPING STATION BD	35N713- 1	R1	UNIT HTR	0 -HTR	- 30	-715/3		1				YES
0-MCC-266-1	480V INTAKE PUMPING STATION BD	35N713- 1	R1	UNIT HTR	0 -HTR	- 30	-716/3		1				YES
0-MCC-266-1	480V INTAKE PUMPING STATION BD	35N713- 1	R1	FIRE PROT VLV BOX SUMP PUMP A	0 -HTR	- 40	-5/1	PLW487	5	PLW2372,2374			YES
0-MCC-266-1	480V INTAKE PUMPING STATION BD	35N713- 2	R1	INTAKE PUMPING STATION CRANE	0 -CRN	-270	-11		1				YES
0-MCC-266-1	480V INTAKE PUMPING STATION BD	35N713- 2	R1	FRESH AIR HTR 2	0 -HTR	- 30	-708/3	PLW417	6,7	PLW3031,3032,3034	14	0.8	YES
0-MCC-266-1	480V INTAKE PUMPING STATION BD	35N713- 2	R1	FRESH AIR HTR 1	0 -HTR	- 30	-709/3	PLW411	6,7	PLW3025,3026,3029	14	0.8	YES
0-MCC-266-1	480V INTAKE PUMPING STATION BD	35N713- 2	R1	UNIT HTR A	0 -HTR	- 30	-710/3		1				YES
0-MCC-266-1	480V INTAKE PUMPING STATION BD	35N713- 2	R1	UNIT HTR B	0 -HTR	- 30	-711/3		1				YES
0-MCC-266-1	480V INTAKE PUMPING STATION BD	35N713- 2	R1	UNIT HTR C	0 -HTR	- 30	-712/3		1				YES
0-MCC-266-1	480V INTAKE PUMPING STATION BD	35N713- 2	R1	UNIT HTR D	0 -HTR	- 30	-713/3		1				YES
0-MCC-266-1	480V INTAKE PUMPING STATION BD	35N713- 2	R1	FRESH AIR HTR 2	0 -HTR	- 30	-714/3	PLW416	6,7	PLW3036	14	0.8	YES
0-MCC-266-1	480V INTAKE PUMPING STATION BD	35N713- 2	R1	FRESH AIR HTR 2	0 -HTR	- 30	-714/3	PLW418	6,7	PLW3034,3035	14	0.8	YES
0-MCC-266-1	480V INTAKE PUMPING STATION BD	35N713- 2	R1	FRESH AIR HTR 1	0 -HTR	- 30	-714/3	PLW412	6,7	PLW3026,3027	14	0.8	YES
0-MCC-266-1	480V INTAKE PUMPING STATION BD	35N713- 2	R1	FRESH AIR HTR 1	0 -HTR	- 30	-714/3	PLW410	6,7	PLW3028	14	0.8	YES
0-MCC-266-1	480V INTAKE PUMPING STATION BD	35N713- 2	R1	FIRE PROT VLV BOX SUMP PUMP B	0 -HTR	- 40	-58/1	PLW497	5	PLW2362,2375			YES

THIS SHEET ADDED BY REV. 10

PREPARED BY: R Katz	DATE 8-6-92
CHECKED BY: [signature]	DATE 8-7-92

APPENDIX A

ATTACHMENT FIR103C - CALC NO. WPBEVAR9001006
REG GUIDE 1.75 ASSOCIATED CIRCUITS
AND APPENDIX R ANALYSIS FOR NON 1E
120V AC AND 250V DC CIRCUITS

MCC	DESCRIPTION	DRAWING	REV	EQUIPMENT	U DES SYS DESIG	CABLE	CAT	CONDUIT	CABLE SIZE	FUSE SIZE-AMPS	PASS CRITERIA
0-BD-206-1	480V AUX BLDG COM BD	45W731	R0	TURB BUILDING ELEVATOR	0 -ELEV -270 -T1		1				YES
0-BD-206-1	480V AUX BLDG COM BD	45W731	R0	AUX BUILDING ELEVATOR	0 -ELEV -271 -A1		1				YES
0-BD-206-1	480V AUX BLDG COM BD	45W731	R0	ICE CONDENS REF UNITS A&B	0 -MTR - 61 -2&12D	PL41	6,7	PLC2580,81,82	12	5	YES
0-BD-206-1	480V AUX BLDG COM BD	45W731	R0	ICE CONDENS REF UNITS A&B	0 -MTR - 61 -2&12D	PL40	6,7	PLC2580,2581,2583	12	5	YES
0-BD-206-1	480V AUX BLDG COM BD	45W731	R0	ICE CONDENS REF UNITS A&B	0 -MTR - 61 -2&12D	PL42	6,7	PLC2582,81,80,PLC2608,09	12	5	YES
0-BD-206-1	480V AUX BLDG COM BD	45W731	R0	ICE CONDENS REF UNITS A&B	0 -MTR - 61 -2&12D	PL45	6,7	PLC2580,2584,2586	12	5	YES
0-BD-206-1	480V AUX BLDG COM BD	45W731	R0	ICE CONDENS REF UNITS A&B	0 -MTR - 61 -2&12D	PL46	6,7	PLC2580,2584,2586	12	5	YES
0-BD-206-1	480V AUX BLDG COM BD	45W731	R0	ICE CONDENS REF UNITS A&B	0 -MTR - 61 -2&12D	PL47	6,7	PLC2585,84,86,PLC2608,09	12	5	YES
0-BD-206-1	480V AUX BLDG COM BD	45W731	R0	ICE CONDENS REF UNITS C&D	0 -MTR - 61 -22&32D	PL50	6,7	PLC2587,89,PLC2611	12	5	YES
0-BD-206-1	480V AUX BLDG COM BD	45W731	R0	ICE CONDENS REF UNITS C&D	0 -MTR - 61 -22&32D	PL51	6,7	PLC2587,88,PLC2611	12	5	YES
0-BD-206-1	480V AUX BLDG COM BD	45W731	R0	ICE CONDENS REF UNITS C&D	0 -MTR - 61 -22&32D	PL52	6,7	PLC2587,88,PLC2608,09	12	5	YES
0-BD-206-1	480V AUX BLDG COM BD	45W731	R0	ICE CONDENS REF UNITS C&D	0 -MTR - 61 -22&32D	PL55	6,7	PLC2587,90,92	12	5	YES
0-BD-206-1	480V AUX BLDG COM BD	45W731	R0	ICE CONDENS REF UNITS C&D	0 -MTR - 61 -22&32D	PL56	6,7	PLC2587,90,91	12	5	YES
0-BD-206-1	480V AUX BLDG COM BD	45W731	R0	ICE CONDENS REF UNITS C&D	0 -MTR - 61 -22&32D	PL57	6,7	PLC2587,90,91,PLC2608,09	12	5	YES
0-BD-206-1	480V AUX BLDG COM BD	45W731	R0	ICE CONDENS REF UNITS E&F	0 -MTR - 61 -42&52D	PL60	6,7	PLC2593,94,95,96	12	5	YES
0-BD-206-1	480V AUX BLDG COM BD	45W731	R0	ICE CONDENS REF UNITS E&F	0 -MTR - 61 -42&52D	PL61	6,7	PLC2593,94,95,96	12	5	YES
0-BD-206-1	480V AUX BLDG COM BD	45W731	R0	ICE CONDENS REF UNITS E&F	0 -MTR - 61 -42&52D	PL62	6,7	PLC2594,95,96,PLC2608,10	12	5	YES
0-BD-206-1	480V AUX BLDG COM BD	45W731	R0	ICE CONDENS REF UNITS E&F	0 -MTR - 61 -42&52D	PL65	6,7	PLC2593,94,98,PLC2600	12	5	YES

THIS SHEET ADDED BY REV 10

PREPARED BY: R. Katz | DATE 8-6-92
CHECKED BY: [signature] | DATE 8-7-92

APPENDIX A

ATTACHMENT FIR103C - CALC NO. WPBEVAR9001006
REG GUIDE 1.75 ASSOCIATED CIRCUITS
AND APPENDIX R ANALYSIS FOR NON 1E
120V AC AND 250V DC CIRCUITS

MCC	DESCRIPTION	DRAWING	REV	EQUIPMENT	U DES	SYS	DESIG	CABLE	CAT	CONDUIT	CABLE SIZE	FUSE SIZE-AMPS	PASS CRITERIA
0-BD-206-1	480V AUX BLDG COM BD	45W731	R0	ICE CONDENS REF UNITS E&F	0 -MTR	- 61	-42&52D	PL66	6,7	PLC2593,94,98,99	12	5	YES
0-BD-206-1	480V AUX BLDG COM BD	45W731	R0	ICE CONDENS REF UNITS E&F	0 -MTR	- 61	-42&52D	PL67	6,7	PLC2593,94,98,99,PLC2608,10	12	5	YES
0-BD-206-1	480V AUX BLDG COM BD	45W731	R0	ICE CONDENS REF UNITS G&H	0 -MTR	- 61	-62&72D	PL70	6,7	PLC2593,PLC2601,02,04	12	5	YES
0-BD-206-1	480V AUX BLDG COM BD	45W731	R0	ICE CONDENS REF UNITS E&F	0 -MTR	- 61	-62&72D	PL71	6,7	PLC2593,PLC2601,02,03	12	5	YES
0-BD-206-1	480V AUX BLDG COM BD	45W731	R0	ICE CONDENS REF UNITS E&F	0 -MTR	- 61	-62&72D	PL72	6,7	PLC2593,PLC2601,02,03,08,10	12	5	YES
0-BD-206-1	480V AUX BLDG COM BD	45W731	R0	ICE CONDENS REF UNITS E&F	0 -MTR	- 61	-62&72D	PL75	6,7	PLC2593,PLC2601,05,07	12	5	YES
0-BD-206-1	480V AUX BLDG COM BD	45W731	R0	ICE CONDENS REF UNITS E&F	0 -MTR	- 61	-62&72D	PL76	6,7	PLC2593,PLC2601,05,06	12	5	YES
0-BD-206-1	480V AUX BLDG COM BD	45W731	R0	ICE CONDENS REF UNITS E&F	0 -MTR	- 61	-62&72D	PL77	6,7	PLC2593,PLC2601,05,08,10	12	5	YES
0-BD-206-1	480V AUX BLDG COM BD	45W731	R0	AUX INSTR RM HTR	2 -HTR	- 31	-89	2PL2826	6,9,11	2PLC238			~~YES~~ NO JJB 8-15-92
1-MCC-215-A1-A	DIESEL AUX BD 1A1-A	45W732- 1	R0	CORRIDOR ELEC HTR 1A	0 -HTR	- 30	-479		1				YES
2-MCC-215-A1-A	DIESEL AUX BD 2A1-A	45W732- 1	R0	CORRIDOR ELEC HTR 2A	0 -HTR	- 30	-480		1				YES
1-MCC-215-A1-A	DIESEL AUX BD 1A1-A	45W732- 1	R0	LUBE OIL STORAGE RM HTR	0 -HTR	- 30	-483	PL2311	6,9,11	PLC2380			~~YES~~ NO JJB 8-15-92
1-MCC-215-A2-A	DIESEL AUX BD 1A2-A	45W732- 2	R0	CO2 STORAGE RM ELEC HTR	0 -HTR	- 30	-484	PL2305	6,9,11	PLC2372			~~YES~~ NO JJB 8-15-92
1-MCC-215-A2-A	DIESEL AUX BD 1A2-A	45W732- 2	R0	FALLOUT SHELTER HTR	0 -HTR	- 30	-485	PL2317	6,9,11	PLC2381			~~YES~~ NO JJB 8-15-92
1-MCC-215-A2-A	DIESEL AUX BD 1A2-A	45W732- 2	R0	DSL GEN BLDG CO2 REFRIG UNIT	0 -PKG	- 39	- 37	FE535	2	FE1427,FE3579			YES
1-MCC-215-A2-A	DIESEL AUX BD 1A2-A	45W732- 2	R0	DSL GEN BLDG CO2 REFRIG UNIT	0 -PKG	- 39	- 37	FE536	2,8	FE3564,FE3578,FE4129			YES
1-MCC-215-A2-A	DIESEL AUX BD 1A2-A	45W732- 2	R0	DSL GEN BLDG CO2 REFRIG UNIT	0 -PKG	- 39	- 37	A2804	10,8	A4476,A4477			YES
1-MCC-215-A2-A	DIESEL AUX BD 1A2-A	45W732- 2	R0	DSL GEN 1A-A RM HTR A	1 -HTR	- 30	-471	PL2263	6,9,11	PLC2360			~~YES~~ NO JJB 8-15-92

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PREPARED BY: R Katz DATE 8-6-92
CHECKED BY: [illegible signature] DATE 8-7-92

APPENDIX A

ATTACHMENT FIR103C - CALC NO. WPBEVAR9001006
REG GUIDE 1.75 ASSOCIATED CIRCUITS
AND APPENDIX R ANALYSIS FOR NON 1E
120V AC AND 250V DC CIRCUITS

MCC	DESCRIPTION	DRAWING	REV	EQUIPMENT	U DES	SYS	DESIG	CABLE	CAT	CONDUIT	CABLE SIZE	FUSE SIZE-AMPS	PASS CRITERIA	
	DIESEL AUX BD 1A2-A	45W732- 2	R0	DSL GEN 1A-A RM HTR B	1 -HTR	- 30	-472	PL2269	6,9,11	PLC2361			~~YES~~ NO JDB 8-15-92	R11
1-MCC-215-A2-A	DIESEL AUX BD 1A2-A	45W732- 2	R0	DSL GEN 1A-A 480V BD HTR	1 -HTR	- 30	-487		1				YES	
2-MCC-215-A2-A	DIESEL AUX BD 2A2-A	45W732- 2	R0	DSL GEN 1A-A RM HTR A	2 -HTR	- 30	-475	PL2287	6,9,11	PLC2362			~~YES~~ NO JDB 8-15-92	R11
2-MCC-215-A2-A	DIESEL AUX BD 2A2-A	45W732- 2	R0	DSL GEN 2A-A RM HTR A	2 -HTR	- 30	-476	PL2293	6,9,11	PLC2363			~~YES~~ NO JDB 8-15-92	
2-MCC-215-A2-A	DIESEL AUX BD 2A2-A	45W732- 2	R0	DSL GEN 2A-A 480V BD HTR	2 -HTR	- 30	-488		1				YES	
1-MCC-215-B1-B	DIESEL AUX BD 1B1-B	45W732- 3	R0	CORRIDOR ELEC HTR 1B	0 -HTR	- 30	-481		1				YES	
2-MCC-215-B1-B	DIESEL AUX BD 2B1-B	45W732- 3	R0	CORRIDOR ELEC HTR 1B	0 -HTR	- 30	-482		1				YES	
1-MCC-215-B2-B	DIESEL AUX BD 1B2-B	45W732- 4	R1	DSL GEN 1B-B RM HTR A	1 -HTR	- 30	-473	PL2275	6,9,11	PLC2364			~~YES~~ NO JDB 8-15-92	R11
1-MCC-215-B2-B	DIESEL AUX BD 1B2-B	45W732- 4	R1	DSL GEN 1B-B RM HTR B	1 -HTR	- 30	-474	PL2281	6,9,11	PLC2365			~~YES~~ NO JDB 8-15-92	
1-MCC-215-B2-B	DIESEL AUX BD 1B2-B	45W732- 4	R1	DSL GEN 1B-B 480V BD HTR	1 -HTR	- 30	-489		1				YES	
2-MCC-215-B2-B	DIESEL AUX BD 2B2-B	45W732- 4	R1	DSL GEN 2B-B RM HTR A	2 -HTR	- 30	-477	PL2299	6,9,11	PLC2366			~~YES~~ NO JDB 8-15-92	R11
2-MCC-215-B2-B	DIESEL AUX BD 2B2-B	45W732- 4	R1	DSL GEN 2B-B RM HTR B	2 -HTR	- 30	-478	PL2776	6,9,11	PLC2367			~~YES~~ NO JDB 8-15-92	
2-MCC-215-B2-B	DIESEL AUX BD 2B2-B	45W732- 4	R1	DSL GEN 1B-B 480V BD HTR	2 -HTR	- 30	-490		1				YES	
0-MCC-215-C1-S	480V DSL AUX BD C1-S	45W733- 3	R0	NONE									YES	
0-MCC-215-C1-S	480V DSL AUX BD C1-S	45W733- 4	R0	NONE									YES	
0-MCC-215-C2-S	480V DSL AUX BD C2-S	45W733- 5	R0	DG ROOM HTR 1	0 -HTR	- 30	-317		1				YES	
0-MCC-215-C2-S	480V DSL AUX BD C2-S	45W733- 5	R0	DG ROOM HTR 2	0 -HTR	- 30	-322		1				YES	
0-MCC-215-C2-S	480V DSL AUX BD C2-S	45W733- 5	R0	FIRE PROTECTION RM HTR	0 -HTR	- 30	-325		1				YES	

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APPENDIX A

PREPARED BY: R Katz	DATE 8-6-92
CHECKED BY: [signature]	DATE 8-7-92

ATTACHMENT FIR103C - CALC NO. WPBEVAR9001006
REG GUIDE 1.75 ASSOCIATED CIRCUITS
AND APPENDIX R ANALYSIS FOR NON 1E
120V AC AND 250V DC CIRCUITS

MCC	DESCRIPTION	DRAWING	REV	EQUIPMENT	U DES	SYS	DESIG	CABLE	CAT	CONDUIT	CABLE SIZE	FUSE SIZE-AMPS	PASS CRITERIA
0-MCC-215-C2-S	480V DSL AUX BD C2-S	45W733- 5	R0	480V BD RM HTR	0 -HTR	- 30	-326		1				YES
0-MCC-215-C2-S	480V DSL AUX BD C2-S	45W733- 6	R0	6.9KV BD RM HTR 1	0 -HTR	- 30	-318		1				YES
0-MCC-215-C2-S	480V DSL AUX BD C2-S	45W733- 6	R0	6.9KV BD RM HTR 2	0 -HTR	- 30	-319		1				YES
0-MCC-215-C2-S	480V DSL AUX BD C2-S	45W733- 6	R0	TRANSFORMER RM HTR	0 -HTR	- 30	-32(2)		1				YES
0-MCC-215-C2-S	480V DSL AUX BD C2-S	45W733- 6	R0	PIPE GALLERY RM HTR 1	0 -HTR	- 30	-320		1				YES
0-MCC-215-C2-S	480V DSL AUX BD C2-S	45W733- 6	R0	PIPE GALLERY RM HTR 2	0 -HTR	- 30	-321		1				YES
0-MCC-215-C2-S	480V DSL AUX BD C2-S	45W733- 6	R0	VESTIBULE HTR	0 -HTR	- 30	-323		1				YES
0-MCC-215-C2-S	480V DSL AUX BD C2-S	45W733- 7	R0	NONE									YES
0-MCC-216-A	480V FUEL & WSTE HDL BD A	45W743- 1	R0	FUEL PIT UPENDING-WINCH 1	1 -HST	- 78	-W1	PLR139	5	PLR1822,1824			YES
0-MCC-216-A	480V FUEL & WSTE HDL BD A	45W743- 1	R0	FUEL PIT UPENDING-WINCH 1	1 -HST	- 78	-W1	PLR140	5	PLR1822,1824			YES
0-MCC-216-A	480V FUEL & WSTE HDL BD A	45W743- 1	R0	FUEL PIT UPENDING-WINCH 1	1 -HST	- 78	-W1	PLR141	6,7	PLR1340,1368,1821	14	10	YES
0-MCC-216-A	480V FUEL & WSTE HDL BD A	45W743- 1	R0	FUEL PIT UPENDING-WINCH 1	1 -HST	- 78	-W1	PLR142	6,9,11	PLR1340,1368,1821	16	10	YES
0-MCC-216-A	480V FUEL & WSTE HDL BD A	45W743- 1	R0	FUEL PIT UPENDING-WINCH 1	1 -HST	- 78	-W1	PLR143	6,9,11	PLR1820	16	10	YES
0-MCC-216-A	480V FUEL & WSTE HDL BD A	45W743- 1	R0	FUEL PIT UPENDING-WINCH 1	1 -HST	- 78	-W1	PLR144	6,7	PLR1348,1349	14	10	YES
0-MCC-216-A	480V FUEL & WSTE HDL BD A	45W743- 1	R0	FUEL PIT UPENDING-WINCH 1	1 -HST	- 78	-W1	PLR145	5	PLR1823,1824	12	10	YES
0-MCC-216-A	480V FUEL & WSTE HDL BD A	45W743- 1	R0	FUEL PIT UPENDING-WINCH 1	1 -HST	- 78	-W1	PLR146	5	PLR1823,1824	12	10	YES
0-MCC-216-A	480V FUEL & WSTE HDL BD A	45W743- 1	R0	FUEL PIT UPENDING-WINCH 1	1 -HST	- 78	-W1	PLR147	6,7	PLR1823,1824	14	10	YES
0-MCC-216-A	480V FUEL & WSTE HDL BD A	45W743- 1	R0	FUEL PIT UPENDING-WINCH 1	1 -HST	- 78	-W1	PLR148	5	PLR1823,1824	14	10	YES

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PREPARED BY: R-Katz DATE 8-6-92
CHECKED BY: [signature] DATE 8-7-92

APPENDIX A

Page No. 6
08/06/92

ATTACHMENT FIR103C - CALC NO. WPBEVAR9001006
REG GUIDE 1.75 ASSOCIATED CIRCUITS
AND APPENDIX R ANALYSIS FOR NON 1E
120V AC AND 250V DC CIRCUITS

MCC	DESCRIPTION	DRAWING	REV	EQUIPMENT	U	DES	SYS	DESIG	CABLE	CAT	CONDUIT	CABLE SIZE	FUSE SIZE-AMPS	PASS CRITERIA
0-MCC-216-A	480V FUEL & WSTE HDL BD A	45W743- 1	R0	FUEL PIT UPENDING-WINCH 1	1	-HST	- 78	-W1	PLR149	2	PLR1364	16	10	YES
0-MCC-216-A	480V FUEL & WSTE HDL BD A	45W743- 1	R0	FUEL PIT UPENDING-U1 CAN	1	-HST	- 78	-W2	PLR1043	6,7	PLR1570	14	10	YES
0-MCC-216-A	480V FUEL & WSTE HDL BD A	45W743- 1	R0	FUEL PIT UPENDING-U1 CAN	1	-HST	- 78	-W2	PLR212	6,7	PLR1540	14	10	YES
0-MCC-216-A	480V FUEL & WSTE HDL BD A	45W743- 1	R0	FUEL PIT UPENDING-U1 CAN	1	-HST	- 78	-W2	PLR137	6,7	PLR1540	14	10	YES
0-MCC-216-A	480V FUEL & WSTE HDL BD A	45W743- 1	R0	FUEL PIT UPENDING-U1 CAN	1	-HST	- 78	-W2	PLR1040	5	PLR1545	12	10	YES
0-MCC-216-A	480V FUEL & WSTE HDL BD A	45W743- 1	R0	FUEL PIT UPENDING-U1 CAN	1	-HST	- 78	-W2	PLR1041	5	PLR1545	12	10	YES
0-MCC-216-A	480V FUEL & WSTE HDL BD A	45W743- 1	R0	FUEL PIT UPENDING-U1 CAN	1	-HST	- 78	-W2	PLR1042	6,7	PLR1570	14	10	YES
0-MCC-216-A	480V FUEL & WSTE HDL BD A	45W743- 1	R0	FUEL PIT UPENDING-U1 CAN	1	-HST	- 78	-W2	PLR1043	6,7	PLR1570	14	10	YES
0-MCC-216-A	480V FUEL & WSTE HDL BD A	45W743- 1	R0	FUEL PIT UPENDING-U1 CAN	1	-HST	- 78	-W2	PLR1044	6,7	PLR1570	14	10	YES
0-MCC-216-A	480V FUEL & WSTE HDL BD A	45W743- 1	R0	FUEL PIT UPENDING-U1 CAN	1	-HST	- 78	-W2	PLR1045	2	PLR1572	16	10	YES
0-MCC-216-A	480V FUEL & WSTE HDL BD A	45W743- 1	R0	PRI & REFLG WTR PIPE TNL U1	1	-HTR	- 30	-687		1				YES
0-MCC-216-A	480V FUEL & WSTE HDL BD A	45W743- 1	R0	PRI & REFLG WTR PIPE TNL U1	1	-HTR	- 30	-689		1				YES
0-MCC-216-A	480V FUEL & WSTE HDL BD A	45W743- 1	R0	PRI & REFLG WTR PIPE TNL U1	1	-HTR	- 30	-691		1				YES
0-MCC-216-B	480V FUEL & WSTE HDL BD B	45W743- 2	R0	NEW FUEL ELEVATOR	0	-ELEV	- 78	-1	PLR293	6,9,11	PLR1376	14		~~YES~~ NO JSB 8-15-92
0-MCC-216-B	480V FUEL & WSTE HDL BD B	45W743- 2	R0	NEW FUEL ELEVATOR	0	-ELEV	- 78	-1	PLR292	6,9,11	PLR1376	14		~~YES~~ NO JSB 8-15-92
0-MCC-216-B	480V FUEL & WSTE HDL BD B	45W743- 2	R0	NEW FUEL ELEVATOR	0	-ELEV	- 78	-1	PLR197	6,9,11	PLR1360	14		~~YES~~ NO JSB 8-15-92
0-MCC-216-B	480V FUEL & WSTE HDL BD B	45W743- 2	R0	NEW FUEL ELEVATOR	0	-ELEV	- 78	-1	PLR290	5,8	PLR1307,1373			YES
0-MCC-216-B	480V FUEL & WSTE HDL BD B	45W743- 2	R0	NEW FUEL ELEVATOR	0	-ELEV	- 78	-1	PLR294	6,9,11	PLR1377	14		~~YES~~ NO JSB 8-15-92

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APPENDIX A

Page No. 7
08/06/92

PREPARED BY: R-Katz DATE 8-6-92
CHECKED BY: [signature] DATE 8-7-92

ATTACHMENT FIR103C - CALC NO. WPBEVAR9001006
REG GUIDE 1.75 ASSOCIATED CIRCUITS
AND APPENDIX R ANALYSIS FOR NON 1E
120V AC AND 250V DC CIRCUITS

MCC	DESCRIPTION	DRAWING	REV	EQUIPMENT	U DES	SYS	DESIG	CABLE	CAT	CONDUIT	CABLE SIZE	FUSE SIZE-AMPS	PASS CRITERIA
0-MCC-216-B	480V FUEL & WSTE HDL BD B	45W743- 2	R0	NEW FUEL ELEVATOR	0 -ELEV	- 78	-1	PLR291	5	PLR1374			YES
0-MCC-216-B	480V FUEL & WSTE HDL BD B	45W743- 2	R0	FUEL PIT UPENDING-WINCH 1	2 -HST	- 78	-W1	PLR225	6,7	PLR1350,1369,1831	14	10	YES
0-MCC-216-B	480V FUEL & WSTE HDL BD B	45W743- 2	R0	FUEL PIT UPENDING-WINCH 1	2 -HST	- 78	-W1	PLR229	6,9,11	PLR1350,1369,1831	16	10	YES
0-MCC-216-B	480V FUEL & WSTE HDL BD B	45W743- 2	R0	FUEL PIT UPENDING-WINCH 1	2 -HST	- 78	-W1	PLR249	6,7	PLR1350,1369,1831	14	10	YES
0-MCC-216-B	480V FUEL & WSTE HDL BD B	45W743- 2	R0	FUEL PIT UPENDING-WINCH 1	2 -HST	- 78	-W1	PLR250	6,9,11	PLR1350,1369,1831	16	10	YES
0-MCC-216-B	480V FUEL & WSTE HDL BD B	45W743- 2	R0	FUEL PIT UPENDING-WINCH 1	2 -HST	- 78	-W1	PLR247	6,7	PLR1834,1832	12	10	YES
0-MCC-216-B	480V FUEL & WSTE HDL BD B	45W743- 2	R0	FUEL PIT UPENDING-WINCH 1	2 -HST	- 78	-W1	PLR248	6,7	PLR1834,1832	12	10	YES
0-MCC-216-B	480V FUEL & WSTE HDL BD B	45W743- 2	R0	FUEL PIT UPENDING-WINCH 1	2 -HST	- 78	-W1	PLR254	6,7	PLR1834,1833	12	10	YES
0-MCC-216-B	480V FUEL & WSTE HDL BD B	45W743- 2	R0	FUEL PIT UPENDING-WINCH 1	2 -HST	- 78	-W1	PLR255	6,7	PLR1834,1833	12	10	YES
0-MCC-216-B	480V FUEL & WSTE HDL BD B	45W743- 2	R0	FUEL PIT UPENDING-WINCH 1	2 -HST	- 78	-W1	PLR256	6,7	PLR1358,1836	14	10	YES
0-MCC-216-B	480V FUEL & WSTE HDL BD B	45W743- 2	R0	FUEL PIT UPENDING-WINCH 1	2 -HST	- 78	-W1	PLR257	6,7	PLR1358,1836	14	10	YES
0-MCC-216-B	480V FUEL & WSTE HDL BD B	45W743- 2	R0	FUEL PIT UPENDING-WINCH 1	2 -HST	- 78	-W1	PLR258	6,7	PLR1358,1836	14	10	YES
0-MCC-216-B	480V FUEL & WSTE HDL BD B	45W743- 2	R0	FUEL PIT UPENDING-WINCH 1	2 -HST	- 78	-W1	PLR259	6,9,11	PLR1358,1835	16	10	YES
0-MCC-216-B	480V FUEL & WSTE HDL BD B	45W743- 2	R0	FUEL PIT UPENDING-WINCH 1	2 -HST	- 78	-W1	PLR235	6,7	PLR1350,1353	14	10	YES
0-MCC-216-B	480V FUEL & WSTE HDL BD B	45W743- 2	R0	FUEL PIT UPENDING-WINCH 1	2 -HST	- 78	-W1	PLR253	6,9,11	PLR1350,1369,1830	16	10	YES
0-MCC-216-B	480V FUEL & WSTE HDL BD B	45W743- 2	R0	FUEL PIT UPENDING-WINCH 1	2 -HST	- 78	-W1	PLR241	6,7	2T3859	14	10	YES
0-MCC-216-B	480V FUEL & WSTE HDL BD B	45W743- 2	R0	FUEL PIT UPENDING-WINCH 1	2 -HST	- 78	-W1	PLR273	6,7	2T3859	14	10	YES
0-MCC-216-B	480V FUEL & WSTE HDL BD B	45W743- 2	R0	FUEL PIT UPENDING-U2 CAN	2 -HST	- 78	-W2	PLR1050	6,7	PLR1558	12	10	YES

THIS SHEET ADDED BY REV 10

PREPARED BY: R-Kat	DATE 8-6-92
CHECKED BY: [signature]	DATE 8-7-92

APPENDIX A

Page No. 8
08/06/92

ATTACHMENT FIR103C - CALC NO. WPBEVAR9001006
REG GUIDE 1.75 ASSOCIATED CIRCUITS
AND APPENDIX R ANALYSIS FOR NON 1E
120V AC AND 250V DC CIRCUITS

MCC	DESCRIPTION	DRAWING	REV	EQUIPMENT	U DES	SYS	DESIG	CABLE	CAT	CONDUIT	CABLE SIZE	FUSE SIZE-AMPS	PASS CRITERIA
0-MCC-216-B	480V FUEL & WSTE HDL BD B	45W743- 2	R0	FUEL PIT UPENDING-U2 CAN	2 -HST	- 78	-W2	PLR1051	6,7	PLR1558	12	10	YES
0-MCC-216-B	480V FUEL & WSTE HDL BD B	45W743- 2	R0	FUEL PIT UPENDING-U2 CAN	2 -HST	- 78	-W2	PLR1052	6,7	PLR1571	14	10	YES
0-MCC-216-B	480V FUEL & WSTE HDL BD B	45W743- 2	R0	FUEL PIT UPENDING-U2 CAN	2 -HST	- 78	-W2	PLR1053	6,7	PLR1571	14	10	YES
0-MCC-216-B	480V FUEL & WSTE HDL BD B	45W743- 2	R0	FUEL PIT UPENDING-U2 CAN	2 -HST	- 78	-W2	PLR1054	6,9,11	PLR1571	16	10	YES
0-MCC-216-B	480V FUEL & WSTE HDL BD B	45W743- 2	R0	FUEL PIT UPENDING-U2 CAN	2 -HST	- 78	-W2	PLR1055	6,7	PLR1573	14	10	YES
0-MCC-216-B	480V FUEL & WSTE HDL BD B	45W743- 2	R0	FUEL PIT UPENDING-U2 CAN	2 -HST	- 78	-W2	PLR242	6,7	PLR1553	14	10	YES
0-MCC-216-B	480V FUEL & WSTE HDL BD B	45W743- 2	R0	FUEL PIT UPENDING-U2 CAN	2 -HST	- 78	-W2	PLR272	6,7	PLR1553	14	10	YES
0-MCC-216-B	480V FUEL & WSTE HDL BD B	45W743- 2	R0	PRI & REFLG WTR PIPE TNL U2	2 -HTR	- 30	-686		1				YES
0-MCC-216-B	480V FUEL & WSTE HDL BD B	45W743- 2	R0	PRI & REFLG WTR PIPE TNL U2	2 -HTR	- 30	-688		1				YES
0-MCC-216-B	480V FUEL & WSTE HDL BD B	45W743- 2	R0	PRI & REFLG WTR PIPE TNL U2	2 -HTR	- 30	-691		1				YES
0-MCC-216-B	480V FUEL & WSTE HDL BD B	45W743- 3	R0	NONE									YES
0-MCC-208-A	480V AUX BLDG COMM MCC A	45W744- 1	R0	AUX BLDG MISC HOIST A4-A6T	0 -HST	-271	-AB10		1				YES
0-MCC-208-A	480V AUX BLDG COMM MCC A	45W744- 1	R0	AUX BLDG MISC HOIST A5A10	0 -HST	-271	-AB3		1				YES
0-MCC-208-A	480V AUX BLDG COMM MCC A	45W744- 1	R0	AUX BLDG MISC HOIST A5U	0 -HST	-271	-AB6		1				YES
0-MCC-208-A	480V AUX BLDG COMM MCC A	45W744- 1	R0	AUX BLDG MISC HOIST A3S	0 -HST	-271	-AB7		1				YES
0-MCC-208-A	480V AUX BLDG COMM MCC A	45W744- 1	R0	AUX BLDG MISC HOIST A13S	0 -HST	-271	-AB9		1				YES
0-MCC-208-A	480V AUX BLDG COMM MCC A	45W744- 2	R1	AUX BLDG MISC HOIST A4U	0 -HST	-271	-AB11		1				YES
0-MCC-208-A	480V AUX BLDG COMM MCC A	45W744- 2	R1	AUX BLDG MISC HOIST A10-A12T	0 -HST	-271	-AB12		1				YES

THIS SHEET ADDED BY REV 10

PREPARED BY: [illegible] DATE 8-6-92
CHECKED BY: [illegible] DATE 8-7-92

APPENDIX A

ATTACHMENT FIR103C - CALC NO. WPBEVAR9001006
REG GUIDE 1.75 ASSOCIATED CIRCUITS
AND APPENDIX R ANALYSIS FOR NON 1E
120V AC AND 250V DC CIRCUITS

MCC	DESCRIPTION	DRAWING	REV	EQUIPMENT	U	DES	SYS	DESIG	CABLE	CAT	CONDUIT	CABLE SIZE	FUSE SIZE-AMPS	PASS CRITERIA
0-MCC-208-A	480V AUX BLDG COMM MCC A	45W744- 2	R1	AUX BLDG MISC HOIST A9 CL RB	0	-HST	-271	-AB13		1				YES
0-MCC-208-A	480V AUX BLDG COMM MCC A	45W744- 2	R1	AUX BLDG MISC HOIST A12V	0	-HST	-271	-AB14		1				YES
0-MCC-208-A	480V AUX BLDG COMM MCC A	45W744- 2	R1	AUX BLDG CHILL A OIL PMP MTR	0	-HTR	- 31	-APA	PL2080	5	PLC2690			YES
0-MCC-208-B	480V AUX BLDG COMM MCC B	45W744- 3	R1	ICE CONDENSER EQUIP HOIST	0	-HST	-271	-AB15		1				YES
0-MCC-208-B	480V AUX BLDG COMM MCC B	45W744- 3	R1	WASTE PKG AREA UNIT HTR C	0	-HTR	-271	-ABUC		1				YES
0-MCC-208-B	480V AUX BLDG COMM MCC B	45W744- 3	R1	WASTE PKG AREA UNIT HTR D	0	-HTR	-271	-ABUD		1				YES
0-MCC-208-B	480V AUX BLDG COMM MCC B	45W744- 3	R1	CASK DECON PKG	0	-PKG	- 59	-B	PL3797	5	PLC884			YES
0-MCC-208-B	480V AUX BLDG COMM MCC B	45W744- 3	R1	CASK DECON PKG	0	-PKG	- 59	-B	PL3791	5	PLC894			YES
0-MCC-208-B	480V AUX BLDG COMM MCC B	45W744- 3	R1	CASK DECON PKG	0	-PKG	- 59	-B	PL3816	5	PLC882			YES
0-MCC-208-B	480V AUX BLDG COMM MCC B	45W744- 3	R1	CASK DECON PKG	0	-PKG	- 59	-B	PL3817	6,7	PLC882	14	10	YES
0-MCC-208-B	480V AUX BLDG COMM MCC B	45W744- 3	R1	CASK DECON PKG	0	-PKG	- 59	-B	PL3818	6,7	PLC883,903,1335	14	10	YES
0-MCC-208-B	480V AUX BLDG COMM MCC B	45W744- 3	R1	CASK DECON PKG	0	-PKG	- 59	-B	PL3819	6,7	PLC883,903,1335	14	10	YES
0-MCC-208-B	480V AUX BLDG COMM MCC B	45W744- 3	R1	CASK DECON PKG	0	-PKG	- 59	-B	PL3821	6,7	PLC896,881	14	10	YES
0-MCC-208-B	480V AUX BLDG COMM MCC B	45W744- 3	R1	U1 ADD EQUIP BLDG A/C 1B	1	-ACU	- 31	-B		1				YES
0-MCC-208-B	480V AUX BLDG COMM MCC B	45W744- 3	R1	U1 ADD EQUIP BLDG A/C 1C	1	-ACU	- 31	-C	PL3850	2	PLC995			YES
0-MCC-208-B	480V AUX BLDG COMM MCC B	45W744- 3	R1	U1 ADD EQUIP BLDG A/C 1C	1	-ACU	- 31	-C	PL3849	5	PLC996			YES
0-MCC-208-B	480V AUX BLDG COMM MCC B	45W744- 4	R3	FUEL HANDLING AREA UNIT HTR J	0	-HTR	-271	-ABUJ		1				YES
0-MCC-208-B	480V AUX BLDG COMM MCC B	45W744- 4	R3	SPARE ICE MACHINE	0	-TB	- 61	-CH		1				YES

THIS SHEET ADDED BY REV 10

PREPARED BY: R-Kat DATE 8-6-92
CHECKED BY: [signature] DATE 8-7-92

APPENDIX A

Page No. 10
08/06/92

ATTACHMENT FIR103C - CALC NO. WPBEVAR9001006
REG GUIDE 1.75 ASSOCIATED CIRCUITS
AND APPENDIX R ANALYSIS FOR NON 1E
120V AC AND 250V DC CIRCUITS

MCC	DESCRIPTION	DRAWING	REV	EQUIPMENT	U DES	SYS	DESIG	CABLE	CAT	CONDUIT	CABLE SIZE	FUSE SIZE-AMPS	PASS CRITERIA
0-MCC-208-B	480V AUX BLDG COMM MCC B	45W744- 4	R3	U1 SHIELD BLDG RAD MON RM A/C	1 -ACU	- 31	-IRS	1PL6792	5	1RM629			YES
0-MCC-208-B	480V AUX BLDG COMM MCC B	45W744- 4	R3	U1 SHIELD BLDG RAD MON RM A/C	1 -ACU	- 31	-IRS	1PL6796	6,9,11	1RM631,632			~~YES~~ No JSB 8-15-92 PH 8/15/92
0-MCC-208-B	480V AUX BLDG COMM MCC B	45W744- 4	R3	U1 PASF CLEANUP HTR	1 -HTR	- 31	-PASF		4				YES
0-MCC-208-B	480V AUX BLDG COMM MCC B	45W744- 4	R3	RR ACCESS RM UNIT HTR	1 -HTR	-271	-AB/RR1		1				YES
0-MCC-208-B	480V AUX BLDG COMM MCC B	45W744- 4	R3	U1 ADD EQPT BLDG UNIT HTR 1B	1 -HTR	-271	-AEB	PL1185	5	PLC943,944			YES
0-MCC-208-B	480V AUX BLDG COMM MCC B	45W744- 4	R3	U1 ADD EQPT BLDG UNIT HTR 1C	1 -HTR	-271	-AEC		1				YES
0-MCC-208-B	480V AUX BLDG COMM MCC B	45W744- 4	R3	U1 ADD EQPT BLDG UNIT HTR 1E	1 -HTR	-271	-AEE		1				YES
0-MCC-208-B	480V AUX BLDG COMM MCC B	45W744- 4	R3	U1 ADD EQPT BLDG UNIT HTR 1H	1 -HTR	-271	-AEH	PL1200	5	PLC2218,411			YES
0-MCC-208-B	480V AUX BLDG COMM MCC B	45W744- 4	R3	U1 ADD EQPT BLDG UNIT HTR 1J	1 -HTR	-271	-AEJ		1				YES
0-MCC-208-B	480V AUX BLDG COMM MCC B	45W744- 4	R3	U2 ADD EQPT BLDG UNIT HTR 2B	2 -HTR	-271	-AEB	PL1210	5	PLC877,878			YES
0-MCC-208-B	480V AUX BLDG COMM MCC B	45W744- 4	R3	U2 ADD EQPT BLDG UNIT HTR 2D	2 -HTR	-271	-AED	PL1211	5	PLC876,2410,2411			YES
0-MCC-208-C	480V AUX BLDG COMM MCC C	45W744- 5	R0	RAILROAD ACC RM HTR	0 -HTR	-271	-AB/RR2		1				YES
0-MCC-208-C	480V AUX BLDG COMM MCC C	45W744- 5	R0	FUEL HDLG AREA HTR 1	0 -HTR	-271	-ABU1		1				YES
0-MCC-208-C	480V AUX BLDG COMM MCC C	45W744- 5	R0	U1 ADD EQUIP BLDG A/C 1A	1 -ACU	- 31	-A		1				YES
0-MCC-208-C	480V AUX BLDG COMM MCC C	45W744- 5	R0	U2 ADD EQPT BLDG A/C 2A	2 -ACU	- 31	-A		1				YES
0-MCC-208-C	480V AUX BLDG COMM MCC C	45W744- 5	R0	U2 ADD BLDG HTR 2A	2 -HTR	-271	-AEA	PL2906	5	PLC877,879			YES
0-MCC-208-C	480V AUX BLDG COMM MCC C	45W744- 5	R0	U2 ADD BLDG HTR 2C	2 -HTR	-271	-AEC	PL2905	5	PLC876,2410,2412			YES
0-MCC-208-C	480V AUX BLDG COMM MCC C	45W744- 6	R1	BORIC FEEDWATER CHILLER	0 -CHL	- 61	-120	PL3906	6,7,8		14	10	YES

|R11

THIS SHEET ADDED BY REV 10

PREPARED BY: R Katz	DATE 8-6-92
CHECKED BY: [signature]	DATE 8-7-92

APPENDIX A

ATTACHMENT FIR103C - CALC NO. WPBEVAR9001006
REG GUIDE 1.75 ASSOCIATED CIRCUITS
AND APPENDIX R ANALYSIS FOR NON 1E
120V AC AND 250V DC CIRCUITS

MCC	DESCRIPTION	DRAWING	REV	EQUIPMENT	U	DES	SYS	DESIG	CABLE	CAT	CONDUIT	CABLE SIZE	FUSE SIZE-AMPS	PASS CRITERIA
0-MCC-208-C	480V AUX BLDG COMM MCC C	45W744- 6	R1	PASF OUTSIDE AIR PRE HTR	0	-HTR	- 31	-479	PL6005	5	2PLC3691			YES
0-MCC-208-C	480V AUX BLDG COMM MCC C	45W744- 6	R1	WASTE PACK AREA HTR A	0	-HTR	-271	-ABUA		1				YES
0-MCC-208-C	480V AUX BLDG COMM MCC C	45W744- 6	R1	WASTE PACK AREA HTR B	0	-HTR	-271	-ABUB		1				YES
0-MCC-208-C	480V AUX BLDG COMM MCC C	45W744- 6	R1	RAD WASTE HDLG CONVEYOR	0	-PO	- 77	-RWHC	PL2910	6,7	PLC429	14	10	YES
0-MCC-208-C	480V AUX BLDG COMM MCC C	45W744- 6	R1	U1 ADD EQPT RM HTR 1A	1	-HTR	-271	-AEA		1				YES
0-MCC-208-C	480V AUX BLDG COMM MCC C	45W744- 6	R1	U1 ADD EQPT RM HTR 1D	1	-HTR	-271	-AED	PL2897	5	PLC940,941			YES
0-MCC-208-C	480V AUX BLDG COMM MCC C	45W744- 6	R1	U1 ADD EQPT RM HTR 1F	1	-HTR	-271	-AEF		1				YES
0-MCC-208-C	480V AUX BLDG COMM MCC C	45W744- 6	R1	U1 ADD EQPT RM HTR 1G	1	-HTR	-271	-AEG	PL2881	5	PLC2216,412			YES
0-MCC-208-C	480V AUX BLDG COMM MCC C	45W744- 6	R1	U1 ADD EQPT RM HTR 1K	1	-HTR	-271	-AEK		1				YES
0-MCC-208-C	480V AUX BLDG COMM MCC C	45W744- 6	R1	U1 ADD EQPT RM HTR 1L	1	-HTR	-271	-AEL	PL2889	5	PLC414,415			YES
0-MCC-217-A	480V CHEM & VOL CONT BD A	45W746- 1	R0	MISC HOIST	0	-HST	-271	-AB16		1				YES
0-MCC-217-A	480V CHEM & VOL CONT BD A	45W746- 1	R0	AUX BLDG UNIT HTR	0	-HTR	-271	-ABUM		1				YES
0-MCC-217-A	480V CHEM & VOL CONT BD A	45W746- 1	R0	SAMPLE RM CHILLER 1	1	-CHL	- 43	-156		1				YES
0-MCC-217-A	480V CHEM & VOL CONT BD A	45W746- 1	R0	TITRATION RM CHILLER 1	1	-CHL	- 43	-161		1				YES
0-MCC-217-A	480V CHEM & VOL CONT BD A	45W746- 1	R0	BORIC ACID EVAP&GAS PKG A	1	-PKG	- 62	-A		1				YES
0-MCC-217-B	480V CHEM & VOL CONT BD B	45W746- 2	R0	MISC HOIST	0	-HST	-271	-AB18		1				YES
0-MCC-217-B	480V CHEM & VOL CONT BD B	45W746- 2	R0	MISC HOIST	0	-HST	-271	-AB19		1				YES
0-MCC-217-B	480V CHEM & VOL CONT BD B	45W746- 2	R0	MISC HOIST	0	-HST	-271	-AB20		1				YES

THIS SHEET ADDED BY REV 10

PREPARED BY R Katz | DATE 8-6-92
CHECKED BY [signature] | DATE 8-7-92

APPENDIX A

Page No. 12
08/06/92

ATTACHMENT FIR103C - CALC NO. WPBEVAR9001006
REG GUIDE 1.75 ASSOCIATED CIRCUITS
AND APPENDIX R ANALYSIS FOR NON 1E
120V AC AND 250V DC CIRCUITS

MCC	DESCRIPTION	DRAWING	REV	EQUIPMENT	U	DES	SYS	DESIG	CABLE	CAT	CONDUIT	CABLE SIZE	FUSE SIZE-AMPS	PASS CRITERIA
0-MCC-217-B	480V CHEM & VOL CONT BD B	45W746- 2	R0	MISC HOIST	0	-HST	-271	-AB21		1				YES
0-MCC-217-B	480V CHEM & VOL CONT BD B	45W746- 2	R0	AUX BLDG UNIT HTR (ABUK)	0	-HST	-271	-ABUK		1				YES
0-MCC-217-B	480V CHEM & VOL CONT BD B	45W746- 2	R0	AUX BLDG UNIT HTR (ABUL)	0	-HST	-271	-ABUL		1				YES
0-MCC-217-B	480V CHEM & VOL CONT BD B	45W746- 2	R0	SAMPLE RM CHILLER PKG 2	2	-CHL	- 43	-156		1				YES
0-MCC-217-B	480V CHEM & VOL CONT BD B	45W746- 2	R0	TITRATION RM CHILLER 2	2	-CHL	- 43	-161		1				YES
0-MCC-217-B	480V CHEM & VOL CONT BD B	45W746- 2	R0	BORIC ACID EVAP&GAS PKG B	2	-PKG	- 62	-B		1				YES
1-BD-203-A	480V UNIT BOARD 1A	45W747- 1	R0	NONE										YES
1-BD-203-B	480V UNIT BOARD 1B	45W747- 2	R0	ISOLATED PHASE BUS CON HTR 1	1	-HTR	- 58	-3		1				YES
2-BD-203-B	480V UNIT BOARD 2B	45W747- 2	R0	ISOLATED PHASE BUS CON HTR 1	2	-HTR	- 58	-3		1				YES
1-BD-212-A1-A	480V SHUTDOWN BD 1A1-A	45W749- 1	R0	NONE										YES
2-BD-212-A1-A	480V SHUTDOWN BD 2A1-A	45W749- 1	R0	NONE										YES
1-BD-212-A2-A	480V SHUTDOWN BD 1A2-A	45W749- 2	R2	NONE										YES
2-BD-212-A2-A	480V SHUTDOWN BD 2A2-A	45W749- 2	R2	NONE										YES
1-BD-212-B1-B	480V SHUTDOWN BD 1B1-B	45W749- 3	R1	NONE										YES
2-BD-212-B1-B	480V SHUTDOWN BD 2B1-B	45W749- 3	R1	NONE										YES
1-BD-212-B2-B	180V SHUTDOWN BD 1B2-B	45W749- 4	R1	NONE										YES
2-BD-212-B2-B	480V SHUTDOWN BD 2B2-B	45W749- 4	R1	NONE										YES
2-MCC-213-A1-A	REACTOR MOV BD 2A1-A	45W751- 1	R1	NONE										YES

THIS SHEET ADDED BY REV. 10

PREPARED BY: R Katz	DATE 8-6-92
CHECKED BY: [signature]	DATE 8-7-92

APPENDIX A

Page No. 13
08/06/92

ATTACHMENT FIR103C - CALC NO. WPBEVAR9001006
REG GUIDE 1.75 ASSOCIATED CIRCUITS
AND APPENDIX R ANALYSIS FOR NON 1E
120V AC AND 250V DC CIRCUITS

MCC	DESCRIPTION	DRAWING	REV	EQUIPMENT	U DES	SYS	DESIG	CABLE	CAT	CONDUIT	CABLE SIZE	FUSE SIZE-AMPS	PASS CRITERIA
1-MCC-213-A1-A	REACTOR MOV BD 1A1-A	45W751- 1	R1	INCORE INST RM CHLLD WTR CPRSR 1A	1 -MTR	- 31	-303/2		1				YES
2-MCC-213-A1-A	REACTOR MOV BD 2A1-A	45W751- 1	R1	INCORE INST RM CHLLD WTR CPRSR 2A	2 -MTR	- 31	-303/2		1				YES
1-MCC-213-A1-A	REACTOR MOV BD 1A1-A	45W751- 2	R1	NONE									YES
2-MCC-213-A1-A	REACTOR MOV BD 2A1-A	45W751- 2	R1	NONE									YES
1-MCC-213-A1-A	REACTOR MOV BD 1A1-A	45W751- 3	R1	NONE									YES
2-MCC-213-A1-A	REACTOR MOV BD 2A1-A	45W751- 3	R1	NONE									YES
1-MCC-213-A2-A	REACTOR MOV BD 1A2-A	45W751- 4	R1	NONE									YES
2-MCC-213-A2-A	REACTOR MOV BD 2A2-A	45W751- 4	R1	NONE									YES
1-MCC-213-A2-A	REACTOR MOV BD 1A2-A	45W751- 5	R1	NONE									YES
2-MCC-213-A2-A	REACTOR MOV BD 2A2-A	45W751- 5	R1	NONE									YES
1-MCC-213-A2-A	REACTOR MOV BD 1A2-A	45W751- 6	R1	NONE									YES
2-MCC-213-A2-A	REACTOR MOV BD 2A2-A	45W751- 6	R1	NONE									YES
2-MCC-213-B1-B	REACTOR MOV BD 2B1-B	45W751- 7	R1	NONE									YES
1-MCC-213-B1-B	REACTOR MOV BD 1B1-B	45W751- 7	R1	INCORE INST RM CHLLD WTR CPRSR 1B	1 -MTR	- 31	-324/2		1				YES
2-MCC-213-B1-B	REACTOR MOV BD 2B1-B	45W751- 7	R1	INCORE INST RM CHLLD WTR CPRSR 2B	2 -MTR	- 31	-324/2		1				YES
1-MCC-213-B1-B	REACTOR MOV BD 1B1-B	45W751- 8	R1	NONE									YES

THIS SHEET ADDED BY REV 10

PREPARED BY: R Katz	DATE 8-6-92
CHECKED BY: [signature]	DATE 8-7-92

APPENDIX A

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MCC	DESCRIPTION	DRAWING	REV	EQUIPMENT	U DES	SYS	DESIG	CABLE	CAT	CONDUIT	CABLE SIZE	FUSE SIZE-AMPS	PASS CRITERIA
2-MCC-213-B1-B	REACTOR MOV BD 2B1-B	45W751- 8	R1	NONE									YES
1-MCC-213-B1-B	REACTOR MOV BD 1B1-B	45W751- 9	R1	NONE									YES
2-MCC-213-B1-B	REACTOR MOV BD 2B1-B	45W751- 9	R1	NONE									YES
1-MCC-213-B2-B	REACTOR MOV BD 1B2-B	45W751-10	R1	NONE									YES
2-MCC-213-B2-B	REACTOR MOV BD 2B2-B	45W751-10	R1	NONE									YES
1-MCC-213-B2-B	REACTOR MOV BD 1B2-B	45W751-11	R1	480V BD RM 1B AC CPRSR 1B-B	1 -MTR	- 31	-447-B		1				YES
2-MCC-213-B2-B	REACTOR MOV BD 2B2-B	45W751-11	R1	480V BD RM 2B AC CPRSR 2B-B	2 -MTR	- 31	-447-B		1				YES
1-MCC-213-B2-B	REACTOR MOV BD 1B2-B	45W751-12	R2	NONE									YES
2-MCC-213-B2-B	REACTOR MOV BD 2B2-B	45W751-12	R2	NONE									YES
1-MCC-232-A-A	REACTOR VENT BD 1A-A	45W755- 2	R0	14 ICE COND AHU	1 -AHU	- 61	-1,ETC		1				YES
0-MCC-232-A-A	REACTOR VENT BD 1A-A	45W755- 2	R0	RX BLDG MANIP CRANE 1	1 -CRN	- 78	-1M	PLR211	6,9,11	PLR1543,1544			~~YES~~ NO 8-15-92
0-MCC-232-A-A	REACTOR VENT BD 1A-A	45W755- 2	R0	RX BLDG MANIP CRANE 1	1 -CRN	- 78	-1M	1T1175	6,9,11	PLR1543,1544			~~YES~~ NO 8-15-92
1-MCC-232-A-A	REACTOR VENT BD 1A-A	45W755- 2	R0	CNTMT INSTR RM HTR 1A	1 -HTR	- 30	-11H	1PL5441	5	1PLC6552,6554			YES
1-MCC-232-A-A	REACTOR VENT BD 1A-A	45W755- 2	R0	RX UPR COMPT HTR 1C	1 -HTR	- 30	-33H	1PL441	5	1PLC1113			YES
1-MCC-232-A-A	REACTOR VENT BD 1A-A	45W755- 2	R0	RX UPR COMPT HTR 1A	1 -HTR	- 30	-35H	1PL426	5	1PLC1108,1109			YES
1-MCC-232-A-A	REACTOR VENT BD 1A-A	45W755- 2	R0	RX LWR COMPT HTR 1A	1 -HTR	- 30	-74H	1PL337	5	1PLC1099			YES
2-MCC-232-A-A	REACTOR VENT BD 2A-A	45W755- 2	R0	14 ICE COND AHU	2 -AHU	- 61	-1,ETC		1				YES
2-MCC-232-A-A	REACTOR VENT BD 2A-A	45W755- 2	R0	CNTMT INSTR RM HTR 2A	2 -HTR	- 30	-11H	2PL5441	5	2PLC1552,1554			YES

RK
PH 8/15/92

THIS SHEET ADDED BY REV 10

PREPARED BY: R. Hart DATE 8-6-92
CHECKED BY [signature] DATE 8-7-92

APPENDIX A

Page No. 15
08/06/92

ATTACHMENT FIR103C - CALC NO. WPBEVAR9001006
REG GUIDE 1.75 ASSOCIATED CIRCUITS
AND APPENDIX R ANALYSIS FOR NON 1E
120V AC AND 250V DC CIRCUITS

MCC	DESCRIPTION	DRAWING	REV	EQUIPMENT	U DES	SYS	DESIG	CABLE	CAT	CONDUIT	CABLE SIZE	FUSE SIZE-AMPS	PASS CRITERIA
2-MCC-232-A-A	REACTOR VENT BD 2A-A	45W755- 2	R0	RX UPR COMPT HTR 2C	2 -HTR	- 30	-33H	2PL441	5	2PLC1113			YES
2-MCC-232-A-A	REACTOR VENT BD 2A-A	45W755- 2	R0	RX UPR COMPT HTR 2A	2 -HTR	- 30	-35H	2PL426	5	2PLC1108,1109			YES
2-MCC-232-A-A	REACTOR VENT BD 2A-A	45W755- 2	R0	RX LWR COMPT HTR 2A	2 -HTR	- 30	-74H	2PL337	5	2PLC1099			YES
1-MCC-232-B-B	REACTOR VENT BD 1B-B	45W755- 3	R0	EQUIP HATCH HOIST	1 -CRN	- 78	-1EH	2PL705	5	2PLC3172,3195			YES
2-MCC-232-B-B	REACTOR VENT BD 2B-B	45W755- 3	R0	EQUIP HATCH HOIST	2 -CRN	- 78	-1EH		1				YES
1-MCC-232-B-B	REACTOR VENT BD 1B-B	45W755- 4	R0	14 ICE COND AHU	1 -AHU	- 61	-2,ETC		1				YES
1-MCC-232-B-B	REACTOR VENT BD 1B-B	45W755- 4	R0	REACTOR BLDG JIB CRANE	1 -CRN	- 78	-15		1				YES
1-MCC-232-B-B	REACTOR VENT BD 1B-B	45W755- 4	R0	RX UPR COMPT HTR 1D	1 -HTR	- 30	-100H		1				YES
1-MCC-232-B-B	REACTOR VENT BD 1B-B	45W755- 4	R0	CNTMT INSTR RM HTR 1B	1 -HTR	- 30	-12H		1				YES
1-MCC-232-B-B	REACTOR VENT BD 1B-B	45W755- 4	R0	RX UPR COMPT HTR 1B	1 -HTR	- 30	-37H		1				YES
1-MCC-232-B-B	REACTOR VENT BD 1B-B	45W755- 4	R0	RX LWR COMPT HTR 1B	1 -HTR	- 30	-75H		1				YES
2-MCC-232-B-B	REACTOR VENT BD 2B-B	45W755- 4	R0	RX LWR COMPT HTR 2B	1 -HTR	- 30	-75H	2PL346	5	2PLC1102			YES
1-MCC-232-B-B	REACTOR VENT BD 1B-B	45W755- 4	R0	CONTROL BAY SUMP PUMP 1	1 -MTR	- 40	-2/4	1PL694	5	1PLC214,229			YES
2-MCC-232-B-B	REACTOR VENT BD 2B-B	45W755- 4	R0	14 ICE COND AHU	2 -AHU	- 61	-2,ETC		1				YES
2-MCC-232-B-B	REACTOR VENT BD 2B-B	45W755- 4	R0	REACTOR BLDG JIB CRANE	2 -CRN	- 78	-15	2PL708	5	2PLC3196			YES
2-MCC-232-B-B	REACTOR VENT BD 2B-B	45W755- 4	R0	RX UPR COMPT HTR 2D	2 -HTR	- 30	-100H	2PL469	5	2PLC1111,1112			YES
2-MCC-232-B-B	REACTOR VENT BD 2B-B	45W755- 4	R0	CNTMT INSTR RM HTR 2B	2 -HTR	- 30	-12H	2PL5451	5	2PLC1480			YES
2-MCC-232-B-B	REACTOR VENT BD 2B-B	45W755- 4	R0	RX UPR COMPT HTR 2B	2 -HTR	- 30	-37H	2PL455	5	2PLC1106,1107			YES

THIS SHEET ADDED BY REV 10

PREPARED BY: R Katz	DATE 8-10-92
CHECKED BY [signature]	DATE 8-16-92

APPENDIX A

ATTACHMENT FIR103C - CALC NO. WPBEVAR9001006
REG GUIDE 1.75 ASSOCIATED CIRCUITS
AND APPENDIX R ANALYSIS FOR NON 1E
120V AC AND 250V DC CIRCUITS

MCC	DESCRIPTION	DRAWING	REV	EQUIPMENT	U DES	SYS	DESIG	CABLE	CAT	CONDUIT	CABLE SIZE	FUSE SIZE-AMPS	PASS CRITERIA
2-MCC-232-B-B	REACTOR VENT BD 2B-B	45W755- 4	R0	CONTROL BAY SUMP PUMP 1	2 -MTR	- 40	-2/4	2PL694	5				YES
1-MCC-214-A1-A	CONT & AUX BLDG VENT BD 1A1-A	45W756- 1	R2	RAD MONITOR	1 -DXF	-242	-1	FE1420	5	FE1874			YES
1-MCC-214-A1-A	CONT & AUX BLDG VENT BD 1A1-A	45W756- 1	R2	RAD MONITOR	1 -DXF	-242	-1	1RM160	5	1RM340			YES
1-MCC-214-A1-A	CONT & AUX BLDG VENT BD 1A1-A	45W756- 1	R2	VLV & STR RM SUMP PMP 1A	1 -MTR	- 40	-3A		1				YES
2-MCC-214-A1-A	CONT & AUX BLDG VENT BD 2A1-A	45W756- 1	R2	RAD MONITOR	2 -DXF	-242	-1	FE1421	5				YES
2-MCC-214-A1-A	CONT & AUX BLDG VENT BD 2A1-A	45W756- 1	R2	RAD MONITOR	2 -DXF	-242	-1	2RM160	5	2RM341			YES
2-MCC-214-A1-A	CONT & AUX BLDG VENT BD 2A1-A	45W756- 1	R2	VLV & STR RM SUMP PMP 2A	2 -MTR	- 40	-3B		1				YES
1-MCC-214-A1-A	CONT & AUX BLDG VENT BD 1A1-A	45W756- 2	R1	GASSEOUS EFF RAD MONITOR	1 -PNL	- 90	-L398	1RM19	6,8,7, 11	1RM284,294,1RM637,663	10	5	YES
1-MCC-214-A1-A	CONT & AUX BLDG VENT BD 1A1-A	45W756- 2	R1	GASSEOUS EFF RAD MONITOR	1 -PNL	- 90	-L398	1PM3830	2,8	1RM639,665,1PM6237			YES
2-MCC-214-A1-A	CONT & AUX BLDG VENT BD 2A1-A	45W756- 2	R1	GASSEOUS EFF RAD MONITOR	2 -PNL	- 90	-L398	2RM19	6,8,7, 11	2RM284,294,2RM637,663	10	5	YES
2-MCC-214-A1-A	CONT & AUX BLDG VENT BD 2A1-A	45W756- 2	R1	GASSEOUS EFF RAD MONITOR	2 -PNL	- 90	-L398	2PM3830	2,8	1RM639,665,674,2PM6237			YES
1-MCC-214-A2-A	CONT & AUX BLDG VENT BD 1A2-A	45W756- 3	R0	FUEL HAND AREA UNIT HTR A	0 -HTR	- 30	-AFH		1				YES
1-MCC-214-A2-A	CONT & AUX BLDG VENT BD 1A2-A	45W756- 3	R0	FUEL HAND AREA UNIT HTR B	0 -HTR	- 30	-BFH		1				YES
1-MCC-214-A2-A	CONT & AUX BLDG VENT BD 1A2-A	45W756- 3	R0	FUEL HAND AREA UNIT HTR C	0 -HTR	- 30	-CFH		1				YES
2-MCC-214-A2-A	CONT & AUX BLDG VENT BD 2A2-A	45W756- 3	R0	FUEL HAND AREA UNIT HTR D	0 -HTR	- 30	-DFH		1				YES
2-MCC-214-A2-A	CONT & AUX BLDG VENT BD 2A2-A	45W756- 3	R0	FUEL HAND AREA UNIT HTR E	0 -HTR	- 30	-EFH		1				YES
2-MCC-214-A2-A	CONT & AUX BLDG VENT BD 2A2-A	45W756- 3	R0	FUEL HAND AREA UNIT HTR F	0 -HTR	- 30	-FFH		1				YES

THIS SHEET ADDED BY REV 10

PREPARED BY: R 3/at | DATE 8-6-92
CHECKED BY: [illegible signature] | DATE 8-7-92

APPENDIX A

Page No. 17
08/06/92

ATTACHMENT FIR103C - CALC NO. WPBEVAR9001006
REG GUIDE 1.75 ASSOCIATED CIRCUITS
AND APPENDIX R ANALYSIS FOR NON 1E
120V AC AND 250V DC CIRCUITS

MCC	DESCRIPTION	DRAWING	REV	EQUIPMENT	U	DES	SYS	DESIG	CABLE	CAT	CONDUIT	CABLE SIZE	FUSE SIZE-AMPS	PASS CRITERIA
2-MCC-214-A2-A	CONT & AUX BLDG VENT BD 2A2-A	45W756- 3	R0	HOT INSTR SHOP UNIT HTR	0	-HTR	- 31	-339		1				YES
1-MCC-214-A2-A	CONT & AUX BLDG VENT BD 1A2-A	45W756- 3	R0	480V BD RM 1A UNIT HTR A	1	-HTR	- 30	-A1A		1				YES
1-MCC-214-A2-A	CONT & AUX BLDG VENT BD 1A2-A	45W756- 3	R0	CRDE RM UNIT HTR A	1	-HTR	- 30	-ACRD		1				YES
1-MCC-214-A2-A	CONT & AUX BLDG VENT BD 1A2-A	45W756- 3	R0	480V BD RM 1A UNIT HTR B	1	-HTR	- 30	-B1A		1				YES
1-MCC-214-A2-A	CONT & AUX BLDG VENT BD 1A2-A	45W756- 3	R0	CRDE RM UNIT HTR B	1	-HTR	- 30	-BCRD		1				YES
1-MCC-214-A2-A	CONT & AUX BLDG VENT BD 1A2-A	45W756- 3	R0	480V BD RM 1A UNIT HTR C	1	-HTR	- 30	-C1A		1				YES
1-MCC-214-A2-A	CONT & AUX BLDG VENT BD 1A2-A	45W756- 3	R0	CRDE RM UNIT HTR C	1	-HTR	- 30	-CCRD		1				YES
1-MCC-214-A2-A	CONT & AUX BLDG VENT BD 1A2-A	45W756- 3	R0	480V BD RM 1A DUCT HTR	1	-HTR	- 31	-D1A	1PL3511	6,9,11	1PLC2972			~~YES~~ NO ZSB 8-15-92 R11
1-MCC-214-A2-A	CONT & AUX BLDG VENT BD 1A2-A	45W756- 3	R0	CRDE RM A/C 1A	1	-HTR	- 30	-CRD	1PL3694	6,9,11	1PL3713			~~YES~~ NO ZSB 8-15-92
2-MCC-214-A2-A	CONT & AUX BLDG VENT BD 2A2-A	45W756- 3	R0	480V BD RM 2A UNIT HTR A	2	-HTR	- 30	-A1A		1				YES
2-MCC-214-A2-A	CONT & AUX BLDG VENT BD 2A2-A	45W756- 3	R0	CRDE RM UNIT HTR A	2	-HTR	- 30	-ACRD		1				YES
2-MCC-214-A2-A	CONT & AUX BLDG VENT BD 2A2-A	45W756- 3	R0	480V BD RM 2A UNIT HTR B	2	-HTR	- 30	-B1A		1				YES
2-MCC-214-A2-A	CONT & AUX BLDG VENT BD 2A2-A	45W756- 3	R0	CRDE RM UNIT HTR B	2	-HTR	- 30	-BCRD		1				YES
2-MCC-214-A2-A	CONT & AUX BLDG VENT BD 2A2-A	45W756- 3	R0	480V BD RM 2A UNIT HTR C	2	-HTR	- 30	-C1A		1				YES
2-MCC-214-A2-A	CONT & AUX BLDG VENT BD 2A2-A	45W756- 3	R0	CRDE RM UNIT HTR C	2	-HTR	- 30	-CCRD		1				YES
2-MCC-214-A2-A	CONT & AUX BLDG VENT BD 2A2-A	45W756- 3	R0	480V BD RM 2A DUCT HTR	2	-HTR	- 31	-D1A		1				YES
2-MCC-214-A2-A	CONT & AUX BLDG VENT BD 2A2-A	45W756- 3	R0	CRDE RM A/C 2A	2	-HTR	- 30	-CRD		1				YES
2-MCC-214-A2-A	CONT & AUX BLDG VENT BD 2A2-A	45W756- 4	R0	AUX BLDG SPACE HTR EL 737	0	-HTR	- 30	-AB1		1				YES

THIS SHEET ADDED BY REV 10

PREPARED BY: [illegible]	DATE 8-10-92
CHECKED BY: [illegible]	DATE 8-10-92

APPENDIX A

ATTACHMENT FIR103C - CALC NO. WPBEVAR9001006
REG GUIDE 1.75 ASSOCIATED CIRCUITS
AND APPENDIX R ANALYSIS FOR NON 1E
120V AC AND 250V DC CIRCUITS

MCC	DESCRIPTION	DRAWING	REV	EQUIPMENT	U DES	SYS	DESIG	CABLE	CAT	CONDUIT	CABLE SIZE	FUSE SIZE-AMPS	PASS CRITERIA
2-MCC-214-A2-A	CONT & AUX BLDG VENT BD 2A2-A	45W756- 4	R0	AUX BLDG SPACE HTR EL 737	0 -HTR	- 30	-AB2		1				YES
1-MCC-214-A2-A	CONT & AUX BLDG VENT BD 1A2-A	45W756- 4	R0	125 V VIT BAT RM I U HTR	0 -HTR	- 30	-RM1		1				YES
2-MCC-214-A2-A	CONT & AUX BLDG VENT BD 2A2-A	45W756- 4	R0	125 V VIT BAT RM III U HTR	0 -HTR	- 30	-RM3		1				YES
2-MCC-214-A2-A	CONT & AUX BLDG VENT BD 2A2-A	45W756- 4	R0	SHTDN BDRM PRESFAN DUCT HTR	0 -HTR	- 31	-71	2PL3693	6,11	2PLC2683			NO
1-MCC-214-A2-A	CONT & AUX BLDG VENT BD 1A2-A	45W756- 4	R0	CONTR BLDG EL 692 FLOOR HTR	0 -HTR	- 31	-83	1PL3708	6,9,11	1PLC230,231			~~YES~~ NO 798 8-15-92 / R11 pks 8/15/92
2-MCC-214-A2-A	CONT & AUX BLDG VENT BD 2A2-A	45W756- 4	R0	RECORD STORAGE VAULT HTR	0 -HTR	- 31	-91	2PL2801	6,11	2PLC226,228,229			NO
1-MCC-214-A2-A	CONT & AUX BLDG VENT BD 1A2-A	45W756- 4	R0	TOILET & LOCK RM DUCT HTR	0 -HTR	- 31	-97	1PL2801	6,11	1PLC1531,1PLC1537			NO
1-MCC-214-A2-A	CONT & AUX BLDG VENT BD 1A2-A	45W756- 4	R0	CONT BLDG STM GEN	1 -HTR	- 1	-CBS		1				YES
1-MCC-214-A2-A	CONT & AUX BLDG VENT BD 1A2-A	45W756- 4	R0	480V SHTDN BD RM 1A U HTR	1 -HTR	- 30	-1A1		1				YES
1-MCC-214-A2-A	CONT & AUX BLDG VENT BD 1A2-A	45W756- 4	R0	S MN STM VAULT RM U HTR 1	1 -HTR	- 30	-5MS		1				YES
1-MCC-214-A2-A	CONT & AUX BLDG VENT BD 1A2-A	45W756- 4	R0	AUX BLDG SPACE HTR EL 692	1 -HTR	- 30	-AB1		1				YES
1-MCC-214-A2-A	CONT & AUX BLDG VENT BD 1A2-A	45W756- 4	R0	N MN STM VAULT RM U HTR 1	1 -HTR	- 30	-NM1		1				YES
1-MCC-214-A2-A	CONT & AUX BLDG VENT BD 1A2-A	45W756- 4	R0	AUX CONT INST RM 1A U HTR	1 -HTR	- 30	-U1A		1				YES
1-MCC-214-A2-A	CONT & AUX BLDG VENT BD 1A2-A	45W756- 4	R0	XMFR RM 1A U HTR	1 -HTR	- 30	-XM1A		1				YES
2-MCC-214-A2-A	CONT & AUX BLDG VENT BD 2A2-A	45W756- 4	R0	CONT BLDG STM GEN	2 -HTR	- 1	-CBS		1				YES
2-MCC-214-A2-A	CONT & AUX BLDG VENT BD 2A2-A	45W756- 4	R0	480V SHTDN BD RM 2A U HTR	2 -HTR	- 30	-1A1		1				YES
2-MCC-214-A2-A	CONT & AUX BLDG VENT BD 2A2-A	45W756- 4	R0	S MN STM VAULT RM U HTR 1	2 -HTR	- 30	-5MS		1				YES
2-MCC-214-A2-A	CONT & AUX BLDG VENT BD 2A2-A	45W756- 4	R0	AUX BLDG SPACE HTR EL 692	2 -HTR	- 30	-AB1	2PL3314	5,8				YES

THIS SHEET ADDED BY REV 10

PREPARED BY: R Katz | DATE 8-6-92
CHECKED BY: [signature] | DATE 8-7-92

APPENDIX A

ATTACHMENT FIR103C - CALC NO. WPBEVAR9001006
REG GUIDE 1.75 ASSOCIATED CIRCUITS
AND APPENDIX R ANALYSIS FOR NON 1E
120V AC AND 250V DC CIRCUITS

MCC	DESCRIPTION	DRAWING	REV	EQUIPMENT	U DES	SYS	DESIG	CABLE	CAT	CONDUIT	CABLE SIZE	FUSE SIZE-AMPS	PASS CRITERIA
2-MCC-214-A2-A	CONT & AUX BLDG VENT BD 2A2-A	45W756- 4	R0	N MN STM VAULT RM U HTR 1	2 -HTR	- 30	-NM1		1				YES
2-MCC-214-A2-A	CONT & AUX BLDG VENT BD 2A2-A	45W756- 4	R0	AUX CONT INST RM 2A U HTR	2 -HTR	- 30	-U1A	2PL2813	5,8				YES
2-MCC-214-A2-A	CONT & AUX BLDG VENT BD 2A2-A	45W756- 4	R0	XMFR RM 2A U HTR	2 -HTR	- 30	-XM1A	2PL3370	5,8				YES
1-MCC-214-B1-B	CONT & AUX BLDG VENT BD 1B1-B	45W756- 6	R1	GAS EFFULENT RAD MONITOR	0 -PNL	- 90	-L397	1PM3680	2	RM496,483,1PM6244			YES
1-MCC-214-B1-B	CONT & AUX BLDG VENT BD 1B1-B	45W756- 6	R1	GAS EFFULENT RAD MONITOR	0 -PNL	- 90	-L397	RM554	6,9,11	RM492,495	10	5	YES
1-MCC-214-B2-B	CONT & AUX BLDG VENT BD 1B2-B	45W756- 7	R0	FUEL HAND AREA UNIT HTR G	0 -HTR	- 30	-GFA		1				YES
1-MCC-214-B2-B	CONT & AUX BLDG VENT BD 1B2-B	45W756- 7	R0	FUEL HAND AREA UNIT HTR H	0 -HTR	- 30	-HFA		1				YES
2-MCC-214-B2-B	CONT & AUX BLDG VENT BD 2B2-B	45W756- 7	R0	FUEL HAND AREA UNIT HTR K	0 -HTR	- 30	-KFA		1				YES
2-MCC-214-B2-B	CONT & AUX BLDG VENT BD 2B2-B	45W756- 7	R0	FUEL HAND AREA UNIT HTR L	0 -HTR	- 30	-LFA		1				YES
1-MCC-214-B2-B	CONT & AUX BLDG VENT BD 1B2-B	45W756- 7	R0	FUEL HAND AREA UNIT HTR N	0 -HTR	- 30	-NFA		1				YES
2-MCC-214-B2-B	CONT & AUX BLDG VENT BD 2B2-B	45W756- 7	R0	FUEL HAND AREA UNIT HTR P	0 -HTR	- 30	-PFA		1				YES
2-MCC-214-B2-B	CONT & AUX BLDG VENT BD 2B2-B	45W756- 7	R0	AUX CONTROL RM U HTR	0 -HTR	- 30	-U1		1				YES
1-MCC-214-B2-B	CONT & AUX BLDG VENT BD 1B2-B	45W756- 7	R0	480V BD RM 1B UNIT HTR A	1 -HTR	- 30	-A1B		1				YES
1-MCC-214-B2-B	CONT & AUX BLDG VENT BD 1B2-B	45W756- 7	R0	480V BD RM 1B UNIT HTR B	1 -HTR	- 30	-B1B		1				YES
1-MCC-214-B2-B	CONT & AUX BLDG VENT BD 1B2-B	45W756- 7	R0	480V BD RM 1B UNIT HTR C	1 -HTR	- 30	-C1B		1				YES
1-MCC-214-B2-B	CONT & AUX BLDG VENT BD 1B2-B	45W756- 7	R0	PZR HTR XMFR RM U HTR	1 -HTR	- 30	-PRX		1				YES
1-MCC-214-B2-B	CONT & AUX BLDG VENT BD 1B2-B	45W756- 7	R0	AUX CONT INST RM 1B U HTR	1 -HTR	- 30	-U113		1				YES
1-MCC-214-B2-B	CONT & AUX BLDG VENT BD 1B2-B	45W756- 7	R0	480V BD RM 1B DUCT HTR	1 -HTR	- 31	-BRB	1PL3891	6,9,11	1PLC3017			~~YES~~ NO TSB 8-15-92

R11
AH 8/15/92

THIS SHEET ADDED BY REV 10

APPENDIX A

PREPARED BY: R Katz DATE 8-6-92
CHECKED BY: [signature] DATE 8-7-92

ATTACHMENT FIR103C - CALC NO. WPBEVAR9001006
REG GUIDE 1.75 ASSOCIATED CIRCUITS
AND APPENDIX R ANALYSIS FOR NON 1E
120V AC AND 250V DC CIRCUITS

MCC	DESCRIPTION	DRAWING	REV	EQUIPMENT	U DES	SYS	DESIG	CABLE	CAT	CONDUIT	CABLE SIZE	FUSE SIZE-AMPS	PASS CRITERIA	
1-MCC-214-B2-B	CONT & AUX BLDG VENT BD 1B2-B	45W756- 7	R0	CRDE RM A/C 1B	1 -MTR	- 30	-CRB	1PL3672	6,9,11	1PLC3714	14		~~YES~~ NO JJB 8-15-92	R11 PH
2-MCC-214-B2-B	CONT & AUX BLDG VENT BD 2B2-B	45W756- 7	R0	480V BD RM 2B UNIT HTR A	2 -HTR	- 30	-A1B		1				YES	
2-MCC-214-B2-B	CONT & AUX BLDG VENT BD 2B2-B	45W756- 7	R0	480V BD RM 2B UNIT HTR B	2 -HTR	- 30	-B1B		1				YES	
2-MCC-214-B2-B	CONT & AUX BLDG VENT BD 2B2-B	45W756- 7	R0	480V BD RM 2B UNIT HTR C	2 -HTR	- 30	-C1B		1				YES	
2-MCC-214-B2-B	CONT & AUX BLDG VENT BD 2B2-B	45W756- 7	R0	PZR HTR XMFR RM U HTR	2 -HTR	- 30	-PRX		1				YES	
2-MCC-214-B2-B	CONT & AUX BLDG VENT BD 2B2-B	45W756- 7	R0	AUX CONT INST RM 2B U HTR	2 -HTR	- 30	-U113		1				YES	
2-MCC-214-B2-B	CONT & AUX BLDG VENT BD 2B2-B	45W756- 7	R0	480V BD RM 2B DUCT HTR	2 -HTR	- 31	-BRB	2PL3891	6,9,11	1PLC3017			~~YES~~ NO JJB 8-15-92	R11 PH
2-MCC-214-B2-B	CONT & AUX BLDG VENT BD 2B2-B	45W756- 7	R0	CRDE RM A/C 2B	2 -MTR	- 30	-CRB	1PL3672	6,9,11	1PLC3714	14		~~YES~~ NO JJB 8-15-92	
2-MCC-214-B2-B	CONT & AUX BLDG VENT BD 2B2-B	45W756- 8	R0	AUX BLDG SPACE HTR EL 713	0 -HTR	- 30	-A14		1				YES	
1-MCC-214-B2-B	CONT & AUX BLDG VENT BD 1B2-B	45W756- 8	R0	125 V VIT BAT RM II U HTR	0 -HTR	- 30	-RM2		1				YES	
2-MCC-214-B2-B	CONT & AUX BLDG VENT BD 2B2-B	45W756- 8	R0	125 V VIT BAT RM IV U HTR	0 -HTR	- 30	-RM4		1				YES	
1-MCC-214-B2-B	CONT & AUX BLDG VENT BD 1B2-B	45W756- 8	R0	SHTDN BDRM PRESFAN DUCT HTR	0 -HTR	- 31	-72	1PL2978	6,9,11	1PLC3489	14		~~YES~~ NO JJB 8-15-92	R11 PH
2-MCC-214-B2-B	CONT & AUX BLDG VENT BD 2B2-B	45W756- 8	R0	COMPUTER RM HTR	0 -HTR	- 31	-85	2PL2810	6,8,9, 11		14		~~YES~~ NO JJB 8-15-92	
2-MCC-214-B2-B	CONT & AUX BLDG VENT BD 2B2-B	45W756- 8	R0	RELAY RM ELEC HTR	0 -HTR	- 31	-93	2PL3852	6,11	2PLC225,227			NO	
1-MCC-214-B2-B	CONT & AUX BLDG VENT BD 1B2-B	45W756- 8	R0	SHIFT ENG CHRT STOR RM HTR	0 -HTR	- 31	-95	1PL2810	6,11	1PL1529,1536			NO	
2-MCC-214-B2-B	CONT & AUX BLDG VENT BD 2B2-B	45W756- 8	R0	KITCHEN ELEC HTR	0 -HTR	- 31	-99	2PL3841	6,11	1PLC1528,1538			NO	
1-MCC-214-B2-B	CONT & AUX BLDG VENT BD 1B2-B	45W756- 8	R0	AUX BLDG SPACE HTR EL 737	1 -HTR	- 30	-AB7		1				YES	

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PREPARED BY: R K	DATE 8-6-92
CHECKED BY: [signature]	DATE 8-7-92

APPENDIX A

Page No. 21
08/06/92

ATTACHMENT FIR103C - CALC NO. WPBEVAR9001006
REG GUIDE 1.75 ASSOCIATED CIRCUITS
AND APPENDIX R ANALYSIS FOR NON 1E
120V AC AND 250V DC CIRCUITS

MCC	DESCRIPTION	DRAWING	REV	EQUIPMENT	U DES	SYS	DESIG	CABLE	CAT	CONDUIT	CABLE SIZE	FUSE-SIZE-AMPS	PASS CRITERIA
1-HCC-214-B2-B	CONT & AUX BLDG VENT BD 1B2-B	45W756- 8	RO	N MN STM VAULT RM U HTR 2	1 -HTR	- 30	-NM2		1				YES
1-HCC-214-B2-B	CONT & AUX BLDG VENT BD 1B2-B	45W756- 8	RO	480V SHTDN BD RM 1B U HTR	1 -HTR	- 30	-SBU		1				YES
1-HCC-214-B2-B	CONT & AUX BLDG VENT BD 1B2-B	45W756- 8	RO	XMFR RM 1B EL 772 U HTR	1 -HTR	- 30	-T1B		1				YES
1-HCC-214-B2-B	CONT & AUX BLDG VENT BD 1B2-B	45W756- 8	RO	AUX INSTR RM HTR	1 -HTR	- 31	-87	1PL2826	6,9,11	1PLC239			~~YES~~ NO JSB 8-15-92
2-HCC-214-B2-B	CONT & AUX BLDG VENT BD 2B2-B	45W756- 8	RO	AUX INSTR RM HTR	2 -HTR	- 31	-89	2PL2826	6,9,11	2PLC238			~~YES~~ NO JSB 8-15-92

RK
PH. 8/15/92

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ATTACHMENT FIR103C - CALC NO. WPBEVAR9001006
REG GUIDE 1.75 ASSOCIATED CIRCUITS AND APPENDIX R ANALYSIS
FOR NON 1E 120V AC AND 250V DC CIRCUITS
APPENDIX B - DRAWING LIST

DRAWING	SHEET	REV.
35N713	1	1
35N713	2	1
35W733	1	C
35W733	2	J
35W733	3	M
35W733	4	F
45B1755	13A	C
45B1761	5F	B
45B1761	6F	B
45B1762	2E	B
45B1762	3E	B
45B1762	3F	B
45B1762	5E	B
45B1763	5F	B
45B1764	3F	B
45B1770	2F	E
45B1770	8F	D
45B1770	12E	D
45B1771	2D	D
45B1771	3D	D
45B1771	3E	D
45B1771	4E	D
45B1771	4F	D
45B1771	3F	C
45B1771	5E	C
45B1771	5F	C
45B1771	6E	C
45B1771	6F	C
45B1771	7E	C
45B1771	8B	C
45B2761	5F	C
45B2762	3E	C
45B2762	3F	C
45B2763	5F	D
45B2764	3E	D
45B2764	3F	C
45B2770	7D	C
45B2770	8F	D
45B2770	4F	E
45B2770	2F	C
45B2770	12E	B
45B2771	6F	D
45B2771	2D	C
45B2771	2E	C
45B2771	3D	D
45B2771	3E	D
45B2771	4E	D

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REG GUIDE 1.75 ASSOCIATED CIRCUITS AND APPENDIX R ANALYSIS
FOR NON 1E 120V AC AND 250V DC CIRCUITS
APPENDIX B - DRAWING LIST

DRAWING	SHEET	REV.
45B2771	4F	D
45B2771	3F	D
45B2771	5E	D
45B2771	5F	D
45B2771	6D	E
45B2771	6E	D
45B2771	7D	E
45B2771	7E	D
45B2772	8F	D
45B774	2	E
45B774	8A	B
45B775	5	F
45B775	6E	C
45B775	4F	E
45B776	4	E
45B776	7F	D
45B776	11C	C
45B786	3F	E
45B787	3F	C
45B787	4F	C
45N1620	1	L
45N1635	83	E
45N1635	90	F
45W1620	12	L
45W1620	4	G
45W1673	6	S
45W1748	6	F
45W1748	2	R
45W1755	1	H
45W1755	2	K
45W1755	4	C
45W1755	3	L
45W1756	2	K
45W1756	3	M
45W1756	4	C
45W1756	5	B
45W1761	1	M
45W1762	1	H
45W1763	1	J
45W1764	1	F
45W1771	1	5
45W1771	2	5
45W1773	1	D
45W1773	2	H
45W1773	3	E
45W1788	1	C
45W1788	2	B

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REG GUIDE 1.75 ASSOCIATED CIRCUITS AND APPENDIX R ANALYSIS
FOR NON 1E 120V AC AND 250V DC CIRCUITS
APPENDIX B - DRAWING LIST

DRAWING	SHEET	REV.
45W2620	4	7
45W2748	2	J
45W2755	1	G
45W2756	1	2
45W2756	2	8
45W2756	3	4
45W2756	4	1
45W2756	4	1
45W2756	5	1
45W2761	1	J
45W2762	1	G
45W2763	1	L
45W2764	1	J
45W2770	2	E
45W2771	1	E
45W2771	2	E
45W2771	3	D
45W277[illegible]	2	E
45W2773	1	D
45W731		2
45W731		0
45W732	1	0
45W732	2	0
45W732	3	0
45W732	4	1
45W733	3	1
45W733	4	0
45W733	5	0
45W733	6	0
45W733	7	0
45W743	1	0
45W743	2	0
45W743	3	0
45W743	1	0
45W743	2	0
45W743	3	0
45W744	3	1
45W744	1	0
45W744	2	1
45W744	3	1
45W744	4	3
45W744	5	0
45W744	6	1
45W746	1	0
45W746	2	0
45W747	1	0
45W747	2	0

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ATTACHMENT FIR103C - CALC NO. WPBEVAR9001006
REG GUIDE 1.75 ASSOCIATED CIRCUITS AND APPENDIX R ANALYSIS
FOR NON 1E 120V AC AND 250V DC CIRCUITS
APPENDIX B - DRAWING LIST

DRAWING	SHEET	REV.
45W749	1	0
45W749	2	2
45W749	3	1
45W749	4	1
45W751	1	1
45W751	2	1
45W751	3	1
45W751	4	1
45W751	5	1
45W751	6	1
45W751	7	1
45W751	8	1
45W751	9	1
45W751	10	1
45W751	11	1
45W751	12	2
45W755	1	0
45W755	2	0
45W755	3	0
45W755	4	0
45W756	1	2
45W756	2	1
45W756	3	0
45W756	4	0
45W756	6	1
45W756	1	2
45W756	2	1
45W756	3	0
45W756	4	0
45W756	5	2
45W756	6	1
45W756	7	0
45W756	8	0
45W760-234	1	H
45W760-234	4	C
45W760-234	7	G
45W760-234	32	E
45W760-234	17	G
45W760-234	10	H
45W760-61	2	
45W760-78	1	
45W774	1	J
45W774	3	E
45W775	4	F
45W775	3	G
45W775	2	E
45W776	3	F

THIS SHEET ADDED BY REV 10

PREPARED BY: R Katz	DATE 8-6-92
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ATTACHMENT FIR103C - CALC NO. WPBEVAR9001006
REG GUIDE 1.75 ASSOCIATED CIRCUITS AND APPENDIX R ANALYSIS
FOR NON 1E 120V AC AND 250V DC CIRCUITS
APPENDIX B - DRAWING LIST

DRAWING	SHEET	REV.
45W776	2	G
45W782	2	B
45W782	1	G
45W786	1	J
45W786	2	M
45W786	3	D
45W787	2	H
45W798	2	K
45W799	2	J
55W1300	4	G
93-8087-26	03	

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Attachment FIR103C
Reg. Guide 1.75 Associated
Circuits and Appendix R
Analysis for Non-Class 1E
120V AC & 250V DC Circuits

Calculation No. WBPEVAR9001006

Prepared by R Koty Date 8-10-92

Checked by Date 8-10-92

Page 1

APPENDIX C

Skids walked down that have the following conditions;

1. Short length of conduit.
2. Conduit completely visible.
3. No 1E cable or conduit in vicinity.

UNIT HEATER	0-HTR-30-483
UNIT HEATER	0-HTR-30-484
UNIT HEATER	0-HTR-30-485
DUCT HEATER	0-HTR-31-72
DUCT HEATER	0-HTR-31-83
UI SHIELD BLDG RAD MON RM A/C	1-ACU-31-IRS
DUCT HEATER	1-HTR-30-BRB
UNIT HEATER	1-HTR-30-471
UNIT HEATER	1-HTR-30-472
DUCT HEATER	1-HTR-31-87
CRD ROOM A/C	1-MTR-30-CRB
CRDE ROOM A/C	1-MTR-30-CRB
UNIT HEATER	2-HTR-30-473
UNIT HEATER	2-HTR-30-474
UNIT HEATER	2-HTR-30-475
UNIT HEATER	2-HTR-30-476
UNIT HEATER	2-HTR-30-477
HEATER	2-HTR-30-478
DUCT HEATER	2-HTR-31-89
DUCT HEATER	2-HTR-31-BRB
DUCT HEATER	2-HTR-31-D1A

Attachment M-19412-A
Calculation No. WBPEVAR9001006

Prepared by JJB Date 8/8/92

Checked by P. Uff Date 8-8/92

Sheet 1

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3.0	Applicable Codes and Standards	3	–
4.0	Assumptions	3	–
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8.0	Summary of Calculation Results	5	–
9.0	Conclusion	5	–
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This Attachment contains 6 pages.

THIS SHEET ADDED BY REVISION 10

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1.0 PURPOSE & SCOPE

1.1 Purpose

The purpose of this attachment is to evaluate and support the modifications to be implemented under DCN M-19412-A.

The modifications involve the installation of additional fuses 1-FU-275-R71/R5, R6 & 1-FU-275-R70/R5, R6 to the 250V DC Turbine Trip Circuits to achieve fire safe shutdown separation of control building and auxiliary building cabling.

No other Baseline Calculations are impacted by this DCN, an additional calculation WBPE0479207002 "Branch Circuit Protection" is required to support this DCN.

This attachment also documents the roll-up of mini-calculation WBPE0479104004 (DCN M-14120-A).

Description of DCN M-14120-A:

As per WBP890291PER, the following fuses must be selected to have a voltage rating equal to or greater than the source voltage (250V DC) and a current rating capable of protecting the cable from experiencing insulation damage during a short circuit.

Fuse identification numbers: 0-FU-290-1257/F1-A, F2-A, /F3-A, and /F4-A
0-FU-290-1264/F1-B, F2-B, /F3-B, and /F4-B

1.2 Scope

This attachment evaluates and verifies that the proposed design is adequate and meets the guidelines applicable to the Baseline Calculation.

Cables 1G222A & 1G217B shall be fused (Bussmann MIS-5D.C.) at train A isolation box of Relay Panel 1-R-71 and train B isolation box of Relay Panel 1-R-70 respectively.

2.0 CRITERIA

2.1 The new 5A fuses must be able to coordinate with the 15A fuses, existing upstream.

2.2 The circuits will be considered adequately protected by a single fuse if the cables are prevented from reaching thermal damage.

3.0 APPLICABLE CODES AND STANDARDS

See Section 3.0 of the Baseline Calculation.

4.0 ASSUMPTIONS

None

5.0 REFERENCES

5.1 DCN M-19412-A

5.2 Calculation No. WBPE0479207002.

5.3 Calculation No. WBPEVAR8907005.

5.4 DCN M-14120-A

5.5 Electrical Design Stadard DS-E8.1.1, Substitution Standard for Low-Voltage Power and Control Fuses (600 Volts or Less), R7.

5.6 TVA DWG. 1-45W709-1, R0.

5.7 Watts Bar Nuclear Plant Cable Routing System, System ID Y9898, Version 6.

5.8 Departmental Guidelines for Electrical Mini-Calculation Roll-Up, ELEC-004, Dated 4/30/91.

5.9 Calculation No. WBN EEB-MS-TI08-0008.

Attachment M-19412-A
Calculation No. WBPEVAR9001006

Prepared by ~~KY~~ Date 8/8/92

Checked by P-VH Date 8-8-92

Sheet 4

6.0 DESIGN INPUT DATA

6.1 The 15A fuses are identified as Gould Shawmut, type TRS-15R, 600VAC, 200KAIC (Ref. 5.4). Same fuses are also rated for 300VDC, 20KAIC (Ref. 5.5). For characteristic curve, see Ref. 5.9.

6.2 The 5A fuses are identified as Bussmann, type MIS-5D.C, 300 VDC, 20KAIC and for characteristic curve, see reference 5.3.

6.3 Cables: 1G201B*, 1G221A*, 2G201B*, 2G221A*, 1G222A** & 1G217B** are all 12AWG.

* Ref. 5.4, 5.6 and 5.7
** Ref. 5.1

KAIC = 1000 Amp Interrupting Capacity

THIS SHEET ADDED BY REVISION 10

Prepared by KY Date 8/8/92

Checked by P. Uhl Date 8/8/92

7.0 COMPUTATION/ANALYSIS

7.1 Fuses coordination has been shown in Appendix A. Bussmann MIS-5D.C coordinates with Shawmut TRS-15R.

7.2 Coordination curves in Appendix A demonstrate the adequacy of cable protection (#12, 90°C; #12, 75°C).

7.3 As per Section 6.1 of the Baseline Calculation, no conductor smaller than #14 AWG is permitted.

8.0 SUMMARY OF RESULTS

8.1 The results of this analysis is that the added 5A fuses will coordinate with the upstream 15A fuses and will protect the conductors in circuit.

8.2 The thermal damage curves (Appendix A) indicate that regardless of the insulation class (75°C or 90°C) the #12 cables are protected against thermal damage.

9.0 CONCLUSION

The added fuses serve as fire safe shutdown separation devices, provide adequate conductor protection against thermal damage and coordinate with the upstream fuses.

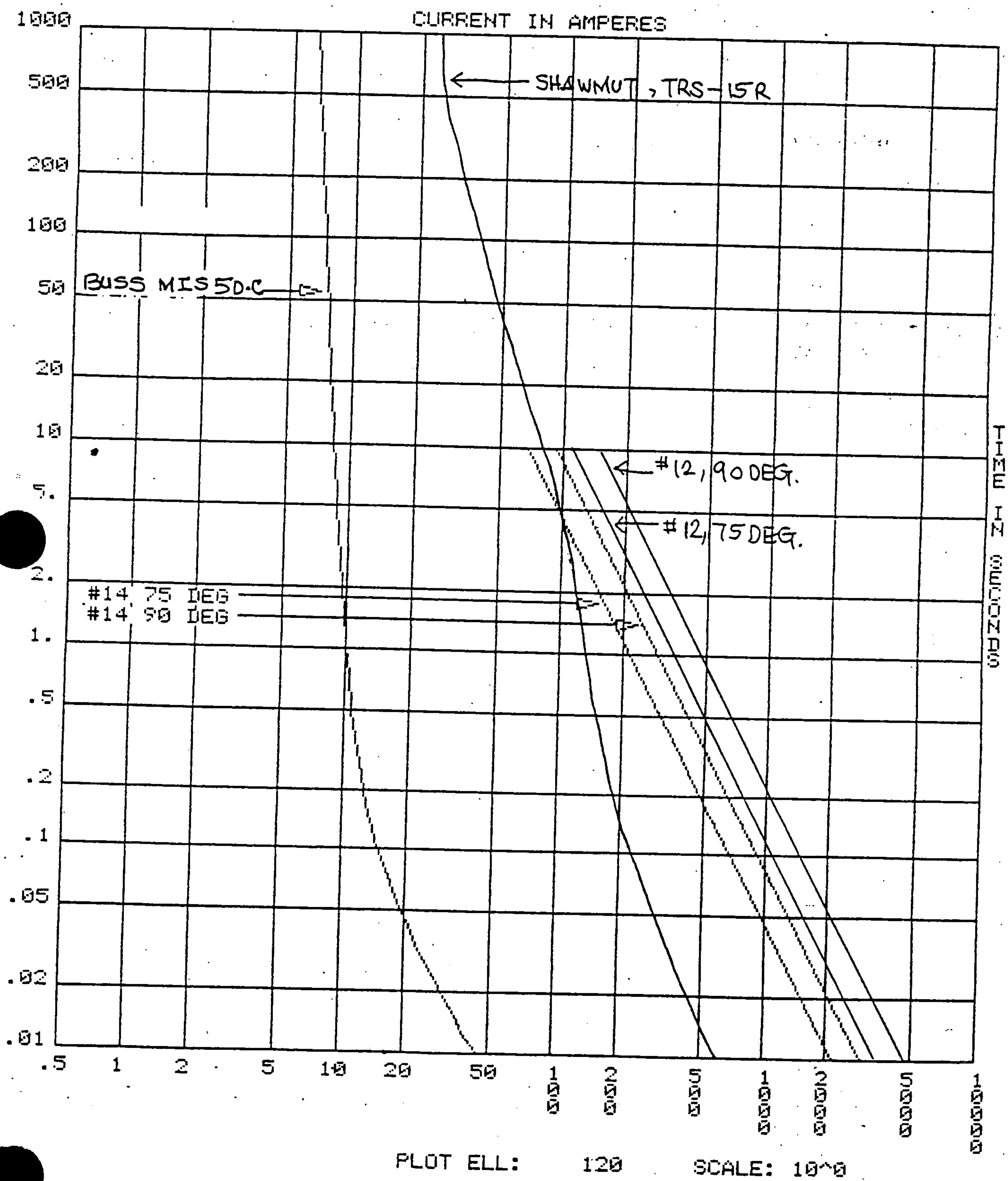
10.0 APPENDICES

Appendix A - Fuses Coordination

APPENDIX A (1/1)

CALCULATION NO: WBPEVAR9001006

SHT. 6



FUSES CO-CORDINATION.