| LO                             | L                            | Calculation/Problem                                  | No: 1040-00  | 1-024                          |                          |                                      |
|--------------------------------|------------------------------|--|--------------|--------------------------------|--------------------------|--------------------------------------|
|                                |                              | Title: Generic 1E                                    | Electrical C | omponent.                      | s 2.21                   |                                      |
| 4                              | T                            | Client: Toledo Edi                                   | son Company  | Project:                       | Davis-Besse              | Unit 1                               |
| _                              |                              | Job No: 1040-001-                                    | .671         | i                              | Equipment Qu             | ualificatio                          |
|                                | purnerenences                | Design Inputs  | are outlined | in the (                       | Cover Report             | t.                                   |
| Assumpti                       | ions:                        |  |              |                                |                          |                                      |
|                                |                              | Assumptions ar                                       | e outlined i | n the Co                       | ver Report.              |                                      |
|                                |                              |  |              |                                | **                       |                                      |
| Method:                        |                              |  |              |                                |                          |                                      |
|                                |                              | Mathada ana au                                       |              |                                |                          |                                      |
|                                |                              | methods are ou                                       | tlined in th | e Cover I                      | Report.                  |                                      |
|                                |                              | Methods are ou                                       | tlined in th | e Cover I                      | Report.                  |                                      |
|                                |                              | Methods are ou                                       | tlined in th | e Cover I                      | Report.                  |                                      |
| Remarks:                       |                              | Methods are ou                                       | tlined in th | e Cover I                      | Report.                  |                                      |
| Remarks:                       |                              | EDS Nuclear Re                                       | port No. 02- | e Cover 1                      | 5.                       | * <b>*</b> •                         |
| Remarks:                       |                              | EDS Nuclear Re<br>REVISION                           | port No. 02- | e Cover 1<br>1040-1076         | 5.<br>OVED               | DATE                                 |
| Remarks:<br>REV. NO.           | Origin                       | EDS Nuclear Re                                       | port No. 02- | e Cover I<br>1040-1076<br>APPR | o.<br>OVED<br>Haverly    | DATE<br>10-2-81                      |
| Remarks:<br>REV. NO.           | Origin<br>GENERAL            | EDS Nuclear Re<br>REVISION                           | port No. 02- | APPR                           | oved<br>Haverly<br>lward | DATE<br>10-2-81<br>1/3/83            |
| Remarks:<br>REV. NO.<br>1<br>2 | Origin<br>GENERAL<br>GENERAL | EDS Nuclear Re<br>REVISION                           | port No. 02- | APPR<br>APPR<br>K Wood         | over<br>Haverly<br>Ward  | DATE<br>10-2-81<br>1/3/83<br>11/2/83 |
| Remarks:                       | Origin<br>GENERAL<br>GENERAL | EDS Nuclear Re<br>REVISION<br>MANUAL RE<br>MANUAL RE | port No. 02- | APPR                           | oved<br>Haverly<br>lward | DATE<br>10-2-81<br>1/3/83<br>11/2/83 |

Davis-Besse Unit 1 Facility 50-346 Docket:





GENERIC 1E ELECTRICAL COMPONENTS

Prepared by: D, Leura checked by: Maclana

Date: 11

Date: 1/

LOCATION Inside Outside Primary Worksheet Plant Primary Index No. Rev. |ID Number Generic Name Containment | Containment REMARKS 2218-012 Cable Containment 2 IAG1 Cable Containment 221H-013 2 IAG2 221H-014 2 **|B01** Cable Containment Containment 221H-015 2 1802 Cable 2 Containment 221H-016 **IB04** Cable Containment 2 Cable 221H-017 1B06 2 Cable Containment 221H-018 **B07** Aux. Bldg. 221H-019 2 **|Various** Cable 2 Cable Containment 221H-020 |B10 Containment 221H-021 2 [B11 Cable Rm. 209 2 **IBE11A** Motor Control Center 221H-022 Rm. 304 221H-023 2 IBE11B Motor Control Center Rm. 304 221H-024 2 |BE11C Motor Control Center Rm. 227 221H-025 2 |BE11D Motor Control Center Rm. 427 221H-026 2 **IBF11A** Motor Control Center 2 Rm. 236 221H-027 |BF11C Motor Control Center Rm. 227 2 IBF11D | Motor Control Center 221H-028 Containment 2 |BG1 | Cable 221H-029 Containment 221H-030 2 IBG2 Cable 2 Cable Containment 221H-031 |BG3 Containment 221H-032 2 |BG4 Cable 2 IBG5 Cable Containment 221H-033 Containment 2 IBG6 Cable 221H-034 2 Rm. 304 221H-035 IBYE2 Motor Control Center Rm. 427 2 Motor Control Center 221H-036 |BYF2 Containment 2 221H-037 |C01 | Cable Containment 221H-038 2 1C02 Cable 221H-039 2 |C10 Cable Containment 221H-040 2 (C11 Cable Containment Containment 221H-041 2 IC12 Cable Containment 2 Cable 221H-042 IC13 Containment 221H-043 2 [C14 Cable

Pacility: Davis-Besse Unit 1 Docket: 50-346 MASELIST HARSH ENVIRONMENT GENERIC 1E ELECTRICAL COMPONENTS



Prepared by: n. Lew Checked by:

Date: 11/1/83 Date: 11/2/15

| 1     |         | 1    | 1         |                           | LOCAT        | TION                                     |             |
|-------|---------|------|-----------|---------------------------|--------------|--|-------------|
| 1     |         | 1    | 1         |                           | Inside       | Outside                                  |             |
| I Wo  | rksheet | 1    | Plant     |                           | Primary      | Primary                                  |             |
| I_In  | dex No. | Rev. | ID Number | Generic Name              | Containment  | Containment                              | REMARKS     |
| 1     |         | 1    | 1         |                           |              |  |             |
| 221   | H-044   | 1 2  | 1015      | Cable                     | Containment  |  |             |
| 1 221 | H-045   | 1 2  | 1020      | Cable                     | Containment  |  |             |
| 221   | H-046   | 1 2  | IC21      | Cable                     | Containment  | 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1 |             |
| 221   | H-047   | 2    | 1C22      | Cable                     | Containment  |  |             |
| 221   | H-048   | 1 2  | IC23      | Cable                     | Containment  |  |             |
| 221   | H-049   | 1 2  | 1024      | Cable                     | Containment  |  | 물건 아파 가지 않는 |
| 221   | H-050   | 1 2  | IC25      | Cable                     | Containment  |  |             |
| 221   | H-051   | 1 2  | Various   | Disconnect Switch         |              | Aux. Bldg.                               |             |
| 221   | H-052   | 1 2  | CDE11A    | Disconnect Switch Cabinet | 말 이 같은 것 같아. | Rm. 304                                  |             |
| 221   | H-053   | 2    | Various   | Terminal Lugs             |              | Aux. Bldg.                               |             |
| 221   | H-054   | 1 2  | Various   | Fuses                     |              | Aux. Bldg.                               |             |
| ! 221 | H-055   | 1 2  | CDE11B-1  | Disconnect Switch Cabinet |              | Rm. 304                                  |             |
| 221   | H-056   | 1 2  | CDE11B-2  | Disconnect Switch Cabinet |              | Rm. 304                                  |             |
| 1 221 | H-057   | 1 2  | CDE11C    | Disconnect Switch Cabinet |              | Rm. 304                                  |             |
| 1 221 | H-058   | 1 2  | CDE11D    | Disconnect Switch Cabinet |              | Rm. 227                                  |             |
| 1 221 | H-059   | 1 2  | CDF11A-1  | Disconnect Switch Cabinet |              | Rm. 427                                  |             |
| 1 221 | H-060   | 1 2  | ICDF11A-2 | Disconnect Switch Cabinet |              | Rm. 427                                  |             |
| 1 221 | H-061   | 1 2  | ICDF11C   | Disconnect Switch Cabinet |              | Rm. 236 1                                |             |
| 1 221 | H-062   | 1 2  | CDF11D    | Disconnect Switch Cabinet |              | Rm. 227                                  |             |
| 1 221 | H-063   | 1 2  | ICDYE2    | Disconnect Switch Cabinet |              | Rm. 304                                  |             |
| 1 221 | H-064   | 1 2  | ICDYF2    | Disconnect Switch Cabinet |              | Rm. 427 1                                |             |
| 1 221 | H-065   | 1 2  | ICS1      | Cable                     | Containment  |  |             |
| 1 221 | H-066   | 1 2  | ICS2      | Cable                     | Containment  |  |             |
| 1 221 | H-067   | 1 2  | ICS3      | Cable                     | Containment  |  |             |
| 1 221 | H-068   | 1 2  | 1055      | Cable                     | Containment  |  |             |
| 1 221 | H-069   | 1 2  | 1056      | Cable                     | Containment  |  |             |
| 1 221 | 8-070   | 1 2  | LEC5017   | Terminal Block Boy        | concurnment  | Dm 515 1                                 |             |
| 1 221 | H-071   | 1 2  | LEC5018   | Terminal Block Box        |              | Rm 515                                   |             |
| 1 221 | H-072   | 1 2  | 1805056   | Terminal Block Box        |              | Rm. 515                                  |             |
| 1 221 | H-073   | 1 2  | 1805057   | Terminal Block Box        |              | Dm 515                                   |             |
| 1 221 | 1-075   | 1 2  | 1203037   | Terminal Block Box        |              | Rm. 515 1                                |             |
| 1 221 | H-075   | 1 0  | 15001060  | morminal Block Box        |              | Rm. 501 1                                |             |
| _ 221 | n-075   | 1 0  | I EVOTOBA | Terminal Block Box        |              | Rin. 501                                 |             |

14

Pacility: Davis-Besse Unit 1 Docket: 50-346 MASTER LIST HARSH ENVIRONMENT GENERIC 1E ELECTRICAL COMPONENTS



Prepared by: N. Lewis Date: 11/1/83 checked by: And Date: 11/1/83

| 1 |           | 1    | 1         |                    | LOCAT       | TION I      |              |
|---|-----------|------|-----------|--------------------|-------------|-------------|--------------|
| 1 |           | 1    | 1         |                    | Inside      | Outside     |              |
| 1 | Worksheet | 1    | Plant     |                    | Primary     | Primary     |              |
| i | Index No. | Rev. | ID Number | Generic Name       | Containment | Containment | REMARKS      |
| i |           | 1    | 1         |                    | 1.          | 1           |              |
| i | 221H-076  | 1 2  | EV01070   | Terminal Block Box | 1001        | Rm. 501     |              |
| 1 | 221H-077  | 1 2  | EV0107A   | Terminal Block Box | 1           | Rm. 501     |              |
| 1 | 221H-078  | 1 2  | EV0240B   | Terminal Block Box | 1           | Rm. 314     |              |
| 1 | 221H-079  | 1 2  | EV05990   | Terminal Block Box | 1.1.1       | Rm. 314     |              |
| 1 | 221H-080  | 1 2  | EV06010   | Terminal Block Box |             | Rm. 314     |              |
| 1 | 221H-081  | 1 2  | EV06080   | Terminal Block Box | 1           | Rm. 303     |              |
| 1 | 221H-082  | 1 2  | EV06120   | Terminal Block Box |             | Rm. 303     |              |
| i | 221H-083  | 1 2  | EV0624B   | Terminal Block Box | 1           | Rm. 427     |              |
| 1 | 221H-084  | 1 2  | EV08300   | Terminal Block Box | 1           | Rm. 113     | . 김 남편이 전쟁에서 |
| 1 | 221H-085  | 1 2  | EV08310   | Terminal Block Box | 1           | Rm. 113     |              |
| i | 221H-086  | 1 2  | EV1001    | Terminal Block Box | 1           | Rm. 602     |              |
| 1 | 221H-087  | 1 2  | EV100A    | Terminal Block Box | 1           | Rm. 602     |              |
| 1 | 221H-088  | 1 2  | [EV1011   | Terminal Block Box |             | Rm. 601     |              |
| i | 221H-089  | 1 2  | EV101B    | Terminal Block Box | 1           | Rm. 601     |              |
| 1 | 221H-090  | 1 2  | EV13280   | Terminal Block Box | 1           | Rm. 314     |              |
| 1 | 221H-091  | 1 2  | EV13380   | Terminal Block Box | 1           | Rm. 314     |              |
| 1 | 221H-092  | 1 2  | EV13660   | Terminal Block Box | 1           | Rm. 314     |              |
| 1 | 221H-093  | 1 2  | EV13670   | Terminal Block Box | 1           | Rm. 314     |              |
| 1 | 221H-094  | 1 2  | LEV13830  | Terminal Block Box | 1           | Rm. 236     |              |
| i | 221H-095  | 1 2  | EV1407B   | Terminal Block Box | 1           | Rm. 314     |              |
| 1 | 221H-096  | 1 2  | EV1411B   | Terminal Block Box | 1           | Rm. 314     |              |
| i | 221H-097  | 1 2  | 1EV1467   | Terminal Block Box | 1           | Rm. 113     |              |
| i | 221H-098  | 1 2  | IEV1469   | Terminal Block Box | 1           | Rm. 113     |              |
| i | 221H-099  | 1 2  | LEV15170  | Terminal Block Box | 1           | Rm. 236     |              |
| i | 221H-100  | 1 2  | IEV15180  | Terminal Block Box | 1           | Rm. 236     |              |
| i | 221H-101  | 1 2  | LEV15300  | Terminal Block Box | 1           | Rm. 303     |              |
| i | 2218-102  | 1 2  | 1EV15310  | Terminal Block Box | 1           | Rm. 314     |              |
| i | 221H-103  | 1 2  | LEV1544   | Terminal Block Box | 1           | Rm. 303     |              |
| i | 221H-104  | 1 2  | LEV1545   | Terminal Block Box | 1           | Rm. 314     |              |
| i | 221H-105  | 1 2  | LEV1567B  | Terminal Block Box | 1           | Rm. 314     |              |
| i | 2218-106  | 1 2  | LEV1719B  | Terminal Block Box | i           | Rm. 236     |              |
| i | 221H-107  | 1 2  | LEV20000  | Terminal Block Box | 1           | Rm. 303     |              |

Pacility Davis-Besse Unit 1 Docket: 50-346





Prepared by: n. fewin checked by: Amended

de.

Date:

|   | Charges in spin-start spin-start in the start with | - |
|---|--|---|
|   | 11/1/82  |   |
|   | 11/105   |   |
| : | 11/2/03  |   |

| 1 |           | 1   |      | 1          | 1 |          |       |              | 1964 august 1 | LOCA   | TION   |        |         |
|---|-----------|-----|------|------------|---|----------|-------|--------------|---------------|--|--------|--------|---------|
| 1 |           | 1   |      | 1          | 1 |          |       |              |               | Inside   | 1 Out  | side   |         |
| 1 | Worksheet | i   |      | I Plant    | 1 |          |       |              | 1.202.00      | Primary  | Pri    | mary   |         |
| i | Index No. | i   | Rev. | IID Number | i |          |       | Generic Name | 1.201.201     | Containment  | Conta  | inment | REMARKS |
| ï | THUCK HOT | T   |      | 1          | T |          |       |              |               |  | 1      | 1      |         |
| i | 221H-108  | i   | 2    | EV20010    | 1 | Terminal | Block | Box          | 34 T 1        |  | Rm.    | 427    |         |
| 1 | 221H-109  | 1   | 2    | EV20030    | 1 | Terminal | Block | Box          |               | [승규 전사 전망  | I Rm.  | 314 1  |         |
| 1 | 221H-110  | 1   | 2    | EV2010     | 1 | Terminal | Block | Box          | 11 Sec. 19    | and the second | Rm.    | 314    |         |
| 1 | 221H-111  | 1   | 2    | EV2012B    | 1 | Terminal | Block | Box          |               |  | I Rm.  | 236    |         |
| i | 221H-112  | 1   | 2    | IEV27330   | 1 | Terminal | Block | Box          |               | 이 같은 것은 것이 같을 것을 수 없다.   | Rn.    | 105    |         |
| 1 | 221H-113  | 1   | 2    | EV27340    | 1 | Terminal | Block | Box          |               | [이는 것은 문제] 그의  | Rm.    | 113    |         |
| i | 221H-114  | 1   | 2    | IEV27360   | 1 | Terminal | Block | Box          |               |  | Rm.    | 314    |         |
| i | 221H-115  | 1   | 2    | EV5005     | 1 | Terminal | Block | Box          |               | 1.2 A. 1. Sec. 1   | 1 Rm.  | 601    |         |
| i | 221H-116  | 1   | 2    | LEV5008    | 1 | Terminal | Block | Box          | 1.1.1.1.1     |  | Rm.    | 427    |         |
| ì | 221H-117  | 1   | 2    | IEV501CB   | 1 | Terminal | Block | Box          | - 1. J        |  | Rm.    | 314    |         |
| i | 221H-118  | i   | 2    | EV5010D    | 1 | Terminal | Block | Box          |               |  | Rm.    | 314    |         |
| i | 221H-119  | 1   | 2    | 1EV50240   | 1 | Terminal | Block | Box          |               |  | I Rm.  | 515    |         |
| i | 221H-120  | ÷i. | 2    | LEV50250   | i | Terminal | Block | Box          | 1             |  | Rm.    | 515    |         |
| i | 221H-121  | i   | 2    | EV50370    | 1 | Terminal | Block | Box          |               |  | Rm.    | 236    |         |
| 1 | 221H-122  | i   | 2    | LEV50380   | 1 | Terminal | Block | Box          |               |  | Rm.    | 236    |         |
| i | 2218-123  | i   | 2    | LEV50650   | i | Terminal | Block | Box          |               |  | I Rm.  | 208    |         |
| i | 2218-124  | i.  | 2    | LEV50670   | i | Terminal | Block | Box          |               |  | Rm.    | 314    |         |
| i | 2218-125  | i   | 2    | LEV50700   | i | Terminal | Block | Box          |               |  | I Rm.  | 500    |         |
| i | 2218-126  | i   | 2    | LEV50730   | i | Terminal | Block | Box          |               |  | 1 Rm.  | 500 1  |         |
| i | 2218-127  | i   | 2    | LEV50750   | i | Terminal | Block | Box          |               |  | I Rm.  | 501    |         |
| ï | 2218-128  | i   | 2    | LEV50780   | i | Terminal | Block | Box          |               |  | Rm.    | 501    |         |
| î | 2218-129  | i   | 2    | LEV50900   | i | Terminal | Block | Box          |               |  | I Rm.  | 314    |         |
| i | 221H-130  | i   | 2    | LEV54210   | i | Terminal | Block | Box          |               |  | I Rm.  | 105    |         |
| î | 2218-131  | i.  | 2    | LEV54220   | i | Terminal | Block | Box          |               |  | I Rm.  | 105    |         |
| 1 | 2210-131  | 1   | 2    | 15454230   | ÷ | Terminal | Block | Box          |               |  | I Rm.  | 113    |         |
| 1 | 2210-132  | 1   | 2    | 15454240   | ÷ | Terminal | Block | Box          |               |  | I Rm.  | 115    |         |
| 1 | 2214-134  | -   | 2    | LEV54250   | 1 | Terminal | Block | Box          | 1.5.0.4       |  | I Rm.  | 115 1  |         |
| 1 | 2211-134  | 1   | 2    | 15054290   | 1 | Terminal | Block | Box          |               |  | I Rm.  | 105 1  |         |
| 1 | 2211-135  | -   | 2    | LEV54590   | 1 | Terminal | Block | Box          |               |  | I Rm.  | 105 1  |         |
| 1 | 2218-130  | -   | 2    | 15054400   | 1 | Terminal | Block | Box          |               |  | I Rm.  | 115 1  |         |
| 1 | 2218-137  | -   | 2    | 12054420   | 1 | Terminal | Block | Box          |               |  | I Rm.  | 314    |         |
| ! | 221H-138  | !   | 2    | 120607     | - | Terminal | Block | BOA          |               |  | I Rm.  | 236 1  |         |
| 1 | 221H-139  |     | 2    | EVDHUIA    |   | Terminal | BTOCK | BOX          |               |  | L Rate | 230    |         |

Facility: Davis-Besse Unit 1 Docket: 50-346





DOCKEC: 50-340

Prepared by: D. Checked by:

Date: 11/1/83 Date: 11/2/03

| 1          | 1   | 1            | I share a second second second second  | LOCATION                  | 1         |
|------------|-----|--------------|--|---------------------------|-----------|
| 1          | 1   | 1            |  | Inside   Outside          | 1         |
| Worksheet  | 1   | Plant        |  | Primary   Primary         | 1         |
| Index No.  | Rev | .  ID Number | Generic Name   | Containment   Containment | I REMARKS |
| 1          | 1   | 1            | I set a set of the set |                           | 1         |
| 221H-140   | 1 2 | EVDH01B      | Terminal Block Box   | 1   Rm. 208               | 1         |
| 221H-141   | 1 2 | EVDH63       | Terminal Block Box   | Rm. 115                   | 1 1       |
| 221H-142   | 1 2 | EVDH64       | Terminal Block Box   | Rm. 105                   | 1 1       |
| 1 221H-143 | 1 2 | IEVHP02A     | Terminal Block Box   | Rm. 236                   | 1 1       |
| 221H-144   | 1 2 | EVHP02B      | Terminal Block Box   | Rm. 236                   | 1 1       |
| 221H-145   | 1 2 | EVHP02C      | Terminal Block Box   | Rm. 208                   | 1         |
| 221H-146   | 1 2 | EVHP02D      | Terminal Block Box   | Rm. 208                   | 1         |
| 221H-147   | 1 2 | EVMU03       | Terminal Block Box   | Rm. 208                   | 1 1       |
| 221H-143   | 1 2 | EVMU33       | Terminal Block Box   | Rm. 236                   | 1 1       |
| 221H-149   | 1 2 | EVMU38       | Terminal Block Box   | Rm. 208                   | 1         |
| 221H-150   | 1 2 | EVMU66       | Terminal Block Box   | Rm. 208                   | 1         |
| 221H-151   | 1 2 | JT1715       | Terminal Block Box   | Rm. 115                   | 1         |
| 1 221H-152 | 1 2 | JT2917       | Terminal Block Box   | Rm. 215                   | 1         |
| 221H-153   | 1 2 | JJT3606      | Terminal Block Box   | Rm. 314                   | 1         |
| 1 221H-154 | 1 2 | IJT3704      | Terminal Block Box   | Rm. 304                   | 1 1       |
| 1 2218-155 | 1 2 | JT3712       | Terminal Block Box   | Rm. 314                   | 1         |
| 221H-156   | 1 2 | JT3802       | Terminal Block Box   | Rm. 303                   | 1 1       |
| 1 2218-157 | 1 2 | JJT3803      | Terminal Block Box   | Rm. 304                   | 1         |
| 1 2218-158 | 1 2 | IJT3953      | Terminal Block Box   | Rm. 410                   | 1         |
| 221H-159   | 1 2 | JT3954       | Terminal Block Box   | Rm. 410                   | 1 1       |
| 221H-160   | 1 2 | JT5705       | Terminal Block Box   | Rm. 501                   | 1 1       |
| 221H-161   | 1 2 | IJT5706      | Terminal Block Box   | Rm. 501                   | 1         |
| 221H-162   | 1 2 | JJT5805      | Terminal Block Box   | Rm. 500                   | 1 1       |
| 1 221H-163 | 1 2 | IJT5806      | 1 Terminal Block Box   | Rm. 500                   | 1         |
| 1 221H-164 | 1 2 | IJT6703      | Terminal Block Box   | Rm. 602                   | 1 1       |
| 1 2218-165 | 1 2 | IJT6704      | Terminal Block Box   | Rm. 602                   | 1         |
| 221H-166   | 1 2 | IJT6707      | Terminal Block Box   | Rm. 602                   | 1         |
| 1 221H-167 | 1 2 | JJT6801      | Terminal Block Box   | Rm. 601                   | 1         |
| 221H-168   | 1 2 | JT6802       | Terminal Block Box   | Rm. 601                   | 1 1       |
| 221H-169   | 1 2 | IJT6807      | Terminal Block Box   | Rm. 601                   | 1 1       |
| 1 221H-170 | 1 2 | Various      | Fuse Block   | 1                         | 1         |
| 1 221H-171 | 1 2 | IL1P         | 1 Cable  | Containment               | 1         |

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Pacility Davis-Besse Unit 1 Docket: 50-346 MASTELIST HARSH ENVIRONMENT GENERIC 1E ELECTRICAL COMPONENTS



Prepared by: 11. Fewie Checked by: Smalenel

Date: 11/1/83 Date: 11/2/05

| 1 |           | 1    | 1         |                      | LOCAT             | rion I                                  |         |
|---|-----------|------|-----------|----------------------|-------------------|---|---------|
| 1 |           | 1    | 1         |                      | Inside            | Outside                                 |         |
| 1 | Worksheet | 1    | Plant     |                      | Primary           | Primary                                 |         |
| 1 | Index No. | Rev. | ID Number | Generic Name         | Containment       | Containment                             | REMARKS |
| 1 |           | 1    | 1         |                      |                   |   |         |
| 1 | 221H-172  | 1 2  | 1110      | Cable                | Containment       |   |         |
| 1 | 221H-173  | 1 2  | ILIT      | Cable                | Containment       |   |         |
| 1 | 221H-174  | 2    | IL4P      | Cable                | Containment       |   |         |
| 1 | 221H-175  | 2    | LXP       | Cable                | Containment       |   |         |
| 1 | 221H-176  | 1 2  | IN/A      | Splice Kit           | Containment       |   |         |
| 1 | 221H-177  | 2    | INC0311   | Push Button Switch   | 1                 | Rm. 115                                 |         |
| 1 | 221H-178  | 2    | INC0312   | Push Button Switch   |                   | Rm. 115                                 |         |
| ۱ | 221H-179  | 1 2  | INC0313   | Push Button Switch   | 1.25-12.25        | Rm. 113                                 |         |
| 1 | 221H-180  | 1 2  | INC0314   | Push Button Switch   | 1.1.1.1.1.1.1.1.1 | Rm. 105                                 |         |
| 1 | 221H-181  | 2    | INC0315   | Push Button Switch   | 1                 | Rm. 105                                 |         |
| I | 221H-182  | 2    | INC0621   | Push Button Switch   | 1                 | Rm. 314                                 |         |
| 1 | 221H-183  | 1 2  | INC0622   | Push Button Switch   | 1                 | Rm. 208                                 |         |
| 1 | 221H-184  | 1 2  | INC5017   | Push Button Switch   | 1                 | Rm. 515                                 |         |
| i | 221H-185  | 1 2  | INC5018   | Push Button Switch   | 1                 | Rm. 515                                 |         |
| 1 | 221H-186  | 1 2  | INC5056   | Push Button Switch   | 1                 | Rm. 515                                 |         |
| 1 | 221H-187  | 1 2  | INC5057   | Push Button Switch   | 1 1               | Rm. 515                                 |         |
| i | 221H-188  | 1 2  | Various   | Timing Relay         | 1                 |   |         |
| i | 221H-189  | 1 2  | Variois   | Relay                | 1                 | 1 · · · · · · · · · · · · · · · · · · · |         |
| 1 | 221H-190  | 1 2  | INP0421   | Push Button Switch   | 1                 | Rm. 105                                 |         |
| i | 221H-191  | 1 2  | INP0422   | Push Button Switch   | 1                 | Rm. 115                                 |         |
| i | 221H-192  | 1 2  | INSV100   | Push Button Switch   | 1                 | Rm. 602                                 |         |
| 1 | 221H-193  | 1 2  | INSV100E  | Push Button Switch   | 1                 | Rm. 602                                 |         |
| i | 221H-194  | 1 2  | INSV101   | Push Button Switch   | 1                 | Rm. 601                                 |         |
| i | 221H-195  | 1 2  | INSV101E  | I Push Button Switch | 1                 | Rm. 601                                 |         |
| i | 2218-196  | 1 2  | INV06248  | Push Button Switch   | i                 | Rm. 427                                 |         |
| i | 2218-197  | 2    | INV08300  | Push Button Switch   | i i               | Rm. 113                                 |         |
| 1 | 2218-198  | 1 2  | INV08310  | Push Button Switch   | 1                 | Rm. 113                                 |         |
| - | 2218-199  | 1 2  | INV1001   | I Push Button Switch | 1                 | Rm. 602                                 |         |
| 1 | 2218-200  | 1 2  | INV1011   | Push Button Switch   | 1                 | Rm. 601                                 |         |
| - | 2214-201  | 1 2  | INV1 156  | I Push Button Switch |                   | Pm, 314                                 |         |
| - | 2214-202  | 1 2  | INV1357   | I Puch Button Switch |                   | Rm. 314                                 |         |
| - | 2214-202  | 2    | 1 1 2 5 9 | Duch Button Switch   |                   | Rm. 314                                 |         |
| 1 | 221H-203  | 1 4  | 1441330   | Push Buccon Switcen  |                   | 10110 314                               |         |

Pacility: Davis-Besse Unit 1 Docket: 50-346 MASTER LIST HARSH ENVIRONMENT GENERIC 1E ELECTRICAL COMPONENTS



Prepared by:

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Date: 11 Date: 11/2

| 1 |                        | 1          | 1                         | 1     |          |              | ILOCA   | TION                          | I                    |         |
|---|------------------------|------------|---------------------------|-------|----------|--------------|---|-------------------------------|----------------------|---------|
|   | Worksheet<br>Index No. | <br>  Rev. | <br>  Plant<br> ID Number |       |          | Generic Name | Inside<br>  Primary<br>  Containment  | Outsi<br>  Prima<br>  Contain | de  <br>ry  <br>ment | REMARKS |
| 1 |                        | 1          | 1                         | 1     |          |              | 1   | 1                             | 1                    |         |
| 1 | 221H-204               | 1 2        | INV13660                  | Pus   | h Button | Switch       | 1   | Rm. 3                         | 14                   |         |
| 1 | 221H-205               | 1 2        | INV13670                  | Pus   | h Button | Switch       | 1   | Rm. 3                         | 14                   |         |
| 1 | 221H-206               | 1 2        | INV13680A                 | Pus   | h Button | Switch       |   | Rm. 3                         | 14                   |         |
| 1 | 221H-207               | 1 2        | INV13680B                 | Pus   | h Button | Switch       | 1   | Rm. 3                         | 14                   |         |
| 1 | 221H-208               | 1 2        | INV13830                  | Pus   | h Button | Switch       | 1. State 1. | Rm. 2                         | 36                   |         |
| 1 | 221H-209               | 1 2        | INV1467                   | Pus   | h Button | Switch       | 1   | Rm. 1                         | 13                   |         |
| 1 | 221H-210               | 1 2        | INV1469                   | Pus   | h Button | Switch       | 1   | Rm. 1                         | 13                   |         |
| 1 | 221H-211               | 1 2        | INV15170                  | Pus   | h Button | Switch       | 1   | Rm. 2                         | 36                   |         |
| 1 | 221H-212               | 1 2        | INV15180                  | Pus   | h Button | Switch       |   | Rm. 2                         | 36                   |         |
| 1 | 221H-213               | 1 2        | INV1542                   | Pus   | h Button | Switch       | 1.  | Rm. 3                         | 14                   |         |
| 1 | 221H-214               | 1 2        | INV1544                   | Pus   | h Button | Switch       | 1   | Rm. 3                         | 03                   |         |
| 1 | 221H-215               | 1 2        | INV1545                   | Pus   | h Button | Switch       | 1   | 1 Rm. 3                       | 14 1                 |         |
| 1 | 221H-216               | 1 2        | INV1719B                  | Pus   | h Button | Switch       |   | 1 Rm. 2                       | 36 1                 |         |
| 1 | 221H-217               | 1 2        | INV20000                  | Pus   | h Button | Switch       |   | I Rm. 3                       | 03 1                 |         |
| 1 | 2211-218               | 1 2        | INV20010                  | Pus   | h Button | Switch       | 1   | Rm. 4                         | 27 1                 |         |
| 1 | 221H-219               | 1 2        | INV20030                  | I Pu  | h Button | Switch       | 1   | I Rm. 3                       | 14 1                 |         |
| i | 221H-220               | 1 2        | INV2010                   | Pus   | h Button | Switch       |   | I Rm. 3                       | 14 1                 |         |
| i | 221H-221               | 1 2        | INV2011                   | I Pus | h Button | Switch       |   | I Rm. 3                       | 14 1                 |         |
| i | 221H-222               | 1 2        | INV232                    | I Pus | h Button | Switch       |   | 1 Rm. 2                       | 36 1                 |         |
| i | 221H-223               | 1 2        | INV235A                   | I Pus | h Button | Switch       |   | I Rm. 3                       | 14 1                 |         |
| 1 | 2218-224               | 1 2        | 1NV236                    | I Pus | h Button | Switch       | i i   | 1 Rm. 2                       | 36 1                 |         |
| i | 2218-225               | 1 2        | INV27360                  | I Put | h Button | Switch       | i i   | 1 Rm. 3                       | 14 1                 |         |
| i | 221H-226               | 1 2        | INV375                    | I Pus | h Button | Switch       | i i   | 1 Rm. 6                       | 02 1                 |         |
| i | 2218-227               | 1 2        | INV 394                   | I Put | h Button | Switch       |   | I Rm. 6                       | 01 1                 |         |
| 1 | 2218-228               | 1 2        | LNV5008                   | I Put | h Button | Switch       |   | I Rm. 4                       | 27 1                 |         |
| i | 2214-229               | 1 2        | INV5010B                  | I Put | h Button | Switch       |   | 1 Rm. 3                       | 14 1                 |         |
| 1 | 2218-230               | 1 2        | INV5010D                  | I Put | h Button | Switch       |   | 1 Rm. 3                       | 14 1                 |         |
| 1 | 2214-231               | 1 2        | INV5010F                  | I Du  | h Button | Switch       |   | 1 Pm. 3                       | 14 1                 |         |
| 1 | 2214-232               | 1 2        | INV5011A                  | I Put | h Button | Switch       |   | 1 Rm. 3                       | 03 1                 |         |
| 1 | 2214-233               | 1 2        | INV5011F                  | I Du  | h Button | Switch       |   | 1 Pm. 3                       | 14 1                 |         |
| 1 | 2214-234               | 1 2        | Deleted                   | 1 rus | n buccon | onacon       |   | 1                             |                      |         |
| 1 | 2211-234               | 1 2        | Incloted                  | 1     |          |              |   |                               | 1                    |         |
| 1 | 221n-233               | 1 4        | Inereced                  | 1     |          |              | and an an an and a second s   |                               |                      |         |

Facility Davis-Besse Unit 1 Docket: 50-346

MAS IST HARSH ENVIRONMENT GENERIC 1E ELECTRICAL COMPONENTS



Prepared by: n. feusion Date: 11/1/83 Checked by: Amang Date: 11/2/03

| 1  |           | 1    | 1         | 1          |        |              | LOCI        | TION  |        |                       |
|----|-----------|------|-----------|------------|--------|--------------|-------------|-------|--------|-----------------------|
| I  |           | 1    | 1         | 1          |        |              | Inside      | Out   | side   |                       |
| 1  | Worksheet | 1    | Plant     | F          |        |              | Primary     | Pri   | mary 1 |                       |
| 1  | Index No. | Rev. | ID Number | 1          | 1000   | Generic Name | Containment | Conta | inment | REMARKS               |
| 1  | 2210 226  | 1 2  | 1         | <br>  Duch | Button | Switch       |             | I Pm. | 236 1  |                       |
| 1  | 2218-230  | 1 2  | INV50380  | Push       | Button | Switch       |             | I Rm. | 236 1  |                       |
| 1  | 2218-238  | 1 2  | INV50650  | Push       | Button | Switch       |             | I Rm. | 208    |                       |
| i  | 2218-239  | 1 2  | INV50670  | Push       | Button | Switch       |             | I Rm. | 314 1  |                       |
| i  | 221H-240  | 1 2  | INV50900  | Push       | Button | Switch       |             | I Rm. | 314 1  |                       |
| i  | 221H-241  | 1 2  | INV54210  | I Push     | Button | Switch       |             | I Rm. | 105 1  |                       |
| i  | 2218-242  | 1 2  | INV54220  | Push       | Button | Switch       |             | I Rm. | 105    |                       |
| i  | 221H-243  | 1 2  | INV54230  | I Push     | Button | Switch       | 1           | I Rm. | 113    |                       |
| i  | 2218-244  | 1 2  | INV54240  | I Push     | Button | Switch       |             | I Rm. | 115 1  |                       |
| ï  | 221H-245  | 1 2  | INV54250  | Push       | Button | Switch       | i i         | I Rm. | 115 1  |                       |
| i  | 221H-246  | 1 2  | INV5715   | Push       | Button | Switch       | i           | I Rm. | 105    |                       |
| i  | 221H-247  | 1 2  | INV598    | I Push     | Button | Switch       | i           | I Rm. | 314 1  |                       |
| i  | 2218-248  | 1 2  | INV607    | Push       | Button | Switch .     | i           | I Rm. | 314 1  |                       |
| i  | 221H-249  | 1 2  | INV6831B  | Push       | Button | Switch       | i           | I Rm. | 208 1  |                       |
| î  | 2218-250  | 1 2  | INVDH01A  | I Push     | Button | Switch       | i i         | I Rm. | 236 1  |                       |
| î  | 221H-251  | 1 2  | INVDH01B  | I Push     | Button | Switch       | i           | I Rm. | 208 1  |                       |
| i  | 221H-252  | 1 2  | INVDE13A  | l Push     | Button | Switch       | i           | I Rm. | 113    |                       |
| i  | 221H-253  | 1 2  | INVDH13B  | l Push     | Button | Switch       |             | I Rm. | 113    |                       |
| i  | 221H-254  | 1 2  | INVDH14A  | Push       | Button | Switch       | i           | I Rm. | 113 1  |                       |
| i  | 2218-255  | 1 2  | INVDH14B  | I Push     | Button | Switch       | i           | I Rm. | 113 1  |                       |
| î  | 221H-256  | 1 2  | INVDH63   | Push       | Button | Switch       |             | I Rm. | 115    |                       |
| Î  | 2218-257  | 1 2  | INVDH64   | Push       | Button | Switch       | 1           | Rm.   | 105    |                       |
| Î  | 221H-258  | 1 2  | INVICS11A | Push       | Button | Switch       | 1           | Rm.   | 602    |                       |
| 1  | 221H-259  | 1 2  | INVICS11B | Push       | Button | Switch       | 1           | Rm.   | 601    |                       |
| 1  | 221H-260  | 1 2  | INVMU03   | Push       | Button | Switch       | 1           | Rm.   | 208    |                       |
| i  | 221H-261  | 1 2  | INVMU33   | Push       | Button | Switch       | 1           | I Rm. | 236    |                       |
| i. | 22111-262 | 1 2  | INVMU38   | Push       | Button | Switch       | 1           | Rm.   | 208    |                       |
| i  | 221H-263  | 1 2  | INVMU66A  | Push       | Button | Switch       |             | I Rm. | 208    |                       |
| 1  | 221H-264  | 1 2  | INVMU66B  | Push       | Button | Switch       | 1           | I Rm. | 208    |                       |
| 1  | 221H-265  | 1 2  | INVMU66C  | Push       | Button | Switch       | 1           | I Rm. | 208    |                       |
| 1  | 221H-266  | 1 2  | INVMU66D  | Push       | Button | Switch       | 1           | I Rm. | 208    |                       |
| 1  |           | 1    | 1         | 1          |        |              | 1           | 1     | 1      | and the second second |

Pacility Davis-Besse Unit 1 Docket: 50-346 MASTELIST HARSH ENVIRONMENT GENERIC 1E ELECTRICAL COMPONENTS



Prepared by: h Checked by:

Date: 11/1/83 Date: 11/2/83

| 1        |      | 1    | 1         | and the make as a sub-sub-sub-sub-sub-sub-sub-sub-sub-sub- | LOCAT                 | rion I      |   |
|----------|------|------|-----------|--|-----------------------|-------------|---|
| 1        |      | 1    | 1         |  | Inside                | Outside     |   |
| Works    | heet | 1    | Plant     |  | Primary               | Primary     |   |
| Index    | No.  | Rev. | ID Number | Generic Name   | Containment           | Containment | REMARKS   |
| 1        |      | 1    | 1         |  | 1                     | 1           | And the second second   |
| 221H-2   | 67   | 2    | IP2C5G    | Penetration Assembly                                       | Containment           | Annulus     |   |
| 1 221H-2 | 268  | 2    | Deleted   | 비행 방법 이 것이 같은 것이 같은 것이 없는 것이 없다.                           |                       | 1           |   |
| 221H-2   | 69   | 1 2  | Deleted   | 비행 이는 것 같은 것이 많이 많이 많이 많이 많이 했다.                           | and the second second | I           |   |
| ! 221H-2 | 270  | 2    | Deleted   | [아이는 아이는 아이들은 아이는 아이는 것 같아.                                | 1.1.1                 | 1           |   |
| 221H-2   | 271  | 2    | Deleted   |  |                       | I           |   |
| 221H-2   | 272  | 1 2  | IP1C2L    | Penetration Assembly                                       | Containment           | Annulus     |   |
| 221H-2   | 73   | 1 2  | Deleted   | 날 이 가 있는 것이 가 비가 그 것 않는 것 같아.                              | 1                     | 1           |   |
| 221H-2   | 274  | 1 2  | IP1P3B    | Penetration Assembly                                       | Containment           | Annulus     |   |
| 221H-2   | 275  | 1 2  | IP3P4C    | Penetration Assembly                                       | Containment           | Annulus     |   |
| 1 221H-2 | 276  | 1 2  | IP2P5F    | Penetration Assembly                                       | Containment           | Annulus     | 이상 같은 것 같아요.  |
| 221H-2   | 277  | 1 2  | Deleted   | 그는 것 같은 것 같                  | 1                     | 1           |   |
| 1 221H-2 | 278  | 1 2  | IP1P2M    | Penetration Assembly                                       | Containment           | Annulus     | 나는 아들은 것은 것이 없다.  |
| 1 221H-2 | 279  | 1 2  | PILLL     | Penetration Assembly                                       | Containment           | Annulus     |   |
| 221H-2   | 280  | 1 2  | IP2L4G    | Penetration Assembly                                       | Containment           | Annulus     |   |
| 1 221H-2 | 281  | 1 2  | IP3L4S    | Penetration Assembly                                       | Containment           | Annulus     |   |
| 1 2218-2 | 282  | 1 2  | IP4L1G    | Penetration Assembly                                       | Containment           | Annulus     |   |
| 221H-2   | 283  | 1 2  | Deleted   |  | 1                     | 1           |   |
| 221H-2   | 284  | 1 2  | Deleted   | 1  | 1                     | E           |   |
| 221H-2   | 285  | 1 2  | IP2C5GI   | Penetration Box (Connector)                                | Containment           | 1           |   |
| 1 221H-2 | 286  | 1 2  | Deleted   | 1  | 1                     | 1           |   |
| 1 221H-2 | 287  | 1 2  | Deleted   | 1  | 1                     | 1 1         |   |
| 1 221H-2 | 288  | 1 2  | Deleted   | 1  | 1                     | 1 1         |   |
| 221H-2   | 289  | 1 2  | Deleted   | 1  | 1                     | 1           |   |
| 1 221H-2 | 290  | 1 2  | IPIC2LI   | Penetration Box (Connector)                                | Containment           | 1 1         |   |
| 221H-2   | 291  | 1 2  | Deleted   | 1  | 1                     | I I         |   |
| 1 221H-2 | 292  | 1 2  | PIP3EII   | Penetration Box (Connector)                                | Containment           | 1 1         |   |
| 221H-2   | 293  | 1 2  | IP3P4CI   | Penetration Box (Connector)                                | Containment           | 1           |   |
| 221H-2   | 294  | 1 2  | IP2P5FI   | Penetration Box (Connector)                                | Containment           | 1. 1        |   |
| 221H-2   | 295  | 1 2  | Deleted   |  | 1                     | I . I       | 1. A. S. A. |
| 221H-2   | 296  | 1 2  | PIP2MI    | Penetration Box (Connector)                                | Containment           | 1           |   |
| 221H-2   | 297  | 1 2  | PILLLI    | Penetration Box (Connector)                                | Containment           | I I         |   |
| 1        |      | 1    | 1         | 1  |                       |             |   |

Pacility: Davis-Besse Unit 1 Docket: 50-346 MASSINGLIST HARSH ENVIRONMENT GENERIC 1E ELECTRICAL COMPONENTS



Prepared by: N. Checked by:

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Date: 11/1/83 Date: 11/24/13

| 1 |           | 1 |      | 1           |                                      | LOCA                                 | TION                                      |  |
|---|-----------|---|------|-------------|--------------------------------------|--------------------------------------|---|--|
| 1 | Worksheet |   | Rev. | <br>  Plant | <br> <br>  Generic Name              | Inside<br>  Primary<br>  Containment | Outside  <br>  Primary  <br>  Containment | REMARKS  |
| ř | THUCK HOT | 1 |      | 1           | 1                                    | 1                                    | 1 1                                       |  |
| i | 221H-298  | i | 2    | IP2L4GI     | Penetration Box (Connector)          | Containment                          | i i                                       |  |
| 1 | 221H-299  | 1 | 2    | P3L4SI      | Penetration Box (Connector)          | Containment                          | 1 1                                       |  |
| 1 | 221H-300  | 1 | 2    | P4L1GI      | Penetration Box (Connector)          | Containment                          | 1   |  |
| 1 | 221H-301  | 1 | 2    | Deleted     |                                      | 1                                    | 1   |  |
| 1 | 221H-302  | 1 | 2    | Deleted     |                                      | 1                                    | 1 1                                       |  |
| 1 | 2218-303  | 1 | 2    | P2C5GX      | Penetration Box (Terminal Block)     | - I                                  | Rm. 427                                   |  |
| 1 | 221H-304  | 1 | 2    | Deleted     |                                      | 1                                    | 1   |  |
| 1 | 221H-305  | 1 | 2    | Deleted     | 비행 친구가 깨끗 다 가지 않는 것 같아.              |                                      | 1   |  |
| 1 | 221H-306  | 1 | 2    | Deleted     |                                      | 1.1                                  | 1   |  |
| 1 | 221H-307  | 1 | 2    | Deleted     |                                      | - <b>1</b> 946 - 196                 |   |  |
| 1 | 221H-308  | 1 | 2    | PIC2LX      | Penetration Box (Terminal Block)     | 그는 바이에 가지 않는 것이 없다.                  | Rm. 303                                   |  |
| 1 | 221H-309  | 1 | 2    | Deleted     |                                      | 1                                    |   |  |
| 1 | 221H-310  | 1 | 2    | P1P3BX      | Penetration Box (Terminal Block)     |                                      | Rm. 303                                   |  |
| 1 | 221H-311  | 1 | 2    | IP3P4CX     | Penetration Box (Terminal Block)     | 1                                    | Rm. 427                                   |  |
| 1 | 221H-312  | 1 | 2    | IP2P5FX     | Penetration Box (Terminal Block)     | 1.1                                  | Rm. 427                                   |  |
| 1 | 221H-313  | 1 | 2    | Deleted     |                                      | 1                                    | 1   |  |
| 1 | 221H-314  | 1 | 2    | IP1P2MX     | Penetration Box (Terminal Block)     | 1.1                                  | Rm. 303                                   |  |
| 1 | 221H-315  | 1 | 2    | P1L1LX      | Penetration Box (Terminal Block)     | 1 I                                  | Rm. 303                                   | - 11 - 12 - 13 - 13 - 13 - 13 - 13 - 13  |
| 1 | 221H-316  | 1 | 2    | IP2L4GX     | Penetration Box (Terminal Block)     | A CONTRACTOR OF A                    | Rm. 427                                   | 그녀가 말하는 것을 생활했다.   |
| 1 | 221H-317  | 1 | 2    | P4L1GX      | Penetration Box (Terminal Block)     | 1                                    | Rm. 314                                   |  |
| 1 | 221H-318  | 1 | 2    | Deleted     | 이 것 같은 것 같은 것 같은 것 같은 것 같은 것 같이 있는 것 |                                      | <ol> <li>1.</li> </ol>                    | 그 가장 그 가슴이 걸   |
| 1 | 221H-319  | 1 | 2    | Deleted     |                                      |                                      | la prese de                               |  |
| ۱ | 221H-320  | 1 | 2    | IRC2701     | Relay Cabinet                        | - 1                                  | Rm. 227                                   |  |
| 1 | 221H-321  | 1 | 2    | IRC2825     | Relay Cabinet                        | 1                                    | Rm. 208                                   |  |
| 1 | 221H-322  | 1 | 2    | RC2826      | Relay Cabinet                        |                                      | Rm. 209                                   | and the second |

Pacility Davis-Besse Unit 1 Docket: 50-346

HARSH ENVIRONMENT GENERIC 1E ELECTRICAL COMPONENTS

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Date: 11/1/83 Date: 11/0/83 Prepared by:

| 1 |           |    |      |           |                                  | LOCAT               | rion                                  |         |
|---|-----------|----|------|-----------|----------------------------------|---------------------|---------------------------------------|---------|
| 1 |           | 1  |      | 1         |                                  | Inside              | Outside                               |         |
| 1 | Worksheet | 1  |      | Plant     |                                  | Primary             | Primary                               |         |
| i | Index No. | 1  | Rev. | ID Number | Generic Name                     | Containment         | Containment                           | REMARKS |
| i |           | 1  |      | 1         | 1                                | 1                   | 1                                     |         |
| i | 221H-323  | i. | 2    | IRC3701   | Relay Cabinet                    | 1                   | Rm. 314                               |         |
| 1 | 221H-324  | 1  | 2    | IRC 3702  | Relay Cabinet                    | 1                   | Rm. 314                               |         |
| 1 | 221H-325  | 1  | 2    | IRC3703   | Relay Cabinet                    | 1                   | Rm. 314                               |         |
| 1 | 221H-326  | ì  | 2    | IRC3704   | Relay Cabinet                    | 1                   | Rm. 314                               |         |
| 1 | 221H-327  | 1  | 2    | IRC3705   | Relay Cabinet                    | 1                   | Rm. 314                               |         |
| 1 | 221H-328  | 1  | 2    | IRC3706   | Relay Cabinet                    | 1                   | Rm. 304                               |         |
| 1 | 221H-329  | 1  | 2    | IRC3801   | Relay Cabinet                    | 1                   | Rm. 303                               |         |
| 1 | 221H-330  | 1  | 2    | RC4601    | Relay Cabinet                    | 1                   | Rm. 427                               |         |
| 1 | 221H-331  | 1  | 2    | IRC4602   | Relay Cabinet                    | 1                   | Rm. 427                               |         |
| 1 | 221H-332  | 1  | 2    | IP1C5S    | Penetration Assembly             | Containment         | Annulus                               |         |
| 1 | 221H-333  | 1  | 2    | IP2C5C    | Penetration Assembly             | Containment         | Annulus                               |         |
| 1 | 221H-334  | 1  | 2    | Deleted   | 1                                | 1                   | 1 1                                   |         |
| 1 | 221H-335  | 1  | 2    | IP1C5SI   | Penetration Box                  | Containment         | 1                                     |         |
| 1 | 221H-336  | 1  | 2    | Deleted   |                                  | 1                   | 1 1                                   |         |
| ł | 221H-337  | 1  | 2    | P2C5CI    | Penetration Box                  | Containment         | I                                     |         |
| 1 | 221H-338  | 1  | 2    | P2C5CX    | Penetration Box                  | 1                   | I Rm. 427                             |         |
| 1 | 221H-339  | 1  | 2    | L1P       | Cabling                          | Containment         | 1                                     |         |
| 1 | 221H-340  | 1  | 2    | ILIQ      | Cabling                          | Containment         | I I I I I I I I I I I I I I I I I I I |         |
| 1 | 221H-341  | 1  | 2    | IJT3955   | Terminal Block Box               | Containment         | 1                                     |         |
| 1 | 221H-342  | 1  | 2    | BE16A     | Motor Control Center             | 1                   | Rm. 515                               |         |
| 1 | 221H-343  | 1  | 2    | BF16B     | Motor Control Center             | 1                   | Rm. 500                               |         |
| 1 | 221H-344  | 1  | 2    | IEV06030  | Terminal Block Box               |                     | Rm. 236                               |         |
| 1 | 221H-345  | 1  | 2    | 1EV0603A  | Terminal Block Box               | 1.1                 | Rm. 236                               |         |
| 1 | 221H-346  | 1  | 2    | EV06110   | Terminal Block Box               | 1                   | Rm. 208                               |         |
| 1 | 221H-347  | 1  | 2    | 1EV0611A  | Terminal Block Box               | 1                   | Rm. 208                               |         |
| i | 221H-348  | ÷. | 2    | INV06030  | Push Button Switch               | 1.1.1.1.1.1.1.1     | Rm. 236                               |         |
| 1 | 221H-349  | 1  | 2    | INV0603A  | Push Button Switch               | <ol> <li></li></ol> | Rm. 236                               |         |
| 1 | 221H-350  | i  | 2    | INV06110  | Push Button Switch               | 1.000               | Rm. 208                               |         |
| 1 | 221H-351  | 1  | 2    | INV0611A  | Push Button Switch               | 1                   | I F.m. 208                            |         |
| 1 | 221H-352  | 1  | 2    | IN/A      | Lubricants for 1E Equipment      | Containment         | Aux. Bldg.                            |         |
| 1 | 221H-353  | 1  | 2    | Various   | Electric Conductor Seal Assembly | Containment         | Annulus                               |         |
| 1 | 221H-354  | 1  | 2    | Various   | Electrical Penetration Assembly  | Containment         | Annulus                               |         |

Facility: Davis-Besse Unit 1 Docket: 50-346 SYSTEM COMPONENT EMPONENT ENDIATION WORKSHEET



Prepared by: Nheino Date: 11/1/83 Checked by: Standong Date: 11/4/13

Qualification | Outstanding EQUIPMENT DESCRIPTION 11 ENVIRONMENT DOCUMENTATION REF. || Parameter | Specification | Qualification | Specification |Qualification | Method Items 11 E-1 System: Generic 1E Elec- ||Operating 1 Year 1.1 Years Note 1 Simultaneous F None trical Components||Time ROC-30B Test 11 Plant ID No. AG1 11 283.0 E-1 Simultaneous [[Temperature] 346.0 H, X None ROC-30B Component: Cable 11 (°F) Test 11 IManufacturer: Okonite 11 52.0 127.7 Simultaneous **||Pressure** G, X E-1 None Model Number: Note 4 ROC-30B Test || (PSIA) 11 11 Function: Power **||Relative** 100.0 100.0 E-1 Simultaneous None A | |Humidity ROC-30B Test N/A (8) Accuracy: Spec: Demon: N/A 11 Boric Aciú Boric Acid E-1 11 Service: Electrical [[Chemical 1800 ppm 1800 ppm A ROC-30B Simultaneous None Control pH 5.0 pH 5.0 CAL-40 Test, ||Spray Note 2 11 Analysis 11 Location: Containment 11 E-1 ||Radiation |3.87 x  $10^7$  RADS|2.0 x  $10^8$  RADS CAL-44 ROC-30B Sequential Test None 11 |Flood Level Elev: 572'-2"|| CAL-90 Above Flood Level: No ||Aging 40 Years 4J Years I E-1 Sequential None 11 ROC-30B Test Needed for: 11 Hot Shutdown 11 XI Note 3 [|Submergence] 572"-2" Note 3 B Note 3 None Cold Shutdown | X | 11 11

| Facility: Davis-Besse Unit 1<br>Docket: 50-346 | SYSTEM COMPONENT EVALUATION WORKSHEET | Index No. 221H-012A<br>Rev.: 2 |
|--|---------------------------------------|--------------------------------|
| Prepared by: Nhains<br>Checked by: Incarol     | Date 11/1/83<br>Date 11/14/13         |                                |

• The test subjected the cabling to an initial transient of 346°F and 127.7 psia for 3 hours, followed by a cooldown to 140°F in 2 hours. The cabling was then subjected to a second transient of 346°F and 127.7 psia for 3 hours, followed by a cooldown to 335°F and 109.7 psia, which was maintained for 3 hours; then a cooldown to 315°F and 83.7 psia, which was maintained for 4 hours; then a cooldown to 265°F and 42.7 psia, which was maintained for 81 hours. The cabling was then subjected to a 212°F steam environment for 100 days. The temperature in containment peaks at 28°°F in 17 seconds. The pressure in containment peaks at 52 psia in 50 seconds. At 3 hours, the conditions are 204°F and 29.46 psia. At 5 hours, the conditions are 193.2°F and 27.08 psia. At 8 hours, the conditions are 24.5 psia and 184°F. At 11 hours, the conditions are 22.2 psia and 175°F. At 15 hours, the conditions are 19.94 psia and 161.4°F. At 96 hours, the conditions are 15.47 psia and 121.6°F. The conditions in containment return to ambient after 7 days.

Based on this information, it can be concluded that the test subjected the cabling to an overall more severe environment than the postulated LOCA. Since the cabling remained functional throughout the test and after completion of the test, it can be concluded that the cabling would remain functional during and after exposure to the accident environment which would result from the postulated LOCA. (Reference G, H, X)

- 2. CAL-40 gualifies components tested in a high pH boric acid spray to a pH value of 5.
- 3. Cables are not affected by submergence. Cables do not service components located below maximum containment flood level.
- 4. Cable is Okonite Company 3-1/Conductor 500 mcm stranded copper wire triplexed with single bare 1/0 ground cable with 115 mils ethylene propylene rubber insulation and 80 mils neoprene jacket. (Reference E-11)



Facility: Davis-Besse Unit 1

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Docket: 50-346

SYSTEM COMPONENT EN OUATION WORKSHEET



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and a \$

Prepared by: NLouis Date: 11/1/83 Checked by: Area Dorot Date: 11/1/183

| EQUIPMENT DESCRIPTION  |                                    | ENVIRONMENT                      |                                  | I DOCUMENTAT  | TION REF.                          | Qualification                     | Outstanding |
|--|------------------------------------|----------------------------------|----------------------------------|---------------|------------------------------------|-----------------------------------|-------------|
|  | Parameter                          | Specification                    | Qualification                    | Specification | Qualification                      | Method                            | Items       |
| System: Generic 1E Elec-   | Operating  <br> Time               | l Year                           | 1.1 Years                        | F             | E-1<br>Note 1<br>ROC-30B           | Simultaneous  <br>  Test          | None        |
| Plant ID No. AG2<br>Component: Cable                                   | Temperature                        | 283.0                            | 346.0                            | н, х          | E-1<br>ROC-30B                     | Simultaneous  <br>Test            | None        |
| Manufacturer: Okonite  | Pressure  <br>  (PSIA)             | 52.0                             | 127.7                            | G, X          | E-1<br>ROC-30B                     | Simultaneous  <br>  Test          | None        |
| Function: Power  | Relative  <br> Humidity  <br>  (%) | 100.0                            | 100.0                            | A             | E-1<br>ROC-30B                     | Simultaneoua<br>Test              | None        |
| Demon: N/A  <br>Service: Electrical  <br>Control                       | <br> Chemical  <br> Spray  <br>    | Boric Acid<br>1800 ppm<br>pH 5.0 | Boric Acid<br>1800 ppm<br>pH 5.0 | A             | E-1<br>ROC-30B<br>CAL-40<br>Note 2 | Simultaneous<br>Test,<br>Analysis | None        |
| Location: Containment  | Radiation                          | 3.87 x 10 <sup>7</sup> RADS      | 2.0 x 10 <sup>8</sup> RADS       | CAL-44        | E-1<br>ROC-30B                     | Sequential Test                   | None        |
| Flood Level Elev: 572'-2"<br>Above Flood Level: No                     | Aging                              | 40 Years                         | 40 Years                         | I             | CAL-90<br>E-1<br>ROC-30B           | Sequential<br>Test                | None        |
| Needed for:<br>Hot Shutdown   <u>X</u>    <br>Cold Shutdown   <u>X</u> | <br> Submergence <br>              | 572"-2"                          | Note 3                           | l B           | Note 3                             | Note 3                            | None        |

| Facility: Divis-Besse Unit 1   | SYSTEM COMPONENT WALUATION WORKSHEET   | Index NO. 221H-013A<br>Rev.: 2 |
|--|--|--------------------------------|
| Prepared by:<br>Checked by:<br>C | 11/1/83 NOTES  |                                |
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1. The test subjected the cabling to an initial transient of 346°F and 127.7 psia for 3 hours, followed by a cooldown to 140°F in 2 hours. The cabling was then subjected to a second transient of 346°F and 127.7 psia for 3 hours, followed by a cooldown to 335°F and 109.7 psia, which was maintained for 3 hours; then a cooldown to 315°F and 83.7 psia, which was maintained for 4 hours; then a cooldown to 265°F and 42.7 psia, which was maintained for 81 hours. The cabling was then subjected to a 212°F steam environment for 100 days. The temperature in containment peaks at 283°F in 17 seconds. The pressure in containment peaks at 52 psia in 50 seconds. At 3 hours, the conditions are 204°F and 29.46 psia. At 5 hours, the conditions are 193.2°F and 27.08 psia. At 8 hours, the conditions are 24.5 psia and 184°F. At 11 hours, the conditions are 22.2 psia and 175°F. At 15 hours, the conditions are 19.94 psia and 161.4°F. At 96 hours, the conditions are 15.47 psia and 121.6°F. The conditions in containment return to ambient after 7 days.

Based on this information, it can be concluded that the test subjected the cabling to an overall more severe environment than the postulated LOCA. Since the cabling remained functional throughout the test and after completion of the test, it can be concluded that the cabling would remain functional during and after exposure to the accident environment which would result from the postulated LOCA. (Reference G, H, X)

2. CAL-40 gualifies components tested in a high pH boric acid spray to a pH value of 5.

- 3. Cables are not affected by submergence. Cables do not service components located below maximum containment flood level.
- 4. Cable is Okonite Company 3-1/Conductor No. 2/0 stranded copper wire triplexed with single bare No. 4 ground cable with 115 mils ethylene propylene rubber insulation and 80 mils neoprene jacket. (Reference E-11)



JATION WORKSHEET SYSTEM COMPONENT EN



Pacility: Davis-Besse Unit 1 Docket: 50-346

Prepared by: NLewis Date: 11/192 Checked by: Attractor Date: 11/4/03

| FOUTPMENT DESCRIPTION                                |                                    | ENVIRONMENT                      |                                      |               | ENVIRONMENT   DOCUMENTATION REF.   Quali |                                   | Outstanding |
|--|------------------------------------|----------------------------------|--------------------------------------|---------------|--|-----------------------------------|-------------|
|  | Parameter                          | Specification                    | Qualification                        | Specification | Qualification                            | Method                            | Items       |
| System: Generic 1E Elec-<br>trical Components        | Operating  <br> Time               | l Year                           | 1.1 Years                            | F             | E-3<br>Note 1<br>V-23B                   | Simultaneous  <br>Test            | None        |
| Plant ID No. BOl<br>Component: Cable                 | Temperature                        | 283.0                            | 320.0                                | н, х          | E-3<br>V-23B                             | Simultaneous<br>Test              | None        |
| Manufacturer: Kerite                                 |                                    | 52.0                             | 96.7                                 | G, X          | E-3<br>V-23B                             | Simultaneous<br>Test              | None        |
| Function: Power                                      | Relative  <br> Humidity  <br> _(%) | 100.0                            | 100.0                                | A             | E-3<br>V-23B                             | Simultaneous<br>Test              | None        |
| Demon: N/A   | <br> Chemical  <br> Spray  <br>    | Boric Acid<br>1800 ppm<br>pH 5.0 | Boric Acid<br>  1800 ppm<br>  pH 5.0 | A             | E-3<br>V-23B<br>CAL-40<br>Note 2         | Simultaneous<br>Test,<br>Analysis | None        |
| Location: Containment                                | Radiation                          | 3.87 x 10 <sup>7</sup> RADS      | 11.0 x 10 <sup>8</sup> RADS          | CAL-44        | E-3<br>V-23B                             | Seguential Test                   | None        |
| Flood Level Elev: 572'-2" <br> Above Flood Level: No | Aging I                            | 40 Years                         | 40 Years                             | I             | CAL-91<br>E-3<br>V-23B                   | Sequential<br>Test                | None        |
| Needed for:  | <br> Submergence                   | 572"-2"                          | Note 3                               | l<br>B        | Note 3                                   | Note 3                            | None        |

Besse Unit 1 SYSTEM COMPONENT JATION WORKSHEET 'acility: Da Index No. 1H-014A 50-346 wocket: Rev. : NOTES Date repared by Date 'hecked by:

The test subjected the cabling to an initial transient of 320°F and 96.7 psia for 13 hours, followed by a cooldown to ambient. The cabling was then subjected to a second transient of 223°F and 19.7 psia for 118 hours. The temperature in containment peaks at 283°F in 17 seconds. The pressure in containment peaks at 52 psia in 50 seconds. At 13 hours, the conditions are 172°F and 20.5 psia. The conditions in containment return to ambient after 7 days.

Based on this information, it can be concluded that the test subjected the cabling to an overall more severe environment than the postulated LOCA. Since the cabling remained functional throughout the test and after completion of the test, it can be concluded that the cabling would remain functional during and after exposure to the accident environment which would result from the postulated LOCA. (Reference G, H, X)

2. CAL-40 qualifies components tested in a high pH boric acid spray to a pH value of 5.

3. Cables are not affected by submergence. Cables do not service components located below maximum containment flood level.

 Cable is Kerite Company stranded copper wire 1 conductor 500 MCM with Kerite HT insulation and Kerite FR jacket. (References E-11 and ROC-23B)

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Pacility: Davis-Besse Unit 1 SYSTEM COMPONENT EVALUATION WORKSHEET Docket: 50-346



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Prepared by: Nhound Date: 11/1/2 Checked by: Anusand Date: 4/1/2

| FOULPMENT DESCRIPTION  | 1                               | ENV I RONMENT                    |                                  | DOCUMENTATION REF. |                                  | Qualification                     | Outstanding |
|--|---------------------------------|----------------------------------|----------------------------------|--------------------|----------------------------------|-----------------------------------|-------------|
|  | Parameter                       | Specification                    | Qualification                    | Specification      | Qualification                    | Method                            | Items       |
| System: Generic 1E Elec-<br>trical Components                        |                                 | l Year                           | 1.1 Years<br>Note 1              | F                  | E-3<br>Note 1<br>V-23B           | Simultaneous<br>Test              | None        |
| Plant ID No. BO2<br>Component: Cable                                 | <br> Temperature <br>  (°F)     | 283.0                            | 320.0                            | H, X  <br>  H, I   | E-3<br>V-23B                     | Simultaneous  <br>Test            | None        |
| Manufacturer: Kerite<br>Model Number: Note 4                         |                                 | 52.0                             | 96.7                             | G, X  <br>         | E-3<br>V-23B                     | Simultaneous  <br>  Test          | None        |
| Function: Power  |                                 | 100.0                            | 100.0                            |                    | E-3<br>V-23B                     | Simultaneous  <br>  Test  <br>    | None        |
| Demon: N/A<br>Service: Power Cable                                   | <br> Chemical  <br> Spray  <br> | Boric Acid<br>1800 ppm<br>pH 5.0 | Boric Acid<br>1800 ppm<br>pH 5.0 |                    | E-3<br>V-23B<br>CAL-40<br>Note 2 | Simultaneous<br>Test,<br>Analysis | None        |
| Location: Containment  | Radiation                       | 3.87 x 10 <sup>7</sup> RADS      | 1.0 z 10 <sup>8</sup> RADS       | CAL-44             | E-3<br>V-23B                     | <br> Sequential Test              | None        |
| Flood Level Elev: 572'-2"<br>Above Flood Level: No                   | Aging                           | 40 Years                         | 40 Years                         | I                  | CAL-91<br>E-3<br>V-23B           | Sequential<br>Test                | None        |
| Needed for:<br>Hot Shutdown   <u>X</u>  <br>Cold Shutdown   <u>X</u> | <br> Submergence                | 572'-2"                          | Note 3                           |                    | Note 3                           | Note 3                            | None        |

| Facility:   | Davis-Besse Unit 1 | SYSTEM COMPONENT SALUATION WORKSHEET | Index Nov 21H-015A<br>Rev.: 2 |
|-------------|--------------------|--------------------------------------|-------------------------------|
| Prepared by | - 7 Leuis Date     | 9/3/83<br>9/3/83                     |                               |

 The test subjected the cabling to an initial transient of 320°F and 96.7 psia for 13 hours, followed by a cooldown to ambient. The cabling was then subjected to a second transient of 223°F and 19.7 psia for 118 hours. The temperature in containment peaks at 283°F in 17 seconds. The pressure in containment peaks at 52 psia in 50 seconds. At 13 hours, the conditions are 172°F and 20.5 psia. The conditions in containment return to ambient after 7 days.

Based on this information, it can be concluded that the test subjected the cabling to an overall more severe environment than the postulated LOCA. Since the cabling remained functional throughout the test and after completion of the test, it can be concluded that the cabling would remain functional during and after exposure to the accident environment which would result from the postulated LOCA. (Reference G, H, X)

2. CAL-40 qualifies components tested in a high pH boric acid spray to a pH value of 5.

3. Cables are not affected by submergence. Cables do not service components located below maximum containment flood level.

 Cable is Kerite Company stranded cop or wire 1 conductor No. 4/0 AWG with Kerite HT insulation and Kerite FR jacket. (References E-11 and ROC-23B) Docket: 50-346

Facility: Davis-Besse Unit 1 SYSTEM COMPONENT EN LUATION WORKSHEET



Prepared by: Nhoeiro Date: 11/1/87 Checked by: Annor Date: 11/1/87

| EQUIPMENT DESCRIPTION  |                                    | ENVIRONMENT                      |  | DOCUMENTATION REF. |  | Qualification                     | Outstanding |
|--|------------------------------------|----------------------------------|--|--------------------|--|-----------------------------------|-------------|
|  | Parameter                          | Specification                    | Qualification                              | Specification      | Qualification                          | Method                            | Items       |
| System: Generic 1E Elec-                                     | <br> Operating  <br> Time          | l Year                           | l l.l Years                                | F                  | E-3<br>  Note 1<br>  V-23B             | Simultaneous  <br>  Test          | None        |
| Plant ID No. BO4   | <br> Temperature <br>  (°F)        | 283.0                            | 320.0                                      | н, х<br>I          | E-3<br>  V-23B                         | Simultaneous<br>Test              | None        |
| Manufacturer: Kerite   |                                    | 52.0                             | 96.7                                       | G, X               | E-3<br>  V-23B                         | Simultaneous  <br>  Test          | None        |
| Function: Power  <br> <br> <br> Accuracy: Spec: N/A          | Relative  <br> Humidity  <br>  (%) | 100.0                            | 100.0                                      | I A                | <br>  E-3<br>  V-23B<br>               | Simultaneous  <br>  Test          | None        |
| Demon: N/A   | <br> Chemical  <br> Spray  <br>    | Boric Acid<br>1800 ppm<br>pH 5.0 | Boric Acid<br>1800 ppm<br>pH 5.0<br>Note 2 | A                  | E-3<br>  V-23B<br>  CAL-40<br>  Note 2 | Simultaneous<br>Test,<br>Analysis | None        |
| Location: Containment  | Radiation                          | 3.87 x 10 <sup>7</sup> RADS      | 11.0 x 10 <sup>8</sup> RADS                | CAL-44             | E-3<br>V-23B                           | Sequential Test                   | None        |
| Flood Level Elev: 572'-2"<br> Above Flood Level: No          | <br> Aging  <br>                   | 40 Years                         | <br>  40 Years<br>                         | II                 | CAL-91<br>  E-3<br>  V-23B             | Sequential  <br>Test              | None        |
| Needed for:<br>  Hot Shutdown   X    <br>  Cold Shutdown   X | <br> Submergence <br>              | 572'-2"                          | <br>  Note 3<br>                           | l B                | Note 3                                 | Note 3                            | None        |

acility: Dav Besse Unit 1 SYSTEM COMPONENT ATION WORKSHEET Index No. 1H-016A 50-346 ocket: Rev.: NOTES hecked by:

The test subjected the cabling to an initial transient of 320°F and 96.7 psia for 13 hours, followed by a cooldown to ambient. The cabling was then subjected to a second transient of 223°F and 19.7 psia for 118 hours. The temperature in containment peaks at 283°F in 17 seconds. The pressure in containment peaks at 52 psia in 50 seconds. At 13 hours, the conditions are 172°F and 20.5 psia. The conditions in containment return to ambient after 7 days.

Based on this information, it can be concluded that the test subjected the cabling to an overall more severe environment than the postulated LOCA. Since the cabling remained functional throughout the test and after completion of the test, it can be concluded that the cabling would remain functional during and after exposure to the accident environment which would result from the postulated LOCA. (Reference G, H, X)

- . CAL-40 qualifies components tested in a high pH boric acid spray to a pH value of 5.
- . Cables are not affected by submergence. Cables do not service components located below maximum containment flood level.
- Cable is Kerite Company stranded copper wire 3 conductor No. 6 AWG with Kerite HT insulation and Kerite FR jacket. (References E-11 and ROC-23B)

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Docket: 50-346

Facility: Davis-Besse Unit 1 SYSTEM COMPONENT EVALUATION WORKSHEET



Prepared by: Nhouns Date: 11/1/2) Checked by: Ancorol Date: 11/2/13

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| FOULPMENT DESCRIPTION                              | MENT DESCRIPTION          |                                  |                                      | DOCUMENTAT    | ION REF.                         | Qualification                     | Outstanding |
|--|---------------------------|----------------------------------|--------------------------------------|---------------|----------------------------------|-----------------------------------|-------------|
|  | Parameter                 | Specification                    | Qualification                        | Specification | Qualification                    | Method                            | Items       |
| System: Generic 1E Elec-<br>trical Components      | <br> Operating  <br> Time | l Year                           | 1.1 Years                            |               | E-3<br>Note 1<br>V-23B           | Simultaneous  <br>  Test  <br>    | None        |
| Plant ID No. BO6<br>Component: Cable               | Temperature<br>(°F)       | 283.0                            | 320.0                                | H, X          | E-3<br>V-23B                     | Simultaneous  <br>  Test  <br>    | None        |
| Manufacturer: Kerite                               | Pressure  <br>  (PSIA)    | 52.0                             | 96.7                                 | G, X          | E-3<br>V-23B                     | Simultaneous  <br>  Test  <br>    | None        |
| Function: Power                                    |                           | 100.0                            | 100.0                                |               | E-3<br>V-23B                     | Simultaneous  <br>  Test  <br>    | None        |
| Demon: N/A<br>Service: Power Cable                 | <br> Chemical  <br> Spray | Boric Acid<br>1800 ppm<br>pH 5.0 | Boric Acid<br>  1800 ppm<br>  pH 5.0 | A             | E-3<br>V-23B<br>CAL-40<br>Note 2 | Simultaneous<br>Test,<br>Analysis | None        |
| Location: Containment                              | Radiation                 | 3.87 x 10 <sup>7</sup> RADS      | 11.0 x 10 <sup>8</sup> RADS          | CAL-44        | E-3<br>V-23B                     | Sequential Testi                  | None        |
| Flood Level Elev: 572'-2"<br>Above Flood Level: No | Aging                     | 40 Years                         | <br>  40 Yearş<br>                   | I             | CAL-91<br>E-3<br>V-23B           | Sequential<br>Test                | None        |
| Hot Shutdown   X                                   | Submergence               | 572'-2"                          | <br>  Note 3                         |               | Note 3                           | Note 3                            | aone        |

| Facility: Data-Besse Unit 1 | SYSTEM COMPONENT LUATION WORKSHEET | Index Not 21H-017A |
|-----------------------------|------------------------------------|--------------------|
| Docket: 50-346              | 1.                                 | Rev.: 2            |
| Provend here & Perio        | NOTES                              |                    |
| Checked by:                 | Date $\frac{1}{30/P}$              |                    |
| checked by. Stratter        | 10011                              |                    |

 The test subjected the cabling to an initial transient of 320°F and 96.7 psia for 13 hours, followed by a cooldown to ambient. The cabling was then subjected to a second transient of 223°F and 19.7 psia for 118 hours. The temperature in containment peaks at 283°F in 17 seconds. The pressure in containment peaks at 52 psia in 50 seconds. At 13 hours, the conditions are 172°F and 20.5 psia. The conditions in containment return to ambient after 7 days.

Based on this information, it can be concluded that the test subjected the cabling to an overall more severe environment than the postulated LOCA. Since the cabling remained functional throughout the test and after completion of the test, it can be concluded that the cabling would remain functional during and after exposure to the accident environment which would result from the postulated LOCA. (Reference G, H, X)

- 2. CAL-40 qualifies components tested in a high pH boric acid spray to a pH value of 5.
- 3. Cables are not affected by submergence. Cables do not service components located below maximum containment flood level.
- 4. Cable is Kerite Company stranded copper wire 4 conductor No. 12 AWG with Kerite HT insulation and Kerite FR jacket. (References E-11 and ROC-23B)

Facility: Davis-Besse Unit 1 SYSTEM COMPONENT EVALUATION WORKSHEET Docket: 50-346



Prepared by: Nhours Date: 11/197 Checked by: Soundard Date: 11/197

| EQUIPMENT DESCRIPTION                                | 1                                  | ENVIRONMENT                      |                                  | I DOCUMENTAT  | DOCUMENTATION REF.   Qualification   Outst |                                   | Outstanding |
|--|------------------------------------|----------------------------------|----------------------------------|---------------|--|-----------------------------------|-------------|
| 1  | Parameter                          | Specification                    | Qualification                    | Specification | Qualification                              | Method                            | Items       |
| <br> System: Generic 1E Elec-<br>  trical Components | <br> Operating  <br> Time          | l Year                           | 1.1 Years                        | F             | E-3<br>Note 1<br>V-23B                     | Simultaneous<br>Test              | None        |
| Plant ID No. B07<br> <br> Component: Cable           | <br> Temperature <br>  (°F)        | 283.0                            | 320.0                            | н, х          | E-3<br>V-23B                               | Simultaneous<br>Test              | None        |
| Manufacturer: Kerite                                 | Pressure  <br> (PSIA)              | 52.0                             | 96.7                             | G, X          | E-3<br>V-23B                               | Simultaneous<br>Test              | None        |
| Function: Power  <br> <br> <br> Accuracy: Spec: N/A  | Relative  <br> Humidity  <br>  (%) | 100.0                            | 100.0                            | A             | E-3<br>V-23B                               | Simultaneous<br>Test              | None        |
| Demon: N/A   | <br> Chemical  <br> Spray  <br>    | Boric Acid<br>1800 ppm<br>pH 5.0 | Boric Acid<br>1800 ppm<br>pH 5.0 | A             | E-3<br>V-23B<br>CAL-40<br>Note 2           | Simultaneous<br>Test,<br>Analysis | None        |
| Location: Containment                                | Radiation                          | 3.87 x 10 <sup>7</sup> RADS      | 1.0 x 10 <sup>8</sup> RADS       | CAL-44        | E-3<br>V-23B                               | Sequential Test                   | None        |
| Flood Level Elev: 572'-2" <br> Above Flood Level: No | <br> Aging  <br>                   | 40 Years                         | 40 Years                         | I             | CAL-91<br>E-3<br>V-23B                     | Sequential<br>Test                | None        |
| Hot Shutdown   X    <br>Cold Shutdown   X            | <br> Submergence <br>              | 572"-2"                          | Note 3                           | в             | Note 3                                     | Note 3                            | None        |

SYSTEM COMPONENT Facility: Besse Unit 1 UATION WORKSHEET Index No 21H-018A Da Docket: 50-346 Rev.: 2 NOTES Date Prepared by Date Checked by:

 The test subjected the cabling to an initial transient of 320°F and 96.7 psia for 13 hours, followed by a cooldown to ambient. The cabling was then subjected to a second transient of 223°F and 19.7 psia for 118 hours. The temperature in containment peaks at 283°F in 17 seconds. The pressure in containment peaks at 52 psia in 50 seconds. At 13 hours, the conditions are 172°F and 20.5 psia. The conditions in containment return to ambient after 7 days.

Based on this information, it can be concluded that the test subjected the cabling to an overall more severe environment than the postulated LOCA. Since the cabling remained functional throughout the test and after completion of the test, it can be concluded that the cabling would remain functional during and after exposure to the accident environment which would result from the postulated LOCA. (Reference G, H, X)

- 2. CAL-40 qualifies components tested in a high pH boric acid spray to a pH value of 5.
- 3. Cables are not affected by submergence. Cables do not service components located below maximum containment flood level.
- Cable is Kerite Company stranded copper wire 3 conductor No. 12 AWG with Kerite HT insulation and Kerite FR jacket. (References E-11 and ROC-23B)

Facility: Davis-Besse Unit 1

Docket: 50-346

Checked by: Miletrald

Hot Shutdown

Cold Shutdown | X |

1 X I

11

11

||Submergence|

N/A

Date: 1/1/8

0.00

SYSTEM COMPONENT SUCCUATION WORKSHEET



| | Outstanding

Items

None

None

None

None

None

None

None

None

N/A

0.039

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| I DESCRIPTION  | 11   | ENVIRONMENT                 |                                      | DOCUMENTA          | <br>  Qualification |           |
|--|--|-----------------------------|--------------------------------------|--------------------|---------------------|-----------|
| 1  | Parameter  | Specification               | Qualification                        | Specification      | Qualification       | Method    |
| <br> System: Generic 1E Elec-<br>  trical Components         | <br>  Operating   <br>  Time                       | l Year                      | <br>  l.l Years<br>                  | Note 1             | Note 2              | Type Test |
| Plant ID No. Various<br> <br> Component: Cable               | <br>  Temperature <br>   (°F)  <br>                | 221.0                       | <br>  340.0<br>                      | C-314              | E-19<br>            | Type Test |
| Manufacturer: General<br>Blectric<br>Model Number: SI-57275  | <br>  Pressure  <br>  (PSIA)  <br>                 | 19,76                       | 77.7                                 | <br>  C-314<br>    | <br>  E-19<br>      | Type Test |
| Function: Switchboard<br>  Wire<br> <br> Accuracy: Spec: N/A | <pre>!!    Relative     Humidity      (%)   </pre> | 100.0                       | 100.0<br>                            | C-314              | E-19                | Type Test |
| Demon: N/A<br> <br> Service: Various<br> <br>                | <br>  Chemical   <br>  Spray   <br>                | N/A                         | N/A                                  | <br>  N/A<br> <br> | <br>  N/A<br>       | N/A       |
| <br> Location: Auxiliary Bldg.<br> <br>                      | <br>  Radiation                                    | 1.97 x 10 <sup>6</sup> RADS | <br> <br> 2.1 x 10 <sup>8</sup> RADS | I T                | E23                 | Type Test |
| Flood Level Elev: N/A<br> Above Flood Level: N/A             | <br>  Aging  <br>                                  | 40 Years                    | <br>  40 Years<br>                   | I                  | E-23<br>Note 3      | Type Test |

N/A

N/A

N/A

| Pacility: D-Besse Unit 1                       | SYSTEM COMPONENT | Index NO121H-019A<br>Rev.: 2 |
|--|------------------|------------------------------|
| Prepared by: 7 fluins Date<br>Checked by: Date | 9/30/83 NOTES    |                              |

- 1. One-year operating time is used as a conservative maximum specification.
- 2. The 36-hour test profile completely envelopes postulated accident conditions. Because the HELB environment returns to normal ambient within 20 minutes, this cable will be exposed to only normal ambient temperature conditions after that time and is therefore expected to remain operational-for the required time of 1.1 years.
- 3. The thermal life of 40 years at 90°C (194°F) and radiation testing to 2.1 x 10<sup>8</sup> rads are for Rockbestos Pirewall III cable. This cable is considered similar to GE SI-57275 since both utilized a cross-linked polyethylene insulation system. Any differences in the exact compounding of the insulation utilized are expected to be accounted for by the vast amount of margin which exists in both the test thermal life temperature (87% margin) and radiation (2 orders of magnitude) over actual plant conditions.

Docket: 50-346

Pacility: Davis-Besse Unit 1 SYSTEM COMPONENT EVALUATION WORKSHEET



Prepared by: NLauro Date: 11/183 Checked by: Sundant Date: 11/4/19

| EQUIPMENT DESCRIPTION                                      | II ENVIRONMENT                     |  |                                  | DOCUMENTATION REF. |                                    | Qualification                     | Outstanding |
|--|------------------------------------|--|----------------------------------|--------------------|------------------------------------|-----------------------------------|-------------|
|  | Parameter                          | ter   Specification   Qualification   Specification   Qualificat |                                  | Qualification      | Method !                           | I Items                           |             |
| System: Generic 1E Elec-<br>  trical Components            | <br> Operating  <br> Time          | l Year   | 1.1 Years                        | P                  | E-1<br>Note 1<br>ROC-30B           | Simultaneous  <br>  Test          | None        |
| Plant ID No. Bl0   | <br> Temperature <br>  (°F)        | 283.0  | 346.0                            | н, х               | E-1<br>ROC-30B                     | Simultaneous  <br>Test            | None        |
| Manufacturer: Okonite                                      |                                    | 52.0   | 127.7                            | G, X               | E-1<br>ROC-30B                     | Simultaneous  <br>  Test          | None        |
| Function: Control  | Relative  <br> Humidity  <br>  (%) | 100.0  | 100.0                            | A                  | E-1<br>ROC-30B                     | Simultaneous  <br>  Test  <br>    | None        |
| Demon: N/A<br>Service: Electrical<br>Control               | <br> Chemical  <br> Spray  <br>    | Boric Acid<br>1800 ppm<br>pH 5.0                                 | Boric Acid<br>1800 ppm<br>pH 5.0 | A                  | E-1<br>ROC-30B<br>CAL-40<br>Note 2 | Simultaneous<br>Test,<br>Analysis | None        |
| Location: Containment                                      | Radiation                          | 3.87 x 10 <sup>7</sup> RADS                                      | 2.0 x 10 <sup>8</sup> RADS       | CAL-44             | E-1<br>ROC-30B                     | Seguential Test                   | None        |
| Flood Level Elev: 572'-2" <br> Above Flood Level: No  <br> | Aging                              | 40 Years   | 40 Years                         | I                  | CAL-90<br>E-1<br>ROC-30B           | Sequential  <br>Test              | None        |
| Hot Shutdown   X    <br>  Cold Shutdown   X                |                                    | 572'-2"  | Note 3                           | B                  | Note 3                             | Note 3                            | None        |

| 0                               |                                      |                     |
|---------------------------------|--------------------------------------|---------------------|
| Facility: Dates-Besse Unit 1    | SYSTEM COMPONENT TALUATION WORKSHEET | Index Non 221H-020A |
| Docket: 50-346                  | Nonza                                | Kev.:               |
| A from                          | NUTES                                |                     |
| Prepared by: Date               | -1445                                |                     |
| checked by: <u>Strates</u> Date | <u>_41218.5</u>                      |                     |
|                                 |                                      |                     |

1. The test subjected the cabling to an initial transient of 346°P and 127.7 psia for 3 hours, followed by a cooldown to 140°P in 2 hours. The cabling was then subjected to a second transient of 346°P and 127.7 psia for 3 hours, followed by a cooldown to 335°F and 109.7 psia, which was maintained for 3 hours; then a cooldown to 265°P and 42.7 psia, which was maintained for 81 hours. The cabling was then subjected to a 212°P steam environment for 100 days. The temperature in containment peaks at 283°P in 17 seconds. The pressure in containment peaks at 52 psia in 50 seconds. At 3 hours, the conditions are 204°F and 29.46 psia. At 5 hours, the conditions are 193.2°F and 27.08 psia. At 8 hours, the conditions are 24.5 psia and 184°F. At 11 hours, the conditions are 12.2 psia and 175°F. At 15 hours, the conditions are 19.94 psia and 161.4°F. At 96 hours, the conditions are 15.47 psia and 121.6°F. The conditions in containment return to ambient after 7 days.

Based on this information, it can be concluded that the test subjected the cabling to an overall more severe environment than the postulated LOCA. Since the cabling remained functional throughout the test and after completion of the test, it can be concluded that the cabling would remain functional during and after exposure to the accident environment which would result from the postulated LOCA (Reference G, H, X)

2. CAL-40 qualifies components tested in a high pH boric acid spray to a pH value of 5.

- 3. Cables are not affected by submergence. Cables do not service components located below maximum containment flood level.
- Cable is Okonite Company 1 Conductor No. 2 AWG stranded copper wire with 60 mils ethylene propylene rubber insulation and 30
  mils neoprene jacket (Reference E-11)

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Facility: Davis-Besse Unit 1 Docket: 50-346

SYSTEM COMPONENT EN UATION WORKSHEET



Prepared by: Nheuns Date: 11/183 Checked by: Schuckard Date: 1/14/19

| POUTPMENT DESCRIPTION                                      | II ENVIRONMENT                     |                                  |                                      | DOCUMENTATION REF. |                                  | Qualification                     | Outstanding |
|--|------------------------------------|----------------------------------|--------------------------------------|--------------------|----------------------------------|-----------------------------------|-------------|
| 1 BEOTTHEAT DESCRIPTION                                    | Parameter                          | Specification                    | Qualification                        | Specification      | Qualification                    | Method                            | Items       |
| System: Generic 1E Elec-<br>trical Components              |                                    | l Year                           | l 1.1 Years                          | F                  | 2-3<br>Note 1<br>V-23B           | Simultaneous  <br>Test            | None        |
| Plant ID No. Bll<br>Component: Cable                       | Temperature <br>  (°F)             | 283.0                            | 320.0                                | н, х<br>1          | E-3<br>V-23B                     | Simultaneous  <br>Test            | None        |
| Manufacturer: Kerite<br>Model Number: Note 4               |                                    | 52.0                             | 96.7                                 | <br>  G,X<br>      | E-3<br>V-23B                     | Simultaneous  <br>Test            | None        |
| Function: Power  | Relative  <br> Humidity  <br>  (%) | 100.0                            | 100.0                                | A                  | E-3<br>V-23B                     | Simultaneous  <br>Test            | None        |
| Demon: N/A   | <br> Chemical  <br> Spray          | Boric Acid<br>1800 ppm<br>pH 5.0 | Boric Acid<br>  1800 ppm<br>  pH 5.0 | A                  | E-3<br>V-23B<br>CAL-40<br>Note 2 | Simultaneous<br>Test,<br>Analysis | None        |
| Location: Containment                                      | Radiation                          | 3.87 x 10 <sup>7</sup> RADS      | 1.0 x 10 <sup>8</sup> RADS           | CAL-44             | E-3<br>V-23B                     | Sequential Test                   | None        |
| Flood Level Elev: 572'-2"<br>Above Flood Level: No         | Aging                              | 40 Years                         | <br>  40 Years<br>                   | I                  | CAL-91<br>E-3<br>V-23B           | Sequential<br>Test                | None        |
| Needed for:<br>  Hot Shutdown   X  <br>  Cold Shutdown   X | <br> Submergence <br>              | 572"-2"                          | <br>  Note 3<br>                     | I B                | Note 3                           | Note 3                            | None        |

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| Pacility: Da Besse Unit 1<br>Docket: 50-346                          | SYSTEM COMPONENT  | Index No 21H-021A<br>Rev.: 2 |
|--|-------------------|------------------------------|
| Prepared by: <u>7 Luis</u> Date 9<br>Thecked by: <u>Flatter</u> Date | 130/83<br>1/30/83 |                              |
| Checked by: State Date Date  | 9/30/93           |                              |

1. The test subjected the cabling to an initial transient of 320°F and 96.7 psia for 13 hours, followed by a cooldown to ambient. The cabling was then subjected to a second transient of 223°F and 19.7 psia for 118 hours. The temperature in containment peaks at 283°F in 17 seconds. The pressure in containment peaks at 52 psia in 50 seconds. At 13 hours, the conditions are 172°F and 20.5 psia. The conditions in containment return to ambient after 7 days.

Based on this information, it can be concluded that the test subjected the cabling to an overall more severe environment than the postulated LOCA. Since the cabling remained functional throughout the test and after completion of the test, it can be concluded that the cabling would remain functional during and after exposure to the accident environment which would result from the postulation LOCA. (Reference G, H, X)

2. CAL-40 qualifies components tested in a high pH boric acid spray to a pH value of 5.

3. Cables are not affected by submergence. Cables do not service components located below maximum containment flood level.

4. Cable is Kerite Company stranded copper wire 1 conductor No. 6 AWG with Kerite HT insulation and Kerite FR jacket. (References E-11 and ROC-233) Pacility: Davis-Besse Unit 1 Docket: 50-346

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SYSTEM COMPONENT EVALUATION WORKSHEET



Prepared by: 4 fewine Date: 9/3/81 Thecked by: 55 a Cando Date: 9/3/81

| EQUIPMENT DESCRIPTION   | ENVIRONMENT                 |                             |               | DOCUMENTATION REF. |               | Qualification | Outstanding |
|---|-----------------------------|-----------------------------|---------------|--------------------|---------------|---------------|-------------|
|   | Parameter                   | Specification               | Qualification | Specification      | Qualification | Method        | Items       |
| System: Generic 1E Elec-  <br>trical Components                             | Operating<br>Time           | l Year  <br>                | Note 3, 4     | F                  | N/A           | N/A           | Note 1      |
| Plant ID No.: BEllA   | Temperature<br>(°F)         | N/A                         | N/A           | Note 2             | N/A           | N/A           | None        |
| Manufacturer:  <br>Westinghouse  <br>Model Number: Type W                   | Pressure<br>(PSIA)          | N/A                         | N/A           | Note 2             | N/A           | N/A           | None        |
| Function: Circuit Breaker   | Relative<br>Humidity<br>(%) | N/A                         | N/A           | Note 2             | N/A           | N/A           | None        |
| Accuracy: Spec: N/A  <br>Demon: N/A  <br>Service: Power  <br>Supply/Control | <br> Chemical<br> Spray     | N/A                         | N/A           | N/A                | N/A           | N/A           | None        |
| Location: Auxiliary Bldg.<br>Rm. 209  | Radiation                   | 1.62 x 10 <sup>6</sup> RADS | Note 3, 4     | т                  | N/A           | N/A           | Note 1      |
| Flood Level Elev: N/A  <br>Above Flood Level: N/A                           | Aging                       | 40 Years                    | Note 4        | I                  | N/A           | N/A           | Note 1      |
| Hot Shutdown   X    <br>Cold Shutdown   X                                   | Submergence                 | N/A                         | N/A           | N/A                | N/A           | N/A           | None        |

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|--|---------------------------------------|----------------------|
| acility: Davis-Besse Unit 1  | SISTEM COMPONENT EVALUATION WORKSHEET | Index No.: ZZIH-UZZA |
| ocket: 50-346  |                                       | Rev.:2               |
| E . NI .   | NOTES                                 |                      |
| repared by: Derua Joses Dat  | te <u>3/7/83</u>                      |                      |
| hecked by: Africk mal Dat  | te .3/7/83                            |                      |
| and a first of the second of t |                                       |                      |

This component is scheduled to be tested or analyzed for qualification by January 1, 1984.

- . The only harsh environment seen is increased radiation due to recirculated fluids.
- 1. This motor control center (MCC) is exposed to high radiation levels resulting from the post-LOCA recirculation of fluids which commences 40 minutes into the accident. The only known materials susceptible to degradation due to radiation are ABS in the handle mechanism of the circuit breaker, and nylon in the auxiliary contacts and terminal blocks. The handle mechanism in the circuit breakers is used to turn the power off for maintenance only and is not required to be operated after an accident. The failure of the handle mechanism cannot prevent any of the devices fed by this MCC from performing their function. According to Reference W-1, the degradation of nylon, which is contained in the auxiliary contacts and terminal blocks, occurs for a radiation dose of 4 x 10<sup>6</sup> Rads or higher. This value is greater than the total integrated dose that the MCC will see.
- In the unlikely event that the MCC failed, its associated equipment can be provided with temporary power. There is no identifiable failure mechanism which will trip a circuit breaker feeding power to a device, or move a valve that is already in a safe position after receiving a safety features actuation signal. These IE MCCs are built to IEEE-323 standards and are equipped with manual closing and tripping devices for the circuit breakers should their actuating circuits fail. Failure of the MCC will not mislead the operator. Based on the above discussion, continued safe plant operation is justified.

Facility: Davis-Besse Unit 1 SYSTEM COMPONENT EV Docket: 50-346

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Prepared by: Thecked by:

Str. Allern





Date: 9/3./83

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| EQUIPMENT DESCRIPTION  | ENVIRONMENT                 |                             |               | DOCUMENTA     | TION REF.     | Qualification | Outstanding |
|--|-----------------------------|-----------------------------|---------------|---------------|---------------|---------------|-------------|
| 1  | Parameter                   | Specification               | Qualification | Specification | Qualification | Method        | Items       |
| System: Generic 1E Elec-<br>trical Components                                  | Operating                   | l Year                      | Note 3, 4     | F             | N/A           | N/A           | Note 1      |
| Plant ID No.: BEllB<br>Component: Motor Control                                | Temperature<br>(°F)         | 208.0                       | Exempt        | C-304         | Note 2, 4     | N/A           | None        |
| Center  <br> Manufacturer:  <br>  Westinghouse  <br> <br> Model Number: Type W | Pressure<br>(PSIA)          | 15.83                       | Exempt        | C-304         | Note 2, 4     | N/A           | None        |
| <br> <br> Function: Circuit Breaker <br>                                       | Relative<br>Humidity<br>(%) | 100.0                       | Exempt        | A A           | Note 2, 4     | N/A           | None        |
| Accuracy: Spec: N/A<br>Demon: N/A<br>Service: Power<br>Supply/Control          | <br> Chemical<br> Spray     | N/A                         | N/A           | N/A           | N/A           | N/A           | None        |
| Location: Auxiliary Bldg.<br>Rm. 304   | Radiation                   | 6.53 x 10 <sup>4</sup> RADS | Note 3, 4     | Т             | N/A           | N/A           | Note 1      |
| Flood Level Elev: N/A Above Flood Level: N/A                                   | Aging                       | 40 Years                    | Note 4        | II            | N/A           | N/A           | Note 1      |
| Needed for:<br>Hot Shutdown X  | <br> Submergence            | N/A                         | N/A           | N/A           | N/A           | N/A           | None        |



50-346

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SYSTEM COMPONENT EVALUATION WORKSHEET

NOTES

Index No.: 221H-023A Rev.:

repared by: Journ Yours Date thecked by: similar Date

. This component is scheduled to be tested or analyzed for qualification by January 1, 1984.

- . This component is a motor control center (MCC) that houses the circuit breakers for certain safety-related equipment. This MCC is exempt from qualification because it does not perform a safety-related function in the harsh steam environment caused by a high energy line break. Failure of the MCC in the harsh steam environment will not degrade other safety-related functions or mislead the operator because the equipment it feeds is only needed to mitigate a LOCA.
- 1. This motor control center (MCC) is exposed to high radiation levels resulting from the post-LOCA recirculation of fluids which commences 40 minutes into the accident. The only known materials susceptible to degradation due to radiation are AES in the handle mechanism of the circuit breaker, and nylon in the auxiliary contacts and terminal blocks. The handle mechanism in the circuit breakers is used to turn the power off for maintenance only and is not required to be operated after an accident. The failure of the handle mechanism cannot prevent any of the devices fed by this MCC from performing their function. According to Reference W-1, the degradation of nylon, which is contained in the auxiliary contacts and terminal blocks, occurs for a radiation dose of  $4 \times 10^6$  Rads or higher. This value is greater than the total integrated dose that the MCC will see.

In the unlikely event that the MCC failed, its associated equipment can be provided with temporary power. There is no identifiable failure mechanism which will trip a circuit breaker feeding power to a device, or move a valve that is already in a safe position after receiving a safety features actuation signal. These LE MCCs are built to IEEE-323 standards and are equipped with manual closing and tripping devices for the circuit breakers should their actuating circuits fail. Failure of the MCC will not mislead the operator. Based on the above discussion, continued safe plant operation is justified.
Docket: 50-346

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Date: 9/30/83





Prepared by: ? Leuns Checked by:

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| FOULPMENT DESCRIPTION   | ENVIRONMENT                 |                             |               | DOCUMENTATION REF. |               | Qualification | Outstanding    |
|---|-----------------------------|-----------------------------|---------------|--------------------|---------------|---------------|----------------|
|   | Parameter                   | Specification               | Qualification | Specification      | Qualification | Method        | Items          |
| System: Generic 1E Elec-<br>trical Components                         | Operating<br>Time           | l Year                      | Note 2, 3, 4  | F                  | N/A           | N/A           | Note 1         |
| Plant ID No.: BEllC   | Temperature                 | 208.0                       | Note 2, 4     | C-304              | N/A           | N/A           | Note 1         |
| Center  |                             |                             |               |                    |               |               |                |
| Westinghouse  | Pressure (PSIA)             | 15.83                       | Note 2, 4     | C-304              | N/A           | N/A           | Note 1         |
| Model Number: Type W<br>Function: Circuit Breaker                     | Relative<br>Humidity<br>(%) | 100.0                       | Note 2, 4     | A                  | N/A           | N/A           | Note 1         |
| Accuracy: Spec: N/A<br>Demon: N/A<br>Service: Power<br>Supply/Control | <br> Chemical<br> Spray     | N/A                         | N/A           | N/A                | N/A           | N/A           | <br>  None<br> |
| Location: Auxiliary Bldg.<br>Rm. 304                                  | Radiation                   | 6.53 x 10 <sup>4</sup> RADS | Note 3, 4     | т                  | N/A           | N/A           | Note 1         |
| Flood Level Elev: N/A<br>Above Flood Level: N/A                       | Aging                       | 40 Years                    | Note 4        | I                  | N/A           | N/A           | Note 1         |
| Needed for:<br>Hot Shutdown   <u>X</u>  <br>Cold Shutdown   <u>X</u>  | Submergence                 | N/A                         | N/A           | N/A                | N/A           | N/A           | None           |

| 'acility: Davis-Besse Unit 1  | SYSTEM COMPONENT EVALUATION WORKSHEET | Index No.: 221H-024A |
|-------------------------------|---------------------------------------|----------------------|
| locket: 50-346                |                                       | Rev.: 2              |
|                               | NOTES                                 |                      |
| repared by: Source Money Date | 3/2/83                                |                      |
| thecked by: interthalf Date   | 3/17/13                               |                      |
| A CONTRACTOR                  |                                       |                      |
|                               |                                       |                      |

This component is scheduled to be tested or analyzed for qualification by January 1, 1984.

- The effects of a high energy line break will cause a harsh steam environment in Room 304 where the temperatures and pressures will rise to the values indicated. The pressure will not cause any adverse effect on the MCC due to the internal compartments' ability to "breathe" from the outside through gaps between the doors and the frame. The peak pressure is barely above atmoshperic with a return to ambient within 10 seconds following the accident. The elevated temperature is not high enough to cause a breakdown of any of the materials in the MCC. Temperature will return to ambient within 8 minutes following the accident. The effect of 100% relative humidity may be the condensation of droplets of water on all the surfaces of the components of the MCC. According to the Davis-Besse 480 V Unit Substation Specification 7749-E-7, the type W MCCs are built for high humidity conditions. Considering the short-term saturated steam conditions (10 seconds), the 100% relative humidity should not cause any malfunctions of the devices in the MCC.
- 3. This motor control center (MCC) is exposed to high radiation levels resulting from the post-LOCA recirculation of fluids which commences 40 minutes into the accident. The only known materials susceptible to degradation due to radiation are ABS in the handle mechanism of the circuit breaker, and nylon in the auxiliary contacts and terminal blocks. The handle mechanism in the circuit breakers is used to turn the power off for maintenance only and is not required to be operated after an accident. The failure of the handle mechanism cannot prevent any of the devices fed by this MCC from performing their function. According to Reference W1, the degradation of nylon, which is contained in the auxiliary contacts and terminal blocks, occurs for a radiation dose of 4 x 10<sup>6</sup> Rads or higher. This value is greater than the total integrated dose that the MCC will see.
- In the unlikely event that the MCC failed, its associated equipment can be provided with temporary power. There is no identifiable failure mechanism which will trip a circuit breaker feeding power to a device, or move a value that is already in a safe position after receiving a safety features actuation signal. There IE MCCs are built to IEEE-323 standards and are equipped with manual closing and tripping devices for the circuit breakers should their actuating circuits fail. Failure of the MCC will not mislead the operator. Based on the above discussion, continued safe plant operation is justified.

'acility: Davis-Besse Unit 1 bocket: 50-346 SYSTEM COMPONENT EV. SATION WORKSHEET



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Date: 9/30/83

| EQUIPMENT DESCRIPTION   | ENVIRONMENT                 |                             |               | DOCUMENTATION REF. |               | Qualification | Outstanding |
|---|-----------------------------|-----------------------------|---------------|--------------------|---------------|---------------|-------------|
|   | Parameter                   | Specification               | Qualification | Specification      | Qualification | Method        | Items       |
| System: Generic 1E Elec-<br>trical Components                         | Operating                   | l Year                      | Note 3, 4     | F                  | N/A           | N/A           | Note 1      |
| Plant ID No.: BEllD<br>Component: Motor Control                       | Temperature<br>(°F)         | N/A                         | N/A           | Note 2             | N/A           | N/A           | None        |
| Center  <br>Manufacturer:<br>Westinghouse                             | <br> Pressure<br> (PSIA)    | N/A                         | N/A           | Note 2             | N/A           | N/A           | None        |
| Function: Circuit Breaker   | Relative<br>Humidity<br>(%) | N/A                         | N/A           | Note 2             | N/&           | N/A           | Nose        |
| Accuracy: Spec: N/A<br>Demon: N/A<br>Service: Power<br>Supply/Control | <br> Chemical<br> Spray     | N/A                         | N/A           | N/A                | N/A           | N/A           | None        |
| Location: Auxiliary Bldg.<br>Rm. 227                                  | Radiation                   | 1.62 x 10 <sup>6</sup> RADS | Note 3, 4     | т                  | N/A           | N/A           | Note 1      |
| Flood Level Elev: N/A<br>Above Flood Level: N/A                       | Aging                       | 40 Years                    | Note 4        | I                  | N/A           | N/A           | Note 1      |
| Needed for:<br>Hot Shutdown X   | <br> Submergence            | N/A                         | N/A           | N/A                | N/A           | N/A           | None        |

| 'acility: Davis-Besse Unit 1   | SYSTEM COMPONENT EVALUATION WORKSHEET | Index No.: 221H-025A |
|--------------------------------|---------------------------------------|----------------------|
| ocket: 50-346                  |                                       | Rev.: 2              |
|                                | NOTES                                 |                      |
| repared by: Service yours Date | 3/1/83                                |                      |
| thecked by: stringet of Date   | 3/1/12                                |                      |
|                                |                                       |                      |
|                                |                                       |                      |

. The only harsh environment seen is increased radiation due to recirculated fluids.

- 1. This motor control center (MCC) is exposed to high radiation levels resulting from the post-LOCA recirculation of fluids which commences 40 minutes into the accident. The only known materials susceptible to degradation due to radiation are ABS in the handle mechanism of the circuit breaker, and nylon in the auxiliary contacts and terminal blocks. The handle mechanism in the circuit breakers is used to turn the power off for maintenance only and is not required to be operated after an accident. The failure of the handle mechanism cannot prevent any of the devices fed by this MCC from performing their function. According to Reference W-1, the degradation of nylon, which is contained in the auxiliary contacts and terminal blocks, occurs for a radiation dose of 4 x 10<sup>6</sup> Rads or higher. This value is greater than the total integrated dose that the MCC will see.
- I. In the unlikely event that the MCC failed, its associated equipment can be provided with temporary power. There is no identifiable failure mechanism which will trip a circuit breaker feeding power to a device, or move a valve that is already in a safe position after receiving a safety features actuation signal. These IE MCCs are built to IEEE-323 standards and are equipped with manual closing and tripping devices for the circuit breakers should their actuating circuits fail. Failure of the MCC will not mislead the operator. Based on the above discussion, continued safe plant operation is justified.

Facility: Davis-Besse Unit 1 Docket: 50-346

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Prepared by: Checked by:

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Date: 9/20/83

| EQUIPMENT DESCRIPTION   | ENVIRONMENT                 |                             |               | DOCUMENTATION REF. |               | Qualification | Outstanding |
|---|-----------------------------|-----------------------------|---------------|--------------------|---------------|---------------|-------------|
| Leonard Deconstruction  | Parameter                   | Specification               | Qualification | Specification      | Qualification | Method        | Items       |
| System: Generic 1E Elec-<br>trical Components                         | Operating<br>Time           | l Year                      | Note 3, 4     | F                  | N/A           | N/A           | Note 1      |
| Plant ID No.: BF11A<br>Component: Motor Control                       | femperature                 | N/A                         | N/A           | Note 2             | N/A           | N/A           | None        |
| Center<br>Manufacturer:<br>Westinghouse                               | Pressure                    | N/A                         | N/A           | Note 2             | N/A           | N/A           | None        |
| Model Number: Type W<br>Function: Circuit Breaker                     | Relative<br>Humidity<br>(%) | N/A                         | N/A           | Note 2             | N/A           | N/A           | None        |
| Accuracy: Spec: N/A<br>Demon: N/A<br>Service: Power<br>Supply/Control | Chemical<br>Spray           | N/A                         | N/A           | N/A                | N/A           | N/A           | None        |
| Location: Auxiliary Bldg.<br>Rm. 427                                  | Radiation                   | 3.12 x 10 <sup>5</sup> RADS | Note 3, 4     | т                  | N/A           | N/A           | Note 1      |
| Flood Level Elev: N/A<br>Above Flood Level: N/A                       | Aging                       | 40 Years                    | Note 4        | I                  | N/A           | N/A           | Note 1      |
| Needed for:<br>Hot Shutdown X<br>Cold Shutdown X                      | <br> Submergence            | N/A                         | N/A           | N/A                | N/A           | N/A           | None        |

C.

SYSTEM COMPONENT EVALUATION WORKSHEET



| Pacility: Davis-Besse Unit 1 | SYSTEM COMPONENT EVALUATION WORKSHEET | Index No : 2218-0261 |
|------------------------------|---------------------------------------|----------------------|
| Docket: 50-346               | STOLET CONTOURNE STADORITON HORESIEST | Pay : 2211-0207      |
|                              | NOTES                                 |                      |
| Prepared by: Sauce Moser     | Date 3/7/83                           |                      |
| Checked by: Amichand         | Cate 3/1/8                            |                      |
| checked by: Amid brilf       | _ Late _3/7/12                        |                      |

1. This component is scheduled to be tested or analyzed for qualification by January 1, 1984.

- ?. The orly harsh environment seen is increased radiation due to recirculated fluids.
- 3. This motor control center (MCC) is exposed to high radiation levels resulting from the post-LOCA recirculation of fluids which commences 40 minutes into the accident. The only known materials susceptible to degradation due to radiation are ABS in the handle mechanism of the circuit breaker, and nylon in the auxiliary contacts and terminal blocks. The handle mechanism in the circuit breakers is used to turn the power off for maintenance only and is not required to be operated after an accident. The failure of the handle mechanism cannot prevent any of the devices fed by this MCC from performing their function. According to Reference W-1, the degradation of nylon, which is contained in the auxiliary contacts and terminal blocks, occurs for a radiation dose of 4 x 10<sup>6</sup> Rads or higher. This value is greater than the total integrated dose that the MCC will see.
- In the unlikely event that the MCC failed, its associated equipment can be provided with temporary power. There is no identifiable failure mechanism which will trip a circuit breaker feeding power to a device, or move a valve that is already in a safe position after receiving a safety features actuation signal. These IE MCCs are built to IEEE-323 standards and are equipped with manual closing and tripping devices for the circuit breakers should their actuating circuits fail. Failure of the MCC will not mislead the operator. Based on the above discussion, continued safe plant operation is justified.

Facility: Dans-Besse Unit 1 Docket: 50-346

Checked by:

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7 Leris Date: 9/30/83

| FOULDMENT DESCRIPTION   | ENVIRONMENT                 |                             |               | DOCUMENTATION REF. |               | Qualification | Outstanding      |
|---|-----------------------------|-----------------------------|---------------|--------------------|---------------|---------------|------------------|
|   | Parameter                   | Specification               | Qualification | Specification      | Qualification | Method        | Items            |
| System: Generic 1E Elec-<br>trical Components                         | <br> Operating<br> Time     | l Year                      | Note 2, 3, 4  | F                  | N/A           | N/A           | Note 1           |
| Fiant ID No.: BF11C<br>Component: Motor Control Center                | Temperature                 | 198.0                       | Note 2, 4     | C-236              | N/A           | N/A           | Note 1           |
| Manufacturer:<br>Westinghouse   | Pressure<br>(PSIA)          | 15.51                       | Note 2, 4     | C-236              | N/A           | N/A           | Note 1           |
| Model Number: Type W<br>Function: Circuit Breaker                     | Relative<br>Humidity<br>(%) | 100.0                       | Note 2, 4     | A                  | N/A           | N/A           | <br>  Note 1<br> |
| Accuracy: Spec: N/A<br>Demon: N/A<br>Service: Power<br>Supply/Control | Chemical<br>Spray           | N/A                         | N/A           | N/A                | N/A           | N/A           | None<br> <br>    |
| Location: Auxiliary Bldg.<br>Rm. 236                                  | Radiation                   | 1.97 x 10 <sup>6</sup> RADS | Note 3, 4     | т                  | N/A           | N/A           | Note 1           |
| Flood Level Elev: N/A<br>Above Flood Level: N/A                       | Aging                       | 40 Years                    | Note 4        | I                  | N/A           | N/A           | Note 1           |
| Needed for:<br>Hot Shutdown X   | Submergence                 | N/A                         | N/A           | N/A                | N/A           | N/A           | None             |

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SYSTEM COMPONENT EN OATION WORKSHEET

|                               |                                       | 0                               |
|-------------------------------|---------------------------------------|---------------------------------|
| Facility: Davis-Besse Unit 1  | SYSTEM COMPONENT EVALUATION WORKSHEET | Index No.: 221H-027A<br>Rev.: 2 |
| Prepared by: Saina Genis Date | NOTES                                 |                                 |
| Checked by: stillater if Date | 3/1/13                                |                                 |

1. This component is scheduled to be tested or analyzed for qualification by January 1, 1984.

- 2. This component is a motor control center that houses the circuit breakers for certain safety-related equipment. Only one component fed from this MCC is needed to mitigate the effects of a high energy line break that causes a harsh steam environment in Room 236. This component is the motor operator for the AFP 2 suction valve (from service water), MV13830. MV13830 would not be initiated in the short term following the accident because it is only needed when the condensate storage tanks run dry. There is ample time to provide this component with temporary power should the MCC fail.
- 3. This motor control center (MCC) is exposed to high radiation resulting from the post-LOCA recirculation of fluids which commences 40 minutes into the accident. The only known materials susceptible to degradation due to radiation are ABS in the handle mechanism of the circuit breaker, and nylon in the auxiliary contacts and terminal blocks. The handle mechanism in the circuit breakers is used to turn the power off for maintenance only and is not required to be operated after an accident. The failure of the handle mechanism cannot prevent any of the devices fed by this MCC from performing their function. According to Reference W-1, the degradation of nylon, which is contained in the auxiliary contacts and terminal blocks, occurs for a radiation dose of 4 x 10<sup>6</sup> Rads or higher. This value is greater than the total integrated dose that the MCC will see.
- 4. In the unlikely event that the MCC failed, its associated equipment can be provided with temporary power. There is no identifiable failure mechanism which will trip a circuit breaker feeding power to a device, or move a valve that is already in a safe position after receiving a safety features actuation signal. These IE MCCs are built to IEEE-323 standards and are equipped with manual closing and tripping devices for the circuit breakers should their actuating circuits fail. Failure of the MCC will not mislead the operator. Based on the above discussion, continued safe plant operation is justified.

Facility: Davis-Besse Unit 1 Docket: 50-346

Prepared by: Checked by:

Date: 230.44

SYSTEM COMPONENT EMALUATION WORKSHEET



| EQUIPMENT DESCRIPTION   | ENVIRONMENT                 |                             |               | DOCUMENTATION REF. |               | Qualification | Outstanding |
|---|-----------------------------|-----------------------------|---------------|--------------------|---------------|---------------|-------------|
|   | Parameter                   | Specification               | Qualification | Specification      | Qualification | Method        | Items       |
| System: Generic 1E Elec-  <br>trical Components                             | Operating<br>Time           | l Year                      | Note 3, 4     | F                  | N/A           | N/A           | Note 1      |
| Flant ID No.: BF11D  <br>Component: Motor Control  <br>Center               | Temperature<br>(°F)         | N/A                         | N/A           | Note 2             | N/A           | N/A           | None        |
| Manufacturer:  <br>Westinghouse  <br>                                       | Pressure<br>(PSIA)          | N/A                         | N/A           | Note 2             | N/A           | N/A           | None        |
| Model Number: Type W  | Relative<br>Humidity<br>(%) | N/A                         | N/A           | Note 2             | N/A           | N/A           | None        |
| Accuracy: Spec: N/A  <br>Demon: N/A  <br>Service: Power  <br>Supply/Control | <br> Chemical<br> Spray     | N/A                         | N/A           | N/A                | N/A           | N/A           | None        |
| Cocation: Auxiliary Bldg.<br>Rm. 227  | Radiation                   | 1.62 x 10 <sup>6</sup> RADS | Note 3, 4     | т                  | N/A           | N/A           | Note 1      |
| Flood Level Elev: N/A  <br>Above Flood Level: N/A                           | Aging                       | 40 Years                    | Note 4        | I                  | N/A           | N/A           | Note 1      |
| Hot Shutdown X  | <br> Submergence            | N/A                         | N/A           | N/A                | N/A           | N/A           | None        |

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| Pacility Davis-Besse Unit 1                                 | SYSTEM COMPONER EVALUATION WORKSHEET  | Index 0. : 2218-028 |
|---|---------------------------------------|---------------------|
| Docket: 50-346  | SISTER CONFORMAL EVALORITOR HORISIEST | Rev.: 2             |
| Success Succession  | NOTES                                 |                     |
| Checked by: Checked by: Checked by: Checked by: Checked by: | 3/1/3                                 |                     |
| checked of .  |                                       |                     |

1. This component is scheduled to be tested or analyzed for qualification by January 1, 1984.

- 2. The only harsh environment seen is increased radiation due to recirculated fluids.
- 3. This motor control center (MCC) is exposed to high radiation resulting from the post-LOCA recirculation of fluids which commences 40 minutes into the accident. The only known materials susceptible to degradation due to radiation are ABS in the handle mechanism of the circuit breaker, and nylon in the auxiliary contacts and terminal blocks. The handle mechanism in the circuit breakers is used to turn the power off for maintenance only and is not required to be operated after an accident. The failure of the handle mechanism cannot prevent any of the devices fed by this MCC from performing their function. According to Reference W-1, the degradation of nylon, which is contained in the auxiliary contacts and terminal blocks, occurs for a radiation dose of 4 x 10<sup>6</sup> Rads or higher. This value is greater than the total integrated dose that the MCC will see.
- 4. In the unlikely event that the MCC failed, its associated equipment can be provided with temporary power. There is no identifiable failure mechanism which will trip a circuit breaker feeding power to a device, or move a valve that is already in a safe position after receiving a safety features actuation signal. These LE MCCs are built to IEEE-323 standards and are equipped with manual closing and tripping devices for the circuit breakers should their actuating circuits fail. Failure of the MCC will not mislead the operator. Based on the above discussion, continued safe plant operation is justified.

?acility: Davis-Besse Unit 1
Docket: 50-346

Prepared by: Nhains Date: 11/1/83 Checked by: Annobis Date: 11/0/19

| FOUL PMENT DESCRIPTION                                       | II ENVIRONMENT                          |                                  |                                  | DOCUMENTATION REF. |                                  | Qualification                     | Outstanding |
|--|---|----------------------------------|----------------------------------|--------------------|----------------------------------|-----------------------------------|-------------|
|  | Parameter                               | Specification                    | Qualification                    | Specification      | Qualification                    | Method                            | Items       |
| System: Generic 1E Elec-<br>trical Components                | <br> Operating  <br> Time               | l Year                           | 1.1 Years                        | F                  | E-3<br>  Note 1<br>  V-23B       | Simultaneous<br>Test              | None        |
| Plant ID No. BGl   | <br> Temperature <br>  (°F)             | 283.0                            | 320.0                            | н, х<br>1          | E-3<br>  V-23B                   | Simultaneous<br>Test              | None        |
| Manufacturer: Kerite   | Pressure  <br>  (PSIA)                  | 52.0                             | 96.7                             | <br>  G, X<br>     | E-3<br>V-23B                     | Simultanec  <br>Test              | None        |
| Function: Power  | <br> Relative  <br> Humidity  <br>  (%) | 100.0                            | 100.0                            |                    | E-3<br>  V-23B<br>               | Simultaneous<br>Test              | None        |
| Demon: N/A<br>Service: Power Cable                           | <br> Chemical  <br> Spray  <br>         | Boric Acid<br>1800 ppm<br>pH 5.0 | Boric Acid<br>1800 ppm<br>pH 5.0 |                    | E-3<br>V-23B<br>CAL-40<br>Note 2 | Simultaneous<br>Test,<br>Analysis | None        |
| Location: Containment  | Radiation                               | 3.87 x 10 <sup>7</sup> RADS      | 1.0 x 10 <sup>8</sup> RADS       | CAL-44             | E-3<br>V-23B                     | Sequential Test                   | None        |
| Flood Level Elev: 572'-2"<br>Above Flood Level: No           | <br> Aging  <br>                        | 40 Years                         | 40 Years                         | I I                | CAL-91<br>E-3<br>V-23B           | Sequential<br>Test                | None        |
| Needed for:<br>  Hot Shutdown   X    <br>  Cold Shutdown   X | <br> Submergence <br>                   | 572"-2"                          | Note 3                           | I B                | <br>  Note 3<br>                 | Note 3                            | None        |

SYSTEM COMPONENT EVALUATION WORKSHEET



| 'acility: Da Besse Unit 1 | SYSTEM COMPONENT UNITION WORKSHEET | Index No. 21H-029A |
|---------------------------|------------------------------------|--------------------|
| Cocket: 50-346            | NOTES                              | Rev.: 2            |
| Prepared by: 7 Leurs Date | 9/30/83                            |                    |
| Thecked by: Date Date     | 9/30/13                            |                    |

Based on this information, it can be concluded that the test subjected the cabling to an overall more severe environment than the postulated LOCA. Since the cabling remained functional throughout the test and after completion of the test, it can be concluded that the cabling would remain functional during and after exposure to the accident environment which would result from the postulated LOCA. (Reference G, H, X)

2. CAL-40 qualifies components tested in a high pH boric acid spray to a pH value of 5.

3. Cables are not affected by submergence. Cables do not service components located below maximum containment flood level.

4. Cable is Kerite Company stranded copper wire 3-1/conductor 500 MCM with Kerite HT insulation and Kerite FR jacket. (References E-11 and ROC-23B) Docket: 50-346

Facility: Davis-Besse Unit 1 SYSTEM COMPONENT EVALUATION WORKSHEET



Prepared by: Nheurs Date: 11/1/83 Checked by: Hundburk Date: 11/1/83

| EQUIPMENT DESCRIPTION                              |   | ENVIRONMENT                      |                                  | DOCUMENTATION REF. |                                  | Qualification                     | Outstanding |
|--|---|----------------------------------|----------------------------------|--------------------|----------------------------------|-----------------------------------|-------------|
|  | Parameter   Specification   Qualification |                                  | Specification                    | Qualification      | Method                           | Items                             |             |
| System: Generic 1E Elec-                           | <br> Operating  <br> Time                 | l Year                           | 1.1 Years                        | F                  | E-3<br>  Note 1<br>  V-23B       | Simultaneous  <br>  Test          | None        |
| Plant ID No. BG2                                   | <br> Temperature <br>  (°F)               | 283.0                            | 320.0                            | н, х               | E-3<br>V-23B                     | Simultaneous<br>Test              | None        |
| Manufacturer: Kerite<br>Model Number: Note 4       |   | 52.0                             | 96.7                             | G, X               | E-3<br>V-23B                     | Simultaneous<br>Test              | None        |
| Function: Power                                    | Relative   <br>  Humidity   <br>   (%)    | 100.0                            | 100.0                            | A A                | <br>  E-3<br>  V-23B<br>         | Simultaneous<br>Test              | None        |
| Demon: N/A<br>Service: Power Cable                 | <br> Chemical  <br> Spray  <br>           | Boric Acid<br>1800 ppm<br>pH 5.0 | Boric Acid<br>1800 ppm<br>pH 5.0 |                    | E-3<br>V-23B<br>CAL-40<br>Note 2 | Simultaneous<br>Test,<br>Analysis | None        |
| Location: Containment                              | Radiation                                 | 3.87 x 10 <sup>7</sup> RADS      | 1.0 x 10 <sup>8</sup> RADS       | CAL-44             | E-3<br>V-23B                     | Sequential Test                   | None        |
| Flood Level Elev: 572'-2"<br>Above Flood Level: No | Aging  <br>  Aging                        | 40 Years                         | <br>  40 Years<br>               | I                  | CAL-91<br>  E-3<br>  V-23B       | Sequential<br>Test                | None        |
| Hot Shutdown   X  <br>Cold Shutdown   X            | Submergence                               | 572'-2"                          | <br>  Note 3<br>                 | l B                | <br>  Note 3<br>                 | Note 3                            | None        |

SYSTEM COMPONENT Besse Unit 1 ATION WORKSHEET acility: Dav Index No. 1H-030A 50-346 ocket: Rev.: 2 NOTES Date repared Date hecked by:

Based on this information, it can be concluded that the test subjected the cabling to an overall more severe environment than the postulated LOCA. Since the cabling remained functional throughout the test and after completion of the test, it can be concluded that the cabling would remain Functional during and after exposure to the accident environment which would result from the postulated LOCA. (Reference G, H, X)

. CAL-40 qualifies components tested in a high pH boric acid spray to a pH value of 5.

. Cables are not affected by submergence. Cables do not service components located below maximum containment flood level.

Cable is Kerite Company stranded copper wire 3-1/conductor 350 MCM with Kerite HT insulation and Kerite FR jacket. (References E-11 and ROC-23B) Facility: Davis-Besse Unit 1 SYSTEM COMPONENT EVALUATION WORKSHEET Docket: 50-346



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Prepared by: Nheins Date: 11/1/23 Thecked by: Samony Date: 11/2/03

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| FOULTPMENT DESCRIPTION                                 |  | ENVIRONMENT                      |                                      | DOCUMENTA        | TION REF.                              | Qualification                     | Outstanding |
|--|--|----------------------------------|--------------------------------------|------------------|--|-----------------------------------|-------------|
|  | Parameter   Specification   Qualification  S |                                  | Specification Qualification          |                  | Method                                 | Items                             |             |
| System: Generic 1E Elec-<br>trical Components          | <br> Operating  <br> Time                    | l Year                           | 1.1 Years                            | F                | E-3<br>  Note 1<br>  V-23B             | Simultaneous  <br>  Test          | None        |
| Plant ID No. BG3<br>Component: Cable                   | Temperature                                  | 283.0                            | 320.0                                | і<br>І н, х<br>І | E-3<br>  V-23B                         | Simultaneous  <br>  Test          | None        |
| Manufacturer: Kerite  <br>Model Number: Note 4         |  | 52.0                             | 96.7                                 | G, X             | E-3<br>  V-23B                         | Simultaneous  <br>  Test          | None        |
| Function: Power  | Relative  <br> Humidity  <br> (%)            | 100.0                            | 100.0                                | A                | <br>  E-3<br>  V-23B                   | Simultaneous  <br>  Test  <br>    | None        |
| Demon: N/A<br>Service: Power Cable                     | <br> Chemical  <br> Spray  <br>              | Boric Acid<br>1800 ppm<br>pH 5.0 | Boric Acid<br>  1800 ppm<br>  pH 5.0 | A                | E-3<br>  V-23B<br>  CAL-40<br>  Note 2 | Simultaneous<br>Test,<br>Analysis | None        |
| Location: Containment                                  | Radiation                                    | 3.87 x 10 <sup>7</sup> RADS      | 11.0 x 10 <sup>8</sup> RADS          | CAL-44           | E-3<br>V-23B                           | Seguential Test                   | None        |
| Flood Level Elev: 572'-2"<br>Above Flood Level: No     | Aging  | 40 Years                         | 40 Years                             | I                | CAL-91<br>  E-3<br>  V-23B             | Sequential<br>Test                | None        |
| Needed for:<br>Hot Shutdown   X  <br>Cold Shutdown   X | <br> Submergence <br>                        | 572'-2"                          | Note 3                               | l<br>l B<br>l    | <br>  Note 3<br>                       | Note 3                            | None        |

| 'acility: Dave Besse Unit 1                             | SYSTEM COMPONENT QUATION WORKSHEET | Index No. 21H-031A |
|---|------------------------------------|--------------------|
| Prepared by: 3 Leurs Date<br>Thecked by: MacDoniel Date | 9/30/83<br>9/3-/83                 | Rev.: 2            |
|   |                                    |                    |

Based on this information, it can be concluded that the test subjected the cabling to an overall more severe environment than the postulated LOCA. Since the cabling remained functional throughout the test and after completion of the test, it can be concluded that the cabling would remain functional during and after exposure to the accident environment which would result from the postulated LOCA. (Reference G, H, X)

- 2. CAL-40 qualifies components tested in a high pH boric acid spray to a pH value of 5.
- 3. Cables are not affected by submergence. Cables do not service components located below maximum containment flood level.
- Cable is Kerite Company stranded copper wire 3-1/conductor No. 4/0 AWG triplexed with single bare No. 2 AWG ground wire with Kerite HT insulation and Kerite FR jacket. (References E-11 and ROC-23B)

Facility: Davis-Besse Unit 1 Docket: 50-346

SYSTEM COMPONENT EVALUATION WORKSHEET



Prepared by: Nlewis Date: 11/2/83 Checked by: Annorth Date: 11/2/83

| EQUIPMENT DESCRIPTION                                |   | ENVIRONMENT                      |                                  | I DOCUMENTAT     | ION REF.                         | Qualification                     | Outstanding |
|--|---|----------------------------------|----------------------------------|------------------|----------------------------------|-----------------------------------|-------------|
| 1  | Parameter                               | Specification                    | Qualification                    | Specification    | Qualification                    | Method                            | Items       |
| System: Generic 1E Elec-  <br>  trical Components    | <br> Operating  <br> Time               | l Year                           | 1.1 Years                        | F                | E-3<br>Note 1<br>V-23B           | Simultaneous  <br>Test            | None        |
| Plant ID No. BG4                                     | <br> Temperature <br>  (°F)             | 283.0                            | 320.0                            | Н, Х             | E-3<br>V-23B                     | Simultaneous<br>Test              | None        |
| Manufacturer: Kerite  <br> <br> Model Number: Note 4 |   | 52.0                             | 96.7                             | G, X I           | E-3<br>V-23B                     | Simultaneous  <br>Test            | None        |
| Function: Power                                      | <br> Relative  <br> Humidity  <br>  (%) | 100.0                            | 100.9                            | A                | E-3<br>V-23B                     | Simultaneous<br>Test              | None        |
| Demon: N/A   | <br> Chemical  <br> Spray  <br>         | Boric Acid<br>1800 ppm<br>pH 5.0 | Borke Acid<br>1800 ppm<br>pH 5.0 | A                | E-3<br>V-23B<br>CAL-40<br>Note 2 | Simultaneous<br>Test,<br>Analysis | None        |
| Location: Containment                                | Radiation                               | 3.87 x 10 <sup>7</sup> RADS      | 1.0 x 10 <sup>8</sup> RADS       | CAL-44           | E-3<br>V-23B                     | Seguential Test                   | None        |
| Flood Level Elev: 572'-2"<br> Above Flood Level: No  | Aging                                   | 40 Years                         | <br>  40 Years<br>               | III              | CAL-91<br>E-3<br>V-23B           | Sequential<br>Test                | None        |
| Hot Shutdown   X  <br>Cold Shutdown   X              | Submergence                             | 572'-2"                          | Note 3                           | B  <br>  B  <br> | Note 3                           | Note 3                            | None        |

Besse Unit 1 SYSTEM COMPONENT UATION WORKSHEET Pacility: Da Index No 21H-032A 50-346 Docket: Rev.: NOTES Prepared b Date Checked by:

Based on this information, it can be concluded that the test subjected the cabling to an overall more severe environment than the postulated LOCA. Since the cabling remained functional throughout the test and after completion of the test, it can be concluded that the cabling would remain functional during and after exposure to the accident environment which would result from the postulated LOCA. (Reference G, H, X)

- 2. CAL-40 qualifies components tested in a high pH boric acid spray to a pH value of 5.
- 3. Cables are not affected by submergence. Cables do not service components located below maximum containment flood level.
- Cable is Kerite Company stranded copper wire 3-1/conductor No. 2 AWG with Kerite HT insulation and Kerite FR jacket. (References E-11 and ROC-23B)

Pacility: Davis-Besse Unit 1 SYSTEM COMPONENT EVALUATION WORKSHEET Docket: 50-346

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Prepared by: Nhains Date: 11/1/83 Thecked by: Atran Don't Date: 11/1/83

| EQUIPMENT DESCRIPTION   | 1                                  | ENVIRONMENT                      |                                  | DOCUMENTATION REF. |                                  | Qualification                     | Outstanding |
|---|------------------------------------|----------------------------------|----------------------------------|--------------------|----------------------------------|-----------------------------------|-------------|
|   | Parameter                          | Specification                    | Qualification                    | Specification      | Qualification                    | Method                            | ïtems       |
| System: Generic 1E Elec-<br>trical Components                         | <br> Operating  <br> Time          | l Year                           | 1.1 Years                        | F                  | E-3<br>Note 1<br>V-23B           | Simultaneous<br>Test              | None        |
| Plant ID No. BG5  | Temperature                        | 283.0                            | 320.0                            | H, X  <br>  H, X   | E-3<br>V-23B                     | Simultanecus<br>Test              | None        |
| Manufacturer: Kerite  <br> <br>Model Number: Note 4                   | <br> Pressure  <br> (PSIA)         | 52.0                             | 96.7                             | G, X  <br>         | E-3<br>V-23B                     | Simultaneous<br>Test              | None        |
| Function: Power  <br> <br>Accuracy: Spec: N/A                         | Relative  <br> Humidity  <br>  (%) | 100.0                            | 100.0                            |                    | E-3<br>V-23B                     | Simultaneous<br>Test              | None        |
| Demon: N/A  <br> <br>Service: Power Cable  <br> <br>                  | <br> Chemical  <br> Spray  <br>    | Boric Acid<br>1800 ppm<br>pH 5.0 | Boric Acid<br>1800 ppm<br>pH 5.0 | A                  | E-3<br>V-23B<br>CAL-40<br>Note 2 | Simultaneous<br>Test,<br>Analysis | None        |
| Location: Containment   | Radiation                          | 3.87 x 10 <sup>7</sup> RADS      | 1.0 x 10 <sup>8</sup> RADS       | CAL-44             | E-3<br>V-23B                     | Sequential Test                   | None        |
| Flood Level Elev: 572'-2"  <br>Above Flood Level: No  <br>Needed for: | Aging                              | 40 Years                         | 40 Years                         | III                | CAL-91<br>E-3<br>V-23B           | Sequential<br>Test                | None        |
| Hot Shutdown   X    <br>Cold Shutdown   X                             | <br> Submergence                   | 572'-2"                          | Note 3                           | B                  | Note 3                           | Note 3                            | None        |

| acility: Dave Besse Unit 1<br>bocket: 50-346 | SYSTEM COMPONENT E JUATION WORKSHEET | Index No. 21H-033A<br>Rev.: 2 |
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| repared by: 1 Auis Dat                       | NOTES                                |                               |
| necked by: Structore Dat                     | e <u>- 7/30/83</u>                   |                               |

Based on this information, it can be concluded that the test subjected the cabling to an overall more severe environment than the postulated LOCA. Since the cabling remained functional throughout the test and after completion of the test, it can be concluded that the cabling would remain functional during and after exposure to the accident environment which would result from the postulated LOCA. (Reference G, H, X)

CAL-40 qualifies components tested in a high pH boric acid spray to a pH value of 5.

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Cables are not affected by submergence. Cables do not service components located below maximum containment flood level.

. Cable is Kerite Company stranded copper wire 3-1/conductor 250 KCMIL triplexed with single bare No. 2 AWG ground wire with Kerite HT insulation and Kerite FR jacket. (References E-11 and ROC-23B) Facility: Davis-Besse Unit 1 SYSTEM COMPONENT EVALUATION WORKSHEET Docket: 50-346



Prepared by: Nhours Date: 11/93 Checked by: Free Date: 11/2/13

|   | ENVIRONMENT                 |                                  |                                  | DOCUMENTATION REF. |                                  | Qualification                     | Outstanding |
|---|-----------------------------|----------------------------------|----------------------------------|--------------------|----------------------------------|-----------------------------------|-------------|
| 1   | Parameter                   | Specification                    | Qualification                    | Specification      | Qualification                    | Method                            | Items       |
| System: Generic 1E Elec-<br>trical Components       | <br> Operating  <br> Time   | l Year                           | 1.1 Years                        | F                  | E-3<br>Note 1<br>V-23B           | Simultaneous  <br>Test            | None        |
| Plant ID No. BG6                                    | <br> Temperature <br>  (°F) | 283.0                            | 320.0                            | н н, х н           | E-3<br>V-23B                     | Simultaneous  <br>Test            | None        |
| Manufacturer: Kerite                                | <br> Pressure  <br>  (?SIA) | 52.0                             | 96.7                             | G, X               | E-3<br>V-23B                     | Simultaneous<br>Tes'              | None        |
| Function: Power  <br> <br> <br> Accuracy: Spec: N/A |                             | 100.0                            | 100.0                            |                    | E-3<br>V-23B                     | Simultaneous<br>Test              | None        |
| Demon: N/A<br>Service: Power Cable                  | Chemical  <br> Spray        | Boric Acid<br>1800 ppm<br>pH 5.0 | Boric Acid<br>1800 ppm<br>pH 5.0 | A                  | E-3<br>V-23B<br>CAL-40<br>Note 2 | Simultaneous<br>Test,<br>Analysis | None        |
| Location: Containment                               | Radiation                   | 3.87 x 10 <sup>7</sup> RADS      | 11.0 x 10 <sup>8</sup> RADS      | CAL-44             | E-3 `<br>V-23B                   | Sequential Test                   | None        |
| Flood Level Elev: 572'-2"<br> Above Flood Level: No | Aging                       | 40 Years                         | 40 Years                         | I                  | CAL-91<br>E-3<br>V-23B           | Sequential<br>Test                | None        |
| Hot Shutdown   X                                    | Submergence                 | 572"-2"                          | Note 3                           | B                  | Note 3                           | Note 3                            | None        |

| Facility: Da Besse Unit 1  | SYSTEM COMPONENT QUATION WORKSHEET   |   | Index No 21H-034A<br>Rev.: 2 |
|--|--------------------------------------|---|------------------------------|
| Prepared by: <u>A Leuis</u> Dat<br>Checked by: <u>Americanal</u> Dat | e <u>9/30/83</u><br>e <u>9/30/83</u> | • |                              |

Based on this information, it can be concluded that the test subjected the cabling to an overall more severe environment than the postulated LOCA. Since the cabling remained functional throughout the test and after completion of the test, it can be concluded that the cabling would remain functional during and after exposure to the accident environment which would result from the postulated LOCA. (Reference G, H, X)

- 2. CAL-40 qualifies components tested in a high pH boric acid spray to a pH value of 5.
- 3. Cables are not affected by submergence. Cables do not service components located below maximum containment flood level.
- 4. Cable is Kerite Company stranded copper wire 3 conductor No. 4 AWG with Kerite NT insulation and Kerite FR jacket. (References E-11 and ROC-23B)

Pacility: Davis-Besse Unit 1 Docket: 50-346

Prepared by: Checked by:

Date: Date:

DOCUMENTATION REF. Qualification Outstanding EQUIPMENT DESCRIPTION ENVIRONMENT Specification Qualification | Specification | Qualification | Method Items || Parameter Note 2, 3, 4 N/A N/A Note 1 F System: Generic 1E Elec- ||Operating 1 Year trical Components || Time |Plant ID No.: BYE2 Note 2, 4 N/A None C-304 ||Temperature| 208.0 Exempt (°F) Component: Motor Control || Center Manufacturer: C-304 Note 2, 4 N/A None ||Pressure 15.83 Exempt Westinghouse (|PSIA) Model Number: Type W 11 Note 2, 4 N/A None 100.0 Exempt A Relative Function: Circuit Breaker | Humidity (8) Accuracy: Spec: N/A Demon: N/A N/A N/A None N/A N/A ||Chemical N/A Spray Service: Power Supply/Control | Location: Auxiliary Bldg. || [6.53 x 104 RADS] N/A Note 1 Radiation Note 3, 4 T N/A Rm. 304 Flood Level Elev: N/A N/A Note 1 I N/A 40 Years Note 4 Above Flood Level: N/A Aging Needed for: Hot Shutdown X N/A None ||Submergence| N/A N/A N/A N/A Cold Shutdown X 11



SYSTEM COMPONENT EVALUATION WORKSHEET

Field

Pacility: Davis-Besse Unit 1 Docket: 50-346





NOTES

Date Prepared by: Checked by: Date

1. This component is scheduled to be tested or analyzed for qualification by January 1, 1984.

- ?. This component is a motor control center (MCC) that houses the circuit breakers for certain safety-related equipment. This MCC is exempt from qualification because it does not perform a safety-related function in the harsh steam environment caused by a high energy line break. Failure of the MCC in the harsh steam environment will not degrade other safety-related functions or mislead the operator because the equipment it feeds is only needed to mitigate a LOCA.
- 3. This motor control center (MCC) is exposed to high radiation levels resulting from the post-LOCA recirculation of fluids which commences 40 minutes into the accident. The only known materials susceptible to degradation due to radiation are ABS in the handle mechanism of the circuit breaker, and nylon in the auxiliary contacts and terminal blocks. The handle mechanism in the circuit breakers is used to turn the power off for maintenance only and is not required to be operated after an accident. The failure of the handle mechanism cannot prevent any of the devices fed by this MCC from performing their function. According to Reference W-1, the degradation of nylon, which is contained in the auxiliary contacts and terminal blocks, occurs for a radiation dose of 4 x 10<sup>6</sup> Rads or higher. This value is greater than the total integrated dose that the MCC will see.
- 4. In the unlikely event that the MCC failed, its associated equipment can be provided with temporary power. There is no identifiable failure mechanism which will trip a circuit breaker feeding power to a device, or move a value that is already in a safe position after receiving a safety features actuation signal. These IE MCCs are built to IEEE-323 standards and are equipped with manual closing and tripping devices for the circuit breakers should their actuating circuits fail. Failure of the MCC will not mislead the operator. Based on the above discussion, continued safe plant operation is justified.

Facility: Davis-Besse Unit 1 SYSTEM COMPONENT E. Docket: 50-346

Prepared by: **#** 

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JUATION WORKSHEET

Index No. 221H-036 Rev.: 2

Date: 9/30/83

| EOUIPMENT DESCRIPTION   |                                   | ENVIRONMENT                 |               | DOCUMENTAT    | TION REF.     | Qualification | Outstanding    |
|---|-----------------------------------|-----------------------------|---------------|---------------|---------------|---------------|----------------|
|   | Parameter                         | Specification               | Qualification | Specification | Qualification | Method        | Items          |
| System: Generic 1E Elec-<br>trical Components                         | Operating  <br>Time               | l Year                      | Note 3, 4     | F             | N/A           | N/A           | Note 1         |
| Plant ID No.: BYF2<br>Component: Motor Control<br>Center              | Temperature<br>(°F)               | N/A                         | N/A           | Note 2        | N/A           | N/A           | None           |
| Manufacturer:<br>Westinghouse   | Pressure  <br> (PSIA)             | N/A                         | N/A           | Note 2        | N/A           | N/A           | None           |
| Model Number: Type W<br>Function: Circuit Breaker                     | Relative  <br> Humidity  <br> (%) | N/A                         | N/A           | Note 2        | N/A.          | N/A           | None           |
| Accuracy: Spec: N/A<br>Demon: N/A<br>Service: Power<br>Supply/Control | Chemical<br>Spray                 | N/A                         | N/A           | N/A           | N/A           | N/A           | <br>  None<br> |
| Location: Auxiliary Bldg.<br>Rm. 427                                  | Radiation                         | ).12 x 10 <sup>5</sup> RADS | Note 3, 4     | т             | N/A           | N/A           | Note 1         |
| Flood Level Elev: N/A<br>Above Flood Level: N/A                       | Aging                             | 40 Years                    | Note 4        | I             | N/A           | N/A           | Note 1         |
| Needed for:<br>Hot Shutdown   <u>X</u>  <br>Cold Shutdown   <u>X</u>  | <br> Submergence                  | N/A                         | N/A           | N/A           | N/A           | N/A           | None           |

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| Cacility: Davis-Besse Unit 1 | SYSTEM COMPONENT EVALUATION WORKSHEET | Index No.: 221H-036A |
| JOCKET: 50-346               |                                       | Rev.: 2              |
| manual has Se i della i an   | NOTES                                 |                      |
| charled by: Jour gases Date  | 3/1/03                                |                      |
| Date Date                    | 3/1/13                                |                      |
|                              |                                       |                      |
|                              |                                       |                      |

1. This component is scheduled to be tested or analyzed for qualification by January 1, 1984.

. The only harsh environment seen is increased radiation due to recirculated fluids.

- 3. This motor control center (MCC) is exposed to high radiation levels resulting from the post-LOCA recirculation of fluids which commences 40 minutes into the accident. The only known materials susceptible to degradation due to radiation are ABS in the handle mechanism of the circuit breaker, and nylon in the auxiliary contacts and terminal blocks. The handle mechanism in the circuit breakers is used to turn the power off for maintenance only and is not required to be operated after an accident. The failure of the handle mechanism cannot prevent any of the devices fed by this MCC from performing their function. According to Reference W-1, the degradation of nylon, which is contained in the auxiliary contacts and terminal blocks, occurs for a radiation dose of  $4 \times 10^6$  Rads or h  $\sim$  r. This value is greater than the total integrated
- In the unlikely event that the MCC failed, its associated equipment can be provided with temporary power. There is no identifiable failure mechanism which will trip a circuit breaker feeding power to a device, or move a valve that is already in a safe position after receiving a safety features actuation signal. These IE MCCs are built to IEEE-323 standards and are equipped with manual closing and tripping devices for the circuit breakers should their actuating circuits fail. Failure of the MCC will not mislead the operator. Based on the above discussion, continued safe plant operation is justified.



Facility: Davis-Besse Unit 1 SYSTEM COMPONENT EVALUATION WORKSHEET Docket: 50-346

Prepared by: Nheins Date: 11/1/92 Checked by: Arcanomy Date: 11/1/03

| EQUIPMENT DESCRIPTION  |                                    | ENVIRONMENT                      |                                      | DOCUMENTA      | TION REF.                              | Qualification                     | Outstanding |
|--|------------------------------------|----------------------------------|--------------------------------------|----------------|--|-----------------------------------|-------------|
| 1  | Parameter                          | Specification                    | Qualification                        | Specification  | Specification Qualification            |                                   | Items       |
| System: Generic 1E Elec-<br>trical Components                | <br> Operating  <br> Time          | l Year                           | 1.1 Years                            | F              | E-3<br>  Note 1<br>  V-23B             | Simultaneous  <br>  Test          | None        |
| Plant ID No. COl<br> <br> Component: Cable                   | <br> Temperature <br>  (°F)        | 283.0                            | 320.0                                | Н, X           | <br>  E-3<br>  V-23B                   | Simultaneous  <br>  Test          | None        |
| Manufacturer: Kerite<br> <br> Model Number: Note 4           |                                    | 52.0                             | 96.7                                 | <br>  G, X<br> | <br>  E-3<br>  V-23B                   | Simultaneous  <br>  Test          | None        |
| Function: Control  | Relative  <br> Humidity  <br>  (%) | 100.0                            | 100.0                                | <br>  A<br>    | <br>  E-3<br>  V-23B<br>               | Simultaneous  <br>  Test          | None        |
| Demon: N/A<br>Service: Control Cable                         | <br> Chemical  <br> Spray  <br>    | Boric Acid<br>1800 ppm<br>pH 5.0 | Boric Acid<br>  1800 ppm<br>  pH 5.0 |                | E-3<br>  V-23B<br>  CAL-40<br>  Note 2 | Simultaneous<br>Test,<br>Analysis | None        |
| Location: Containment  | Radiation                          | 3.87 x 10 <sup>7</sup> RADS      | 1.0 x 10 <sup>8</sup> RADS           | CAL-44         | E-3<br>V-23B                           | Sequential Test                   | None        |
| Flood Level Elev: 572'-2"<br> Above Flood Level: No          | Aging                              | 40 Years                         | <br>  40 Years                       | I              | CAL-91<br>E-3<br>V-23B                 | Sequential<br>Test                | None        |
| Needed for:<br>  Hot Shutdown   X    <br>  Cold Shutdown   X | <br> Submergence                   | 572'-2"                          | Note 3                               | B<br>I         | <br>  Note 3                           | Note 3                            | None        |

| Facility: Date  | esse Unit 1      | SYSTEM | COMPONENT QUATION WO | ORKSHEET | Index No | 21H-037A |
|-----------------|------------------|--------|----------------------|----------|----------|----------|
| Docket: 50-346  |                  |        |                      |          | Rev.:    | 2        |
| A               |                  | 11     | NOTES                |          |          |          |
| Prepared by: 70 | Tems Date 9/     | 30/83  |                      |          |          |          |
| Checked by:     | acconall Date ?! | 38/83  |                      |          |          |          |
|                 |                  |        |                      |          |          |          |

Based on this information, it can be concluded that the test subjected the cabling to an overall more severe environment than the postulated LOCA. Since the cabling remained functional throughout the test and after completion of the test, it can be concluded that the cabling would remain functional during and after exposure to the accident environment which would result from the postulated LOCA. (Reference G, H, X)

- 2. CAL-40 gualifies components tested in a high pH boric acid spray to a pH value of 5.
- 3. Cables are not affected by submergence. Cables do not service components located below maximum containment flood level.
- 4. Cable is Kerite Company stranded copper wire control cable 2C No. 9 AWG with Kerite FR insulation and Kerite FR jacket. (References E-11, ROC-23A, and ROC-23B)

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Facility: Davis-Besse Unit 1 SYSTEM COMPONENT EVALUATION WORKSHEET Docket: 50-346

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Prepared by: Nhamis Date: 11/1/23 Checked by: Amadonal Date: 11/2/13

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| KOULDMENT DESCRIPTION                                    | II ENVIRONMENT                     |                                  |                                  | DOCUMENTATION REF. |                                  | Qualification                     | Outstanding |
|--|------------------------------------|----------------------------------|----------------------------------|--------------------|----------------------------------|-----------------------------------|-------------|
|  | Parameter                          | Specification                    | Qualification                    | Specification!     | Qualification                    | Method                            | Items       |
| System: Generic 1E Elec-<br>trical Components            |                                    | l Year                           | 1.1 Years                        | P                  | E-3<br>Note 1<br>V-23B           | Simultaneous  <br>Test            | None        |
| Plant ID No. CO2<br>Component: Cable                     | <br> Temperature <br>  (°F)        | 283.0                            | 320.0                            | н, х               | E-3<br>V-23B                     | Simultaneous  <br>Test            | None        |
| Manufacturer: Kerite<br>Model Number: Note 4             |                                    | 52.0                             | 96.7                             | G, X               | E-3<br>V-23B                     | Simultaneous  <br>Test            | Ncne        |
| Function: Control  | Relative  <br> Humidity  <br>  (%) | 100.0                            | 100.0                            | Α                  | E−3<br>V−23B                     | Simultaneous  <br>Test            | None        |
| Demon: N/A  <br>Service: Control Cable                   | <br> Chemical  <br> Spray  <br>    | Boric Acid<br>1800 ppm<br>pH 5.0 | Goric Acid<br>1800 ppm<br>pH 5.0 | A                  | E-3<br>V-23B<br>CAL-40<br>Note 2 | Simultaneous<br>Test,<br>Analysis | None        |
| Location: Containment                                    | Radiation                          | 3.87 x 10 <sup>7</sup> RADS      | 1.0 x 10 <sup>8</sup> RADS       | CAL-44             | E-3<br>V-23B                     | Sequential Test                   | None        |
| Flood Level Elev: 572'-2"<br>Above Flood Level: No       | Aging                              | 40 Years                         | 40 Years                         | I                  | CAL-91<br>E-3<br>V-23B           | Sequential<br>Test                | None        |
| Needed for:<br>Hot Shutdown   X    <br>Cold Shutdown   X | <br> Submergence <br>              | 572'-2"                          | Note 3                           | B                  | Note 3                           | Note 3                            | None        |

| acility: Davis Besse Unit 1           | SYSTEM COMPONENT EQUATION WORKSHEET | Index No. 21H-038A |
|---------------------------------------|-------------------------------------|--------------------|
| ocket: 50-346<br>'repared by: 7 Leuis | Date 9/30/8) NOTES                  | Rev.: 2            |
| hecked by: AMacDonal                  | Date 9/30/83                        |                    |

Based on this information, it can be concluded that the test subjected the cabling to an overall more severe environment than the postulated LOCA. Since the cabling remained functional through ut the test and after completion of the test, it can be concluded that the cabling would remain functional during and after exposure to the accident environment which would result from the postulated LOCA. (Reference G, H, X)

CAL-40 qualifies components tested in a high pH boric acid spray to a pH value of 5.

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1. Cables are not affected by submergence. Cables do not service components located below maximum containment flood level.

 Cable is Kerite Company stranded copper wire control cable 4C No. 9 AWG with Kerite FR insulation and Kerite FR jacket. (References E-11, ROC-23A, and ROC-23B) Facility: Davis-Besse Unit 1 Docket: 50-346

Prepared by: Nhours Date: 11/1/83 Checked by: Animpres Date: 11/1/83

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| FOULDMENT DESCRIPTION                              | II ENVIRONMENT  |  |                                  | DOCUMENTATION REF. |                                  | Qualification                     | Outstanding |
|--|---|--|----------------------------------|--------------------|----------------------------------|-----------------------------------|-------------|
|  | Parameter   | ameter   Specification   Qualification   Specification   Qualification |                                  | Qualification      | Method                           | Items                             |             |
| System: Generic 1E Elec-<br>trical Components      | Cperating   | l Year   | 1.1 Years                        | F                  | E-3<br>Note 1<br>V-23B           | <br>Simultaneous  <br>Test        | None        |
| Plant ID No. Cl0<br>Component: Cable               | <br> Temperature <br>  (°F)                             | 283.0  | 320.0                            | H, X               | E-3<br>V-23B                     | Simultaneous  <br>Test            | None        |
| Manufacturer: Kerite<br>Model Number: Note 4       | Pressure  <br> (PSIA)                                   | 52.0   | 96.7                             | G, X               | E-3<br>V-23B                     | Simultaneous<br>Test              | None        |
| Punction: Control                                  | Relative   <br>  Relative   <br>  Humidity   <br>   (%) | 300.0  | 100.0                            |                    | E-3<br>V-23B                     | Simultaneous  <br>Test            | None        |
| Demon: N/A<br>Service: Control Cable               | Chemical  <br> Spray                                    | Boric Acid<br>1800 ppm<br>pH 5.0                                       | Boric Acid<br>1800 ppm<br>pH 5.0 |                    | E-3<br>V-23B<br>CAL-40<br>Note 2 | Simultaneous<br>Test,<br>Analysis | None        |
| Location: Containment                              | Radiation   | 3.87 x 10 <sup>7</sup> RADS  | 11.0 x 10 <sup>8</sup> RADS      | CAL-44             | E-3<br>V-235                     | Sequential Test                   | None        |
| Flood Level Elev: 572'-2"<br>Above Flood Level: No | Aging   | 40 Years   | 40 Years                         | III                | CAL-91<br>E-3<br>V-23B           | Sequential  <br>Test              | None        |
| Hot Shutdown   X    <br>  Cold Shutdown   X        | <br> Submergence  | 572'-2"  | Note 3                           | I B I              | Note 3                           | Note 3                            | None        |

SYSTEM COMPONENT EVALUATION WORKSHEET



| acility: Da Besse Unit 1 | SYSTEM       | COMPONENT QUATION WORKSHEET | Index No. 21H- |
|--------------------------|--------------|-----------------------------|----------------|
| ocket: 50-346            |              |                             | Rev.: 2        |
| 4.4 .                    | 21.6         | NOTES                       |                |
| repared by: 4 Leuro      | Date 9/30/83 |                             |                |
| hecked by: Inumer 1      | Date 9/30/83 |                             |                |

Based on this information, it can be concluded that the test subjected the cabling to an overall more severe environment than the postulated LOCA. Since the cabling remained functional throughout the test and after completion of the test, it can be concluded that the cabling would remain functional during and after exposure to the accident environment which would result from the postulated LOCA. (Reference G, H, X)

2. CAL-40 qualifies components tested in a high pH boric acid spray to a pH value of 5.

3. Cables are not affected by submergence. Cables do not service components located below maximum containment flood level.

 Cable is Kerite Company stranded copper wire control cable 2C No. 12 AWG with Kerite FR insulation and Kerite FR jackst. (References E-11, ROC-23A, and ROC-23B) Facility: Davis-Besse Unit 1 Docket: 50-346

Prepared by: NLewis Date: 11/1/93 Checked by: Annoull Date: 11/2/83

| EQUIPMENT DESCRIPTION                              | ENVIRONMENT                        |                                  |                                  | DOCUMENTATION REF. |                                  | Qualification                     | Outstanding |
|--|------------------------------------|----------------------------------|----------------------------------|--------------------|----------------------------------|-----------------------------------|-------------|
| Contract of the second                             | Parameter                          | Specification                    | Qualification                    | Specification      | Qualification                    | Method                            | Items       |
| System: Generic 1E Elec-<br>trical Components      |                                    | l Year                           | 1.1 Years                        | F                  | E-3<br>Note 1<br>V-23B           | Simultaneous  <br>Test            | None        |
| Plant ID No. Cll<br>Component: Cable               | <br> Temperature <br>  (°F)        | 283.0                            | 320.0                            | H, X               | I<br>E-3<br>V-23B                | Simultaneous  <br>Test            | None        |
| Manufacturer: Kerite<br>Model Number: Note 4       | Pressure  <br> (PS1A)              | 52.0                             | 96.7                             | <br>  G, X         | I E-3<br>I V-23B                 | Simultaneous I<br>Test I          | None        |
| Punction: Control                                  | Relative  <br> Humidity  <br>  (%) | 100.0                            | 100.0                            | I A                | E-3<br>V-23B                     | Simultaneous  <br>Test            | None        |
| Demon: N/A<br>Service: Control Cable               | <br> Chemical  <br> Spray  <br>    | Boric Acid<br>1800 ppm<br>pH 5.0 | Boric Acid<br>1800 ppm<br>pH 5.0 |                    | E-3<br>V-23B<br>CAL-40<br>Note 2 | Simultaneous<br>Test,<br>Analysis | None        |
| Location: Containment                              |                                    | 3.87 x 10 <sup>7</sup> RADS      | 1.0 x 10 <sup>8</sup> RADS       | CAL-44             | E-3  <br>  V-23B                 | Sequential Test                   | None        |
| Flood Level Elev: 572'-2"<br>Above Flood Level: No | Aging                              | 40 Years                         | 40 Years                         | I<br>I<br>I        | CAL-91<br>E-3<br>V-23B           | Sequential  <br>Test              | None        |
| Hot Shutdown   X  <br>Cold Shutdown   X            | Submergence                        | 572'-2*                          | Note 3                           | I<br>I В           | Note 3                           | Note 3                            | None        |

SYSTEM COMPONENT EVALUATION WORKSHEET



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| 'acility: Dave-Besse Unit 1 | SYSTEM COMPONENT SUATION WORKSHEET | Index No. 21H-040A |
|-----------------------------|------------------------------------|--------------------|
| bocket: 50-346              |                                    | Rev.: 2            |
| 2 0.                        | NOTES                              |                    |
| repared by: 7 Line Di       | ate 7/36/83                        |                    |
| thecked by: AmacOord Di     | ate 9/30/13                        |                    |
|                             |                                    |                    |

Based on this information, it can be concluded that the test subjected the cabling to an overall more severe environment than the postulated LOCA. Since the cabling remained functional throughout the test and after completion of the test, it can be concluded that the cabling would remain functional during and after exposure to the accident environment which would result from the postulated LOCA. (Reference G, H, X)

2. CAL-40 gualifies components tested in a high pH boric acid spray to a pH value of 5.

3. Cables are not affected by submergence. Cables do not service components located below maximum containment flood level.

 Cable is Kerite Company stranded copper wire control cable 5C No. 12 AWG with Kerite FR insulation and Kerite FR jacket. (References E-11, ROC-23A, and ROC-23B) Facility: Divis-Besse Unit 1 Docket: 50-346

Index No. 221H-041 Rev.: 2

Checked by: Nharing Date: 11/2/13

| EQUIPMENT DESCRIPTION  | ENVIRONMENT                            |                                  |                                  | DOCUMENTATION REF. |                                  | Qualification                     | Outstanding |
|--|--|----------------------------------|----------------------------------|--------------------|----------------------------------|-----------------------------------|-------------|
| I The state of the | Parameter                              | Specification                    | Qualification                    | Specification      | Qualification                    | Method                            | Items       |
| System: Generic 1E Elec-<br>trical Components  | <br> Operating   <br> Time             | l Year                           | 1.1 Years                        | P                  | E-3<br>Note 1<br>V-23B           | Simultaneous  <br>Test            | None        |
| Plant ID No. Cl2   | Temperature<br>(°F)                    | 283.0                            | 320.0                            | Н, Х               | E-3<br>V-235                     | Simultaneous<br>Test              | None        |
| Manufacturer: Kerite  <br> <br> Model Number: Note 4   |  | 52.0                             | 96.7                             | G, X               | E-3<br>V-23B                     | Simultaneous<br>Test              | None        |
| Function: Control  | Relative   <br>  Humidity   <br>   (%) | 100.0                            | 100.0                            |                    | E-3<br>V-23B                     | Simultaneous  <br>Test            | None        |
| Demon: N/A<br>Service: Control Cable   | <br> Chemical   <br>  Spray            | Boric Acid<br>1800 ppm<br>pH 5.0 | Boric Acid<br>1800 ppm<br>pH 5.0 |                    | E-2<br>V-23B<br>CAL-40<br>Note 2 | Simultaneous<br>Test,<br>Analysis | None        |
| Location: Containment  | Radiation                              | 3.87 x 10 <sup>7</sup> RADS      | 1.0 x 10 <sup>8</sup> RADS       | CAL-44             | E3<br>V-23B                      | Sequential Test                   | None        |
| Flood Level Elev: 572'-2"<br>Above Flood Level: No   | Aging                                  | 40 Years                         | 40 Years                         | I                  | CAL-91<br>E-3<br>V-23B           | Sequential  <br>Test              | None        |
| Hot Shutdown   X  <br>Cold Shutdown   X  | Submergence                            | 572'-2"                          | Note 3                           |                    | Note 3                           | Note 3                            | None        |

SYSTEM COMPONENT EVALUATION WORKSHEET

acility: Davis Besse Unit 1 SYETEM COMPONENT TION WORKSHEET Index No. 21H-041A 50-346 ocket: Rev. : 2 NOTES 'hecked by: Date

Based on this information, it can be concluded that the test subjected the cabling to an overall more severe environment than the postulated LOCA. Since the cabling remained functional throughout the test and after completion of the test, it can be concluded that the cabling would remain functional during and after exposure to the accident environment which would result from the postulated LOCA. (Reference G, H, X)

- CAL-40 qualifies components tested in a high pH boric acid spray to a pH value of 5.
- 3. Cables are not affected by submergence. Cables do not service components located below maximum containment flood level.
- Cable is Kerite Company stranded copper wire control cable 7C No. 12 AWG with Kerite FK insulation and Kerite FR jacket. (References E-11, ROC-23A, and ROC-23B)
Facility: Davis-Besse Unit 1 SYSTEM COMPONENT EVALUATION WORKSHEET Docket: 50-346



Prepared by: N Lewis Date: 11/1/17 Checked by: Marmoonal Date: 11/2/13

| EQUIPMENT DESCRIPTION                                      | II ENVIRONMENT                  |                                  |                                  | DOCUMENTATION REF. |                                 | Qualification                     | Outstanding |
|--|---------------------------------|----------------------------------|----------------------------------|--------------------|---------------------------------|-----------------------------------|-------------|
| 1  | Parameter                       | Specification                    | Qualification                    | Specification      | Qualification                   | Method                            | Items       |
| System: Generic 1E Elec-<br>trical Components              | <br> Operating  <br> Time       | l Year                           | 1.1 Years                        | F                  | E-3<br>  Note 1<br>  V-23B      | Simultaneous<br>Test              | None        |
| Plant ID No. C13   | Temperature                     | 283.0                            | 320.0                            | в, х               | E-3<br>  V-23B                  | Simultaneous<br>Test              | None        |
| Manufacturer: Kerite                                       |                                 | 52.0                             | 96.7                             | <br>  G, X<br>     | E-3<br>  V-23B                  | Simultaneous<br>Test              | None        |
| Function: Control  <br>   <br>   <br>  Accuracy: Spec: N/A |                                 | 100.0                            | 100.0                            | і А<br>І           | E-3<br>V-238                    | Simultaneous<br>Test              | None        |
| Demon: N/A   | <br> Chemical  <br> Spray  <br> | Boric Acid<br>1800 ppm<br>pH 5.0 | Boric Acid<br>1800 ppm<br>pH 5.0 |                    | E3<br>V-23B<br>CAL-40<br>Note 2 | Simultaneous<br>Test,<br>Analysis | None        |
| Location: Containment                                      | Radiation                       | 3.87 x 10 <sup>7</sup> RADS      | 1.0 x 10 <sup>8</sup> RADS       | CAL-44             | E-3                             | Sequential Test                   | None        |
| Flood Level Elev: 572'-2" <br> Above Flood Level: No       |                                 | 40 Years                         | 40 Years                         | <br>  I            | CAL-91<br>  E-3<br>  V-23B      | Sequential<br>Test                | None        |
| Needed for:  | <br> Submergence <br>           | 572'-2"                          | Notes 3 and 5                    | I<br>I B<br>I      | Note 3<br>CAL-65                | Note 3                            | None        |

| acility: D              | avis Besse Unit 1 |          | SYSTE | M COMPONENT | E UATION WORKSHEET | Index No | 21H-042A |
|-------------------------|-------------------|----------|-------|-------------|--------------------|----------|----------|
| ocket: 5<br>repared by: | 7 Leuis           | Date 9/3 | 1/83  | ,           | NOTES              | Rev.:    | 2        |
| hecked by:              | At the hard       | Date 9/  | × /83 |             |                    |          |          |

The test subjected the cabling to an initial transient of 320°F and 96.7 psia for 13 hours, followed by a cooldown to ambient. The cabling was then subjected to a second transient of 223°F and 19.7 psia for 118 hours. The temperature in containment peaks at 283°F in 17 seconds. The pressure in containment peaks at 52 psia in 50 seconds. At 13 hours, the conditions are 172°F and 20.5 psia. The conditions in containment return to ambient after 7 days.

Based on this information, it can be concluded that the test subjected the cabling to an overall more severe environment than the postulated LOCA. Since the cabling remained functional throughout the test and after completion of the test, it can be concluded that the cabling would remain functional during and after exposure to the accident environment which would result from the postulated LOCA. (Reference G, H, X)

CAL-40 qualifies components tested in a high pH boric acid spray to a pH value of 5.

- The cables become submerged due to a LOCA. The cables are insulated with a chlorosulfonated polyethylene insulation system. The steam air chemical spray environment is the most severe environment imposed on the cables. When cable submergence tests are performed with relative humidity conditions in the space between the water surface and the closing cover, the most severe degradation takes place in this space above the water surface. Based on the above information, it is considered that since the cabling passed the LOCA tests, the cabling would withstand submergence satisfactorily. (Reference V-23A)
- . Cable is Kerite Company stranded copper wire control cable 9C No. 12 AWG with Kerite FR insulation and Kerite FR jacket. (References E-11, ROC-23A, and ROC-23B)
- The C13 cable would successfully withstand submergence, would remain functional during and after exposure to a LOCA, and operation of the valve MV5010C would not be impaired. Also, the inability to operate MV5010C for any reason would not impact any other safety-related functions of mislead an operator. (Reference Evaluation Worksheet Index No. 221H-152)

Docket: 50-346

Index No. 221H-043 Rev.: 2

Prepared by: Nheins Date: 11/1/12 Checked by: Annon Date: 11/1/12 Date: 11/1/12

| EQUIPMENT DESCRIPTION                              |                           | ENVIRONMENT                      |                                  | DOCUMENTAT    | DOCUMENTATION REF.   Qualification |                                   | Outstanding |
|--|---------------------------|----------------------------------|----------------------------------|---------------|------------------------------------|-----------------------------------|-------------|
|  | Parameter                 | Specification                    | Qualification                    | Specification | Qualification                      | Method                            | Items       |
| System: Generic 1E Elec-  <br>trical Components    | Operating  <br> Time      | l Year                           | 1.1 Years                        |               | E-3<br>Note 1<br>V-23B             | Simultaneous  <br>Test            | None        |
| Plant ID No. Cl4<br>Component: Cable               | Temperature               | 283.0                            | 320.0                            | H, X          | E-3<br>V-23B                       | Simultaneous  <br>Test            | None        |
| Manufacturer: Kerite<br>Model Number: Note 4       | Pressure  <br> (PSIA)     | 52.0                             | 96.7                             | G, X          | E-3<br>V-23B                       | Simultaneous<br>Test              | None        |
| Function: Control                                  |                           | 100.0                            | 100.0                            |               | E-3<br>V-23B                       | Simultaneous<br>Test              | None        |
| Demon: N/A<br>Service: Control Cable               | <br> Chemical  <br> Spray | Boric Acid<br>1800 ppm<br>pH 5.0 | Boric Acid<br>1800 ppm<br>pH 5.0 | A             | E-3<br>V-23B<br>CAL-40<br>Note 2   | Simultaneous<br>Test,<br>Analysis | None        |
| Location: Containment                              | Radiation                 | 3.87 x 10 <sup>7</sup> RADS      | 1.0 x 10 <sup>8</sup> RADS       | CAL-44        | E-3<br>V-23B                       | Sequential Test                   | None        |
| Flood Level Elev: 572'-2"<br>Above Flood Level: No | Aging                     | 40 Years                         | 40 Years                         | III           | CAL-91<br>E-3<br>V-235             | Sequential<br>Test                | None        |
| Hot Shutdown   X    <br>  Cold Shutdown   X        | Submergence               | 572'-2"                          | Note 3                           | B             | Note 3                             | Note 3                            | None        |



| 'acility: Da Besse Unit 1                     | SYSTEM COMPONENT QUATION WORKSHEET | Index No 21H-043A<br>Rev.: 2 |
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| repared by: <b>3 Lews</b> Date<br>thecked by: | e <u>9/30/83</u><br>NOTES          |                              |
|   |                                    |                              |

The test subjected the cabling to an initial transient of 320°F and 96.7 psia for 13 hours, followed by a cooldown to ambient. The cabling was then subjected to a second transient of 223°F and 19.7 psia for 118 hours. The temperature in containment peaks at 283°F in 17 seconds. The pressure in containment peaks at 52 psia in 50 seconds. At 13 hours, the conditions are 172°F and 20.5 psia. The conditions in containment return to ambient after 7 days.

Based on this information, it can be concluded that the test subjected the cabling to an overall more severe environment than the postulated LOCA. Since the cabling remained functional throughout the test and after completion of the test, it can be concluded that the cabling would remain functional during and after exposure to the accident environment which would result from the postulated LOCA. (Reference G, H, X)

2. CAL-40 qualifies components tested in a high pH boric acid spray to a pH value of 5.

3. Cables are not affected by submergence. Cables do not service components located below maximum containment flood level.

 Cable is Kerite Company stranded copper wire control cable 12C No. 12 AWG with Kerite FR insulation and Kerite FR jacket. (References E-11, ROC-23A, and ROC-23B)



SYSTEM COMPONENT EVALUATION WORKSHEET



Facility: Davis-Besse Unit 1 Docket: 50 346

Prepared by: Nheins Date: 11/187 Checked by: Ancar Donal Date: 11/2/13

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| EQUIPMENT DESCRIPTION                                    | II ENVIRONMENT              |                                  |                                  | DOCUMENTATION REF. |                                  | Qualification                     | Outstanding |
|--|-----------------------------|----------------------------------|----------------------------------|--------------------|----------------------------------|-----------------------------------|-------------|
| 1  | Parameter                   | Specification                    | Qualification                    | Specification      | Qualification                    | Method                            | Items       |
| System: Generic 1E Elec-<br>trical Components            | <br> Operating  <br> Time   | l Year                           | 1.1 Years                        | P                  | E-3<br>Note 1<br>V-23B           | Simultaneous  <br>Test            | None        |
| Plant ID No. C15<br>Component: Cable                     | <br> Temperature <br>  (°F) | 283.0                            | 320.0                            | н, х<br>1          | E-3<br>V-23B                     | Simultaneous  <br>Test            | None        |
| Manufacturer: Kerite<br> <br> Model Number: Note 4       |                             | 52.0                             | 96.7                             | G, X               | E-3<br>V-23B                     | Simultaneous  <br>  Test          | None        |
| Punction: Control  |                             | 100.0                            | 100.0                            | A                  | E-3<br>V-23B                     | Simultaneous  <br>Test            | None        |
| Demon: N/A<br>Service: Control Cable                     | <br> Chemical  <br> Spray   | boric Acid<br>1800 грт<br>рН 5.0 | Boric Acid<br>1800 ppm<br>pH 5.0 | A                  | E-3<br>V-23B<br>CAL-40<br>Note 2 | Simultaneous<br>Test,<br>Analysis | None        |
| Location: Containment                                    | Radiation                   | 3.87 x 20 <sup>7</sup> RADS      | 11.0 x 10 <sup>9</sup> RADS      | CAL-44             | E-3<br>V-23B                     | Seguential Test                   | None        |
| Flood Level Elev: 572'-2"<br> Above Flood Level: No      | Aging                       | 40 Years                         | <br>  40 Years<br>               | I                  | CAL-91<br>E-3<br>V-23B           | Sequential<br>Test                | None        |
| Needed for:<br>Hot Shutdown   X    <br>Cold Shutdown   X |                             | 572'-2"                          | Note 3                           | B                  | Note 3                           | Note 3                            | Mone        |

| Pacility: Da-Jesse Unit 1                                     | SYSTEM COMPONENT QUATION WORKSHEET | Index No 21H-044A |
|---|------------------------------------|-------------------|
| Prepared by: <u>J. Leuis</u><br>Checked by: <u>Invicenter</u> | Date 9/30/83<br>Date 9/30/83       | Nev.:             |

 The test subjected the cabling to an initial transient of 320°F and 96.7 psia for 13 hours, followed by a cooldown to ambient. The cabling was then subjected to a second transient of 223°F and 19.7 psia for 1.8 hours. The temperature in containment peaks at 283°F in 17 seconds. The pressure in containment peaks at 52 psia in 50 seconds. At 13 hours, the conditions are 172°F and 20.5 psia. The conditions in containment return to ambient after 7 days.

Based on this information, it can be concluded that the test subjected the cabling to an overall more severe environment than the postulated LOCA. Since the cabling remained functional throughout the test and after completion of the test, it can be concluded that the cabling would remain functional during and after exposure to the accident environment which would result from the postulated LOCA. (Reference G, H, X)

- 2. CAL-40 qualifies components tested in a high pH boric acid spray to a pH value of 5.
- 3. Cables are not affected by submergence. Cables do not service components located below maximum containment flood level.
- Cable is Kerite Company stranded copper wire control cable 3C No. 12 AWG with Kerite FR insulation and Kerite FR jacket. (References E-11, ROC-23A, and ROC-23B)



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 Facility:
 Davis-Besse Unit 1
 SYSTEM COMPONENT EVALUATION WORKSHEET

 Docket:
 50-346
 SYSTEM COMPONENT EVALUATION WORKSHEET

Checked by: Maria Date: 11/197 Date: 11/197

| EQUIPMENT DESCRIPTION                              | ENVIRONMEN <sup>®</sup>                 |                                  |                                   | DOCUMENTATION REF. |                                  | Qualification                     | Outstanding |
|--|---|----------------------------------|-----------------------------------|--------------------|----------------------------------|-----------------------------------|-------------|
|  | Parameter                               | Specification                    | Qualification                     | Specification      | Qualification                    | Method                            | Items       |
| System: Generic 1E Elec-<br>trical Components      | <br> Operating  <br> Time               | l Year                           | <br>  1.1 Years<br>               |                    | E-3<br>Note 1<br>V-23B           | Simultaneous<br>Test              | None        |
| Plant ID No. C20                                   | <br> Temperature <br>  (°F)             | 283.0                            | 320.0                             | H, X  <br>         | E-3<br>V-23B                     | Simultaneous<br>Test              | None        |
| Manufacturer: Kerite<br>Model Number: Note 4       | 2ressure  <br>  (PSIA)                  | 52.0                             | <br>  98.7<br>                    | G, X               | E-3<br>V-23B                     | Simultaneous<br>Test              | None        |
| Function: Control                                  | <br> Relative  <br> Humidity  <br>  (%) | 100.0                            | 100.0                             |                    | E−3<br>V−23B                     | Simultaneous<br>Test              | None        |
| Demon: N/A  <br>Service: Control Cable             | <br> Chemical  <br> Spray  <br>         | Boric Acid<br>1800 ppm<br>pH 5.0 | Boric Acid<br>i 800 ppm<br>pH 5.0 | A                  | E-3<br>V-23B<br>CAL-40<br>Note 2 | Gimultaneous<br>Test,<br>Analysis | None        |
| Location: Containment                              | Radiation                               | 3.87 x 10 <sup>7</sup> RADS      | 11.0 x 10 <sup>8</sup> RADS       | CAL-44             | E-3<br>V-23B                     | Sequential Test                   | None        |
| Flood Level Elev: 572'-2"<br>Above Flood Level: No | Aging                                   | 40 Years                         | <br>  40 Years<br>                | I                  | CAL-91<br>E-3<br>V-23B           | Sequential<br>Test                | None        |
| Needed for:  | <br> Submergence <br>                   | 572"-2"                          | <br>  Notes 3 and 5<br>           |                    | Note 3<br>CAL-65                 | Note 3                            | None        |

| acility: Davis Besse Unit 1                           | SYSTEM COMPONENT EQUATION WORKSHEET | Index No. 21H-045A |
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| repared by: 7 Levis<br>hecked by: <u>Striketoredf</u> | Date 9/30/8) NOTES                  | Kev.:2             |

. The test subjected the cabling to an initial transient of 320°F and 96.7 psia for 13 hours, followed by a cooldown to ambient. The cabling was then subjected to a second transient of 223°F and 19.7 psia for 118 hours. The temperature in containment peaks at 283°F in 17 seconds. The pressure in containment peaks at 52 psia in 50 seconds. At 13 hours, the conditions are 172°F and 20.5 psia. The conditions in containment return to ambient after 7 days.

Based on this information, it can be concluded that the test subjected the cabling to an overall more severe environment than the postulated LOCA. Since the cabling remained functional throughout the test and after completion of the test, it can be concluded that the cabling would remain functional during and after exposure to the accident environment which would result from the postulated LOCA. (Reference G, H, X)

CAL-40 qualifies components tested in a high pH boric acid spray to a pH value of 5.

- . The cables become submerged due to a LOCA. The cables are insulated with a chlorosulfonated polyethylene insulation system. The steam air chemical spray environment is the most severe environment imposed on the cables. When cable submergence tests are performed with relative humidity conditions in the space between the water surface and the closing cover, the most severe degradation takes place in this space above the water surface. Eased on the above information, it is considered that since the cabling passed the LOCA tests, the cabling would withstand submergence satisfactorily. (Reference V-23A)
- Cable is Kerite Company stranded copper wire control cable 2C No. 14 AWG with Kerite FR insulation and Kerite FR jacket. (References E-11, ROC-23A, and ROC-23B)
- i. The cabling would successfully withstand submergence, would remain functional during and after exposure to a LOCA, and operation of the sealed limit switches (ZSDH11A and ZSDH12A) would not be impaired. (Reference Evaluation Worksheet Index Nos. 224E-014 and 224H-015)

Facility: Davis-Besse Unit 1 Docket: 50-346 NLeurs

SYSTEM COMPONENT EMPLUATION WORKSHEET



Prepared by: NLeurs Checked by:

Date: 11/1/82 Date: 11/2/3

| FOULPMENT DESCRIPTION                                  |                                    | ENVIRONMENT DOCUMENTATION REF.   |  | ION REF.        | Qualification                    | Outstanding                       |       |
|--|------------------------------------|----------------------------------|--|-----------------|----------------------------------|-----------------------------------|-------|
| byorritari buoonirriton                                | Parameter                          | Specification                    | Qualification                              | [Specification] | Qualification                    | Method                            | Items |
| System: Generic 1E Elec-<br>trical Components          | Operating  <br> Time               | l Year                           | 1.1 Years                                  | F               | E-3<br>Note 1<br>V-23B           | Simultaneous  <br>Test            | None  |
| Plant ID No. C21<br>Component: Cable                   | <br> Temperature <br>  (°F)        | 283.0                            | 320.0                                      | н, х            | E-3<br>V-23B                     | Simultaneous<br>Test              | None  |
| Manufacturer: Rerite<br>Model Number: Note 4           |                                    | 52.0                             | 96.7                                       | G, X            | E-3<br>V-23B                     | Simultaneous  <br>Test            | None  |
| Function: Control<br>Accuracy: Spec: N/A               | Relative  <br> Humidity  <br>  (%) | 100.0                            | 100.0                                      | A               | E-3<br>V-23B                     | Simultaneous<br>Test              | None  |
| Demon: N/A<br>Service: Control Cable                   |                                    | Boric Acid<br>1800 ppm<br>pH 5.0 | <br>  Boric Acid<br>  1800 ppm<br>  pH 5.0 | A               | E-3<br>V-23B<br>CAL-40<br>Note 2 | Simultaneous<br>Test,<br>Analysis | None  |
| Location: Containment                                  | Radiation                          | 3.87 x 10 <sup>7</sup> RADS      | 11.0 x 10 <sup>8</sup> RADS                | CAL-44          | E-3<br>V-23B                     | Sequential Test                   | None  |
| Flood Level Elev: 572'-2"<br>Above Flood Level: No     | Aging                              | 40 Years                         | <br>  40 Years<br>                         | I               | CAL-91<br>E-3<br>V-23B           | Sequential<br>Test                | None  |
| Needed for:<br>Hot Shutdown   X  <br>Cold Shutdown   X | <br>  <br>  Submergence <br>       | 572'-2"                          | <br> <br>  Note 3<br>                      | l B             | Note 3                           | Note 3                            | None  |

| Facility: Dars-Besse Unit 1 | SYSTEM COMPONENT LUATION WORKSHEET | Index No 221H-046A |
|-----------------------------|------------------------------------|--------------------|
| Docket: 50-346              | Notes 9/20/82 NOTES                | Rev.:2             |
| Checked by:                 | Date 1/30/83                       |                    |

 The test subjected the cabling to an initial transient of 320°F and 96.7 psia for 13 hours, followed by a cooldown to ambient. The cabling was then subjected to a second transient of 223°F and 19.7 psia for 118 hours. The temperature in containment peaks at 283°F in 17 seconds. The pressure in containment peaks at 52 psia in 50 seconds. At 13 hours, the conditions are 172°F and 20.5 psia. The conditions in containment return to ambient after 7 days.

Based on this information, it can be concluded that the test subjected the cabling to an overall more severe environment than the postulated LOCA. Since the cabling remained functional throughout the test and after completion of the test, it can be concluded that the cabling would remain functional during and after exposure to the accident environment which would result from the postulated LOCA. (Reference G, H, X)

- 2. CAL-40 qualifies components tested in a high pH boric acid spray to a pH value of 5.
- 3. Cables are not affected by submergence. Cables do not service components located below maximum containment flood level.
- Cable is Kerite Company stranded copper wire control cable 4C No. 14 AWG with Kerite FR insulation and Kerite FR jacket. (References E-11, ROC-23A, and ROC-23B)

Facility: Davis-Besse Unit 1 SYSTEM COMPONENT ELEVATION WORKSHEET Docket: 50-346



Prepared by: Nlewis Date: 11/183 Checked by: Annow Date: 11/183

| COULDMENT DESCRIPTION                              | II ENVIRONMENT                          |                                  |                                  | DOCUMENTATION REF. |                                  | Qualification                     | Outstanding |
|--|---|----------------------------------|----------------------------------|--------------------|----------------------------------|-----------------------------------|-------------|
|  | Parameter                               | Specification                    | Qualification                    | {Specification}    | Qualification                    | Method                            | Items       |
| System: Generic 1E Elec-                           |   | l Year                           | 1.1 Years                        | F                  | E-3<br>Note 1<br>V-23B           | Simultaneous<br>Test              | None        |
| Plant ID No. C22<br>Component: Cable               | ן<br> Temperature <br>  (°דּ)           | 283.0                            | 320.0                            | н, х               | E-3<br>V-23B                     | Simultaneous<br>Test              | None        |
| Manufacturer: Kerite<br>Model Number: Note 4       | Pressure  <br>  (PSIA)                  | 52.0                             | 96.7                             | G, X               | E-3<br>V-23B                     | Simultaneous  <br>  Test          | None        |
| Function: Control                                  | <br> Relative  <br> Humidity  <br>  (%) | 100.0                            | 100.0                            |                    | E-3<br>V-23B                     | Simultaneous  <br>Test            | None        |
| Demon: N/A   | <br> Chemical  <br> Spray  <br>         | Boric Acid<br>1800 ppm<br>pH 5.0 | Boric Acid<br>1800 ppm<br>pH 5.0 | A                  | E-3<br>V-23B<br>CAL-40<br>Note 2 | Simultaneous<br>Test,<br>Analysis | None        |
| Location: Containment                              | Radiation                               | 3.87 x 10 <sup>7</sup> RADS      | 1.0 x 10 <sup>8</sup> RADS       | CAL-44             | E-3<br>V-23B                     | Sequential Test                   | None        |
| Flood Level Elev: 572'-2"<br>Above Flood Level: No | Aging                                   | 40 Years                         | 40 Years                         | III                | CAL-33<br>E-3<br>V-23B           | Sequential  <br>Test              | None        |
| Needed for:  | <br> Submergence <br>                   | 572'-2"                          | Note 3                           | I B I              | Note 3                           | Note 3                            | None        |

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| Pacility: Davis-Besse Unit 1 | SYSTEM COMPONENT EXACUATION WORKSHEET | Index No. 21H-047A |
| locket: 50-346               | 9/30/83 NOTES                         |                    |
| Thecked by: Date             | 1/3/1/83                              |                    |
| inecked by: diastrice Date   | 13:103                                |                    |

The test subjected the cabling to an initial transient of 320°F and 96.7 psia for 13 hours, followed by a cooldown to ambient. The cabling was then subjected to a second transient of 223°F and 19.7 psia for 118 hours. The temperature in containment peaks at 283°F in 17 seconds. The pressure in containment peaks at 52 psia in 50 seconds. At 13 hours, the conditions are 172°F and 20.5 psia. The conditions in containment return to ambient after 7 days.

Based on this information, it can be concluded that the test subjected the cabling to an overall more severe environment than the postulated LOCA. Since the cabling remained functional throughout the test and after completion of the test, it can be concluded that the cabling would remain functional during and after exposure to the accident environment which would result from the postulated LOCA. (Reference G, H, X)

2. CAL-40 gualifies components tested in a high pH boric acid spray to a pH value of 5.

1.

3. Cables are not affected by submergence. Cables do not service components located below maximum containment flood level.

Cable is Kerite Company stranded copper wire control cable 5C No. 14 AWG with Kerite FR insulation and Kerite FR jacket. (References E-11, ROC-23A, and ROC-23B) Facility: Davis-Besse Unit 1 SYSTEM COMPONENT 5. Docket: 50-346

Prepared by: Nheeris Date: 11/1/83 Checked by: Ance Date: 11/1/83

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| EQUIPMENT DESCRIPTION                              | ENVIRONMENT                       |                                      |                                  | DOCUMENTATION REF. |                                  | Qualification                     | Outscanding |
|--|-----------------------------------|--------------------------------------|----------------------------------|--------------------|----------------------------------|-----------------------------------|-------------|
| 1  | Parameter                         | Specification                        | Qualification                    | Specification      | Qualification                    | Method                            | Items       |
| System: Generic 1E Elec-  <br>trical Components    | <br> Operating  <br> Time         | <br>l Year  <br>                     | 1.1 Years                        | F                  | E-3<br>Note 1<br>V-23B           | Simultaneous<br>Test              | None        |
| Plant ID No. C23                                   | Temperature                       | 283.0 I                              | 320.0                            | Н, Х               | E-3<br>V-23B                     | Simultaneous<br>Test              | None        |
| Manufacturer: Kerite                               | Pressure  <br>  (PSIA)            | 52.0                                 | 96.7                             | G, X               | E-3<br>V-23B                     | Simultaneous<br>Test              | None        |
| Punction: Control                                  | Relative    <br> Humidity     (%) | 100.0                                | 100.0                            | A                  | E-3<br>V-23B                     | Simultaneous<br>Test              | None        |
| Demon: N/A<br>Service: Control Cable               | <br> Chemical  <br> Spray         | Boric Acid  <br>1800 ppm  <br>pH 5.0 | Boric Acid<br>1800 ppm<br>pH 5.0 |                    | E-3<br>V-23B<br>CAL-40<br>Note 2 | Simeltaneous<br>Test,<br>Analysis | None        |
| Location: Containment                              | <br> Radiation                    | 3.87 x 10 <sup>7</sup> RADS          | 1.0 x 10 <sup>8</sup> RADS       | <br>  CAL-44       | E-3<br>V-23B                     | Sequential Test                   | None        |
| Flood Level Elev: 572'-2"<br>Above Flood Level: No | Aging                             | 40 Years                             | 40 Years                         | I                  | CAL-91<br>E-3<br>V-23B           | Sequential<br>Test                | None        |
| Hot Shutdown   X  <br>Cold Shutdown   X            | Submergence                       | 572'-2"                              | Note 3                           | I B                | Note 3                           | Note 3                            | None        |





| Pacility: Data Besse Unit 1<br>Docket: 50-346 | SYSTEM COMPONENT QUATION WORKSHEET | Index No 21H-048A<br>Rev.: 2 |
|---|------------------------------------|------------------------------|
| mand here & Louis                             | Date 9/30/81 NOTES                 |                              |
| Checked by:                                   | Date 7/3-/83                       |                              |
|   |                                    |                              |

 The test subjected the cabling to an initial transient of 320°F and 96.7 psia for 13 hours, followed by a cooldown to ambient. The cabling was then subjected to a second transient of 223°F and 19.7 psia for 118 hours. The temperature in containment peaks at 283°F in 17 seconds. The pressure in containment peaks at 52 psia in 50 seconds. At 13 hours, the conditions are 172°F and 20.5 psia. The conditions in containment return to ambient after 7 days.

Based on this information, it can be concluded that the test subjected the cabling to an overall more severe environment than the postulated LOCA. Since the cabling remained functional throughout the test and after completion of the test, it can be concluded that the cabling would remain functional during and after exposure to the accident environment which would result from the postulated LOCA. (Reference G, H, X)

2. CAL-40 qualifies components tested in a high pH boric acid spray to a pH value of 5.

3. Cables are not affected by submergence. Cables do not service components located below maximum containment flood level.

 Cable is Kerite Company stranded copper wire control cable 7C No. 14 AWG with Kerite FR insulation and Kerite FR jacket. (References E-11, ROC-23A, and ROC-23B) Facility: Data-Besse Unit 1 SYSTEM COMPONENT E DATION WORKSHEET Docket: 50-346



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Prepared by: Nhouis Date: 11/1/83 Checked by: Analong Date: 11/1/83

|  | II ENVIRONMENT              |                                  | DOCUMENTATION REF.                   |                 | Qualification                    | Outstanding                       |       |
|--|-----------------------------|----------------------------------|--------------------------------------|-----------------|----------------------------------|-----------------------------------|-------|
|  | Parameter                   | Specification                    | Qualification                        | [Specification] | Qualification                    | Method                            | Items |
| System: Generic 1E Elec-<br>trical Components              | Operating                   | l Year                           | 1.1 Years                            | F I             | E-3<br>Note 1<br>V-23B           | Simultaneous  <br>  Test          | None  |
| Plant ID No. C24<br>Component: Cable                       | Temperature<br>(°F)         | 283.0                            | 320.0                                | н, х I          | E-3<br>V-23B                     | Simultaneous  <br>  Test  <br>    | None  |
| Manufacturer: Rerite                                       | Pressure<br>(PSIA)          | 52.0                             | 96.7                                 | G, X            | E-3<br>V-23B                     | Simultaneous  <br>  Test  <br>    | None  |
| Punction: Control  | Relative<br>Humidity        | 100.0                            | 100.0                                |                 | E-3<br>V-23B                     | Simultaneous  <br>  Test          | None  |
| Demon: N/A   | <br> Chemical<br> Spray<br> | Boric Acid<br>1800 ppm<br>pH 5.0 | Boric Acid<br>  1800 ppm<br>  pH 5.0 | A               | E-3<br>V-23B<br>CAI-40<br>Note 2 | Simultaneous<br>Test,<br>Analysis | None  |
| Location: Containment                                      | Radiation                   | 3.87 x 10 <sup>7</sup> RADS      | 1.0 x 10 <sup>8</sup> RADS           | CAL-44          | E-3<br>V-23B                     | Sequential Test                   | None  |
| Flood Level Elev: 572'-2" <br> Above Flood Level: No       | Aging                       | 40 Years                         | <br>  40 Years<br>                   | I               | CAL-91<br>E-3<br>V-23B           | <br>  Sequential<br>  Test        | None  |
| Needed for:<br>  Hot Shutdown   X  <br>  Cold Shutdown   X | <br> Submergence <br>       | 572°-2"                          | <br>  Note 3                         | В               | Note 3                           | Note 3                            | None  |

| Facility: Davis-Besse Unit 1 | SYSTEM COMPONENT SULUATION WORKSHEET | Index No 21H-049A |
|------------------------------|--------------------------------------|-------------------|
| Docket: 50-346               | A A NOTED                            | Rev. :            |
| 3 Pours para P               | NOTES                                |                   |
| Charked by: Date 11          | 13:183                               |                   |
| checked by: 2000             |                                      |                   |

 The test subjected the cabling to an initial transient of 320°F and 96.7 psia for 13 hours, followed by a cooldown to ambient. The cabling was then subjected to a second transient of 223°F and 19.7 psia for 118 hours. The temperature in containment peaks at 283°F in 17 seconds. The pressure in containment peaks at 52 psia in 50 seconds. At 13 hours, the conditions are 172°F and 26.5 psia. The conditions in containment return to ambient after 7 days.

Based on this information, it can be concluded that the test subjected the cabling to an overall more severe environment than the postulated LOCA. Since the cabling remained functional throughout the test and after completion of the test, it can be concluded that the cabling would remain functional during and after exposure to the accident environment which would result from the postulated LOCA. (Reference G, H, X)

2. CAL-40 qualifies components tested in a high pH boric acid spray to a pH value of 5.

3. Cables are not affected by submergence. Cables do not service components located below maximum containment flood level.

 Cable is Kerite Company stranded copper wire control cable 9C No. 14 AWG with Kerite FR insulation and Kerite FR jacket. (References E-11, ROC-23A, and ROC-23B) Facility: Datas-Besse Unit 1 SYSTEM COMPONENT S Docket: 50-346

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UATION WORKSHEET



Prepared by: NLOuis Date: 11/1/23 Checked by: Thrushaff Date: 11/1/23

| EQUIPMENT DESCRIPTION                                      | II ENVIRONMENT               |                                  |  | DOCUMENTATION REF. |                                  | Qualification                         | Outstanding |
|--|------------------------------|----------------------------------|--|--------------------|----------------------------------|---------------------------------------|-------------|
| I I  | Parameter                    | Specification                    | Qualification                              | Specification      | Qualification                    | Method                                | Items       |
| System: Generic 1E Elec-<br>trical Components              | Operating  <br> Time         | l Year                           | <br>  1.1 Years                            | F                  | E-3<br>  Note 1<br>  V-23B       | Simultaneous  <br>  Test              | None        |
| Plant ID No. C25   | Temperature                  | 283.0                            | 320.0                                      | н, х<br>I          | E-3<br>  V-23B<br>               | Simultaneous  <br>  Test  <br>        | None        |
| Manufacturer: Kerite<br>Model Number: Note 4               | Pressure  <br> (PSIA)        | 52.0                             | <br>  96.7<br>                             | <br>  G, X<br>     | E-3<br>V-23B                     | Simultaneous  <br>  Test  <br>        | None        |
| Function: Control  | Relative  <br> Humidity      | 100.0                            | 100.0                                      | A                  | E-3<br>  V-23B                   | Simultaneous  <br>  Test  <br>        | None        |
| Demon: N/A   | <br> Chemic (1   <br>  Spray | Boric Acid<br>1800 ppm<br>pH 5.0 | <br>  Boric Acid<br>  1800 ppm<br>  序相 5.0 |                    | E-3<br>V-23B<br>CAL-40<br>Note 2 | Simultaneous<br>  Test,<br>  Analysis | None        |
| Location: Containment                                      | Radiation                    | 3.87 x 10 <sup>7</sup> RADS      | 1.0 x 10 <sup>8</sup> RADS                 | <br>  CAL-44       | E-3<br>V-23D                     | <br> Sequential Test                  | None        |
| Flood Level Elev: 572'-2"<br> Above Flood Level: No        | Aging                        | 40 Years                         | <br>  40 Years<br>                         | I                  | CAL-91<br>  E-3<br>  V-23B       | Sequential  <br>  Test                | None        |
| Needed for:<br>  Hot Shutdown   X  <br>  Cold Shutdown ! X |                              | 572'-2"                          | <br>  Note 3<br>                           | I B                | <br>  Note 3<br>                 | Note 3                                | None        |

| 'acility: Davis-Besse Unit 1 | SYSTEM COMPONENT QUATION WORKSHEET | Index No. 221H-050A |
|------------------------------|------------------------------------|---------------------|
| bocket: 50-346               | NOTES                              | Rev.:2              |
| Thecked by:                  | Date 2/. 0/33                      |                     |

1. The test subjected the cabling to an initial transient of 320°F and 96.7 psia for 13 hours, followed by a cooldown to ambient. The cabling was then subjected to a second transient of 223°F and 19.7 psia for 118 hours. The temperature in containment peaks at 283°F in 17 seconds. The pressure in containment peaks at 52 psia in 50 seconds. At 13 hours, the conditions are 172°F and 20.5 psia. The conditions in containment return to ambient after 7 days.

Based on this information, it can be concluded that the test subjected the cabling to an overall more severe environment than the postulated LOCA. Since the cabling remained functional throughout the test and after completion of the test, it can be concluded that the cabling would remain functional during and after exposure to the accident environment which would result from the postulated LOCA. (Reference G, H, X)

2. CAL-40 qualifies components tested in a high pH boric acid spray to a pH value of 5.

3. Cables are not affected by submergence. Cables do not service components located below maximum containment flood level.

 Cable is Kerite Company stranded copper wire control cable 12C No. 14 AWG with Kerite FR insulation and Kerite FR jacket. (References E-11, ROC-23A, and ROC-23B) Pacility: Davis-Besse Unit 1

SYSTEM COMPONENT EVALUATION WORKSHEET



Docket: 50-346

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Prepared by: Ahm Date: 1/1/95 Checked by: Emmand Date: 0/2/03

| FOULDMENT DESCRIPTION  | II ENVIRONMENT                     |                           |                                | DOCUMENTATION REF. |               | Qualification      | Outstanding           |
|--|------------------------------------|---------------------------|--------------------------------|--------------------|---------------|--------------------|-----------------------|
|  | Parameter                          | Specification             | Qualification                  | Specification      | Qualification | Method             | Items                 |
| <br> System: Generic 1E Elec-  <br>  trical Components <br> Plant 1D No. Various | <br> Operating  <br> Time  <br>    | l Year                    | <br>  1.1 Years<br>            | Bote 1             | Note 2        | Analysis           | None<br> <br>         |
| Component:<br>  Disconnect Switch  | Temperature <br> (°F)  <br>        | 208                       | <br>  208<br> <br>             | <br>  C-304<br>    | CAL-94        | Analysis           | <br>  None<br>        |
| Manufacturer:<br>  General Electric  |                                    | 15.83                     | <br>  15.83<br>                | C-304              | Note 3        | Analysis           | <br>  None<br>        |
| Model Number: SB-1<br> <br> Function: Electrical<br>  Continuity                 | Relative  <br> Humidity  <br>  (%) | 100                       | l None                         | λ<br>  λ           | N/A           | N/A                | <br>  Note 4<br> <br> |
| Accuracy: Spec: N/A<br>Demon: N/A<br>Service: Various                            | <br> Chemical  <br> Spray  <br>    | N/A                       | N/A                            | N/#.               | N/A           | N/A                | <br>  None<br> <br>   |
| Location: Auxiliary Bldg.  | Radiation                          | 1.97x10 <sup>6</sup> RADS | 1<br>13.0x10 <sup>6</sup> RADS | і<br>і т           | CAL~94        | Analysis           | <br>  None<br>        |
| Flood Level Elev: N/A<br> Above Flood Level: N/A                                 | Aging 1                            | 40 Years                  | <br>  40 Years                 | <br>  I            | <br>  CAL-94  | <br>  Analysis<br> | <br>  None<br>        |
| Needed for:<br>  Hot Shutdown   <u>X</u>  <br>  Cold Shutdown   <u>X</u>         | <br> Submergence                   | N/A                       | <br> <br>  N/A                 | <br>  N/A<br>      | N/A           | N/A                | <br>  None<br>        |

| Facility:                | Davis-Besse Unit 1 | SYSTEM ( | COMPONENT EVALUATION WORKSHEET | Index No. 221H-051A |
|--------------------------|--------------------|----------|--------------------------------|---------------------|
| Docket:                  | 50-346             |          |                                | Rev.:2              |
| Prepared b<br>Checked by | 1: Inulon of Dat   | 1/2/83   | NOTES                          |                     |

1. One year operating time is used as a conservative maximum specification.

- 2. This device has a thermal life of 40 years at 131°F (CAL-94). The relatively short period of time this device will be exposed to temperatures is excess of normal ambient (less than 7 minutes) is insignificant when compared to this thermal life. Therefore, this equipment is considered capable of withstanding accident conditions of at least 1.1 years.
- 3. This device is contained in an open housing which will not allow for the build-up of differential pressure. Given its sturdy design, the approximate 1.13 psi pressure spike will have no effect on its operation.
- 4. This device is not currently qualified for 100% RH. Therefore, the switches required to operate post-HELB which are contained in cabinets CDELLA, CDELLB-1, CDELLB-2, CDELLC, CDYE2, and CDFLLC will either be qualified, replaced or sealed to prevent entrance of moisture. This will be completed by November 30, 1984.

The switches contained in cabinets CDE11D, CDF11D, CDF11A-1, CDF11A-2, and CDYF2 are qualified since they will not be exposed to 100% RH.

| Pacility: | vis-Besse | Unit | 1 |
|-----------|-----------|------|---|
| Docket:   | 50-346    |      |   |

Prepared by: Checked by:

30.

Then Date: 1/10

| COMPONENT | MATERIA | EVALUATION | SHEET |
|-----------|---------|------------|-------|
|-----------|---------|------------|-------|

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 Plant I.D. No.:
 Various
 Component:
 Switch

 Manufacturer:
 General Electric
 Model No.:
 SB-1

|  | I have been a second | THERMAL AGI      | NG I      | RADIATION   |           |  |
|--|---|------------------|-----------|---|-----------|--|
| Parts List   | Materials List  | Qualification    | Reference | Qualification   | Reference |  |
| Cams<br>Barriers<br>Mounting Plate<br>Rear Support | Wood-Flour Filled Phenolic  | 40 Years @ 104°F | CAL-94    | 3 x 10 <sup>6</sup> RADS<br>(25% reduction all<br>p:operties)     | CAL-94    |  |
| Fixed Contact Support<br>Barrier                   | Polyester Glass   | 40 Years @ 131°F | CAL-94    | 4 x 10 <sup>8</sup> RADS<br>(Threshold - tensile<br>strength)     | CAL-94    |  |
| Cover  | Polyvinyl Chloride  | 40 Years @ 140°F | CAL-94    | 8.0 x 10 <sup>6</sup> RADS<br>(25% reduction<br>tensile strength) | CAL-94    |  |
| Cover Screws                                       | I Zytel (Nylon) I   | 40 Years @ 342°F | CAL-94    | 4.0 x 10 <sup>6</sup> RADS<br>(25% reduction<br>elongation)       | CAL-94    |  |

Material & Parts List Reference: V-36A

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Docket: 50-346

Facility: Davis-Besse Unit 1 SYSTEM COMPONENT EVALUATION WORKSHEET



Prepared by: Nhours Date: 11/1/93 Checked by: Sauce Date: 11/3/13

| FOULTPMENT DESCRIPTION  | ENVIRONMENT                        |                             |                                     | DOCUMENTATION REF. |                  | Qualification        | Outstanding    |
|---|------------------------------------|-----------------------------|-------------------------------------|--------------------|------------------|----------------------|----------------|
| I J   | Parameter                          | Specification               | Qualification                       | Specification      | Qualification    | Method               | Items          |
| System: Generic 1E Elec-  | <br> Operating  <br> Time          | l Year                      | 1.1 Years                           | F                  | Note 2, 3        | Analysis             | None           |
| Component: Disconnect  <br>  Switch Cabinet (CD)  <br>  (Note 1) Terminal Block | Temperature<br>(°F)                | 208.0                       | 307.0                               | C-304              | V-36B<br>E-14    | Simultaneous<br>Test | None<br> <br>  |
| Manufacturer:<br>  Cabinet: GE<br>  Block: The States Co.                       | Pressure<br>(FSIA)                 | 15.83                       | 61.0                                | C-304              | V-36B<br>E-14    | Simultaneous<br>Test | None<br> <br>  |
| Model Number: ZWM-250  <br> <br> Function: Switching &  <br>  Control           | Relative  <br> Humidity  <br>  (%) | 100.0                       | 100.0                               | A                  | V-36B<br>E-14    | Simultaneous<br>Test | None<br> <br>  |
| Accuracy: Spec: N/A<br>Demon: N/A<br>Service: Electrical                        | Chemical<br>Spray                  | N/A                         | N/A                                 | N/A                | N/A              | N/A                  | None           |
| Control<br>Location: Auxiliary Bldg.<br>Rm. 304                                 | Radiation                          | 6.53 x 10 <sup>4</sup> RADS | 2.0 x 10 <sup>6</sup> RADS          | т                  | CAL-92<br>Note 2 | Analysis             | <br>  None     |
| Flood Level Elev: N/A   | Aging                              | 40 Years                    | Greater than<br>40 Years<br>@ 104°F | I                  | CAL-92<br>Note 2 | Analysis             | None<br> <br>  |
| Hot Shutdown   X  | <br> Submergence <br>              | N/A                         | N/A                                 | <br>  N/A  <br>    | N/A              | N/A                  | <br>  None<br> |

| Prepared by: NLouis Date Date          | SYSTEM COMPONENT ALUATION WORKSHEET<br>NOTES               | Index NO 221H-052A<br>Rev.: 2 |
|--|--|-------------------------------|
| 1. Disconnect Switch Cabinets are shee | t steel enclosed cabinets with terminal blocks mounted ins | side.                         |

2. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

 The test performed on the States terminal blocks fully envelopes all outside containment temperature and pressure profile and also includes sufficient margin.



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Pacility: Davis-Besse Unit 1 Docket: 50-346

COMFONENT MATERIALS EVALUATION SHEET



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Prepared by: NLauia Date: 11/1/183 Checked by: Diruchant Date: 11/2/13

| Plant I.D. No.: CDE11A   | Component: Terminal Block |
|--------------------------|---------------------------|
| Manufacturer: States Co. | Model No.: 2WM-250        |
|                          |                           |

|   |                  |   |                                  |     | THERMAL AGI                      | NG        | 1 | RADIATION                  |           |
|---|------------------|---|----------------------------------|-----|----------------------------------|-----------|---|----------------------------|-----------|
|   | Parts List       | 1 | Materials List                   | 1   | Qualification                    | Reference | e | Qualification              | Reference |
| в | ase              | - | General Purpose                  |     | Greater than<br>40 years @ 104°F | CAL-92    | 1 | 1.0 x 10 <sup>7</sup> RADS | I CAL-92  |
| В | arrier           | i | Polypropolene<br>Plaskon 1083 or |     | Greater than 40 years @ 104°F    | CAL-92    | 1 | 2.0 x 10 <sup>6</sup> RADS | I CAL-92  |
|   |                  | 1 | Moplen CRV0-8                    | 1   |                                  | 1         | 1 |                            |           |
| Т | erminal Strip    | 1 | Galvanized Steel                 | - F | Not Sensitive                    | 1         | 1 | Not Affected               | 1         |
| S | crews            | 1 | Steel                            | 1   | Not Sensitive                    | 1         | 1 | Not Affected               | 1.000     |
| E | lectrical Strips | i | Copper Alloy                     | 1   | Not Sensitive                    | 1         | 1 | Not Affected               | 1         |
| R | ivet             |   | Nylon                            | 1   | Greater than 40 Years @ 104°F    | CAL-92    | 1 | 6.0 x 10' RADS             | CAL-92    |

Material & Parts List Reference: V-36A



Facility: Davis-Besse Unit 1 Docket: 50-346

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Prepared by: The Date: 1/1/95 Checked by: Drundburl Date: 1/2/17

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| FOULPMENT DESCRIPTION  |  | ENVIRONMENT                 |               | DOCUMENTATION REF. |               | Qualification | Outstanding           |
|--|--|-----------------------------|---------------|--------------------|---------------|---------------|-----------------------|
|  | Parameter  | Specification               | Qualification | Specification      | Qualification | Method        | I Items               |
| System: Generic 1E Elec-   | Operating  <br> Time                                 | l Year  <br>                | Exempt        | Note 1             | Note 2        | N/A           | None<br> <br>         |
| Component:   | Temperature <br>  (°P)                               | 221                         | Exempt        | C-314              | Note 2        | N/A           | None<br>              |
| Manufacturer: Various  | Pressure  <br>  Pressure  <br>  (PSIA)               | 19,76  <br>                 | Exempt        | <br>  C-314        | Note 2        | N/A           | <br>  None<br>        |
| Model Number: Various  <br> <br> Function: Electrical  <br>  Continuity  | Relative  <br>  Relative  <br>  Humidity  <br>   (%) | 100%  <br>                  | Exempt        | <br>  A<br>        | Note 2        | N/A           | <br>  i≋one<br>       |
| Accuracy: Spec: N/A<br>Demon: N/A<br>Service: Various                    | <br>  Chemical  <br>  Spray  <br>                    | N/A                         | N/A           | <br>  N/A<br> <br> | N/A           | N/A           | I None<br>I None<br>I |
| Location: Auxiliary Bldg.  | Radiation  | 1.97 x 10 <sup>6</sup> RADS | Exempt        | <br>  T<br>        | Note 2        | N/A           | <br>  None            |
| Flood Level Elev: N/A<br> Above Flood Level: N/A  <br>                   |  | 40 Years                    | Exempt        | I                  | Note 2        | N/A           | <br>  None<br>        |
| Needed for:<br>  Hot Shutdown   <u>X</u>  <br>  Cold Shutdown   <u>X</u> | <br>  Submergence <br>                               | N/A                         | N/A           | <br>  N/A<br>      | <br>  N/A<br> | N/A           | <br>  None<br>        |



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SYSTEM COMPONENT EVALUATION WORKSHEET

19

|                              |                                      | 6                    |
|------------------------------|--------------------------------------|----------------------|
| Pacility: Davis-Besse Unit 1 | SYSTEM COMPONENT MALUATION WORKSHEET | Index No.: 221H-053A |
| Docket: 50-346               |                                      | Rev.: 2              |
| n/                           | NOTES                                |                      |
| Prepared by: The Date        | 11/1/83                              |                      |
| checked by: garage Date      | 11/2/13                              |                      |
|                              |                                      |                      |

1. One year operating time is used as a conservative maximum specification.

2. These thermal lugs are utilized within the switch disconnect and relay cabinets for wiring various types of equipment. In and of themselves, there is no postulated failure mode for these lugs to interupt electrical continuity.

While it could be postulated that condensation build-up could result in electrical failure, this is not considered to be a function of the type of terminal lug used, but rather the connection design configuration. This electrical interface is addressed in the qualification of the connected squipment since that equipment would be functional during testing. For example, States Terminal Blocks were connected during steam testing by lugs in a manner which was determined by inspection to be similar to that which occurs in the plant. Therefore, the connection design configuration has been qualified as part of the terminal block testing.

Facility: Davis-Besse Unit 1 Docket: 50-346

SYSTEM COMPONENT EVALUATION WORKSHEET



Prepared by: The Date: 11/1/93 Checked by: Dawn Date: 11/1/93

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| EQUIPMENT DESCRIPTION  | ENVIRONMENT                     |                             |                            | DOCUMENTATION REF. |                  | Qualification        | Outstanding      |
|--|---------------------------------|-----------------------------|----------------------------|--------------------|------------------|----------------------|------------------|
|  | Parameter                       | Specification               | Qualification              | Specification      | Qualification    | Method               | Items            |
| <br> System: Generic 1E Elec-  <br>  trical Components <br> Plant ID No. Various | <br> Operating  <br> Time  <br> | l Year  <br>                | 1.1 Years                  | Note 1             | E-20  <br>Note 2 | Simultaneous<br>Test | <br>  None<br>   |
| Component:   | <br> Temperature <br>  (°F)     | 221                         | 212                        | c-314              | E-20  <br>Note 3 | Simultaneous<br>Test | <br>  None<br>   |
| Manufacturer:<br>Gould Electronics   |                                 | 19.76                       | 19.76                      | C-316              | Note 4           | Simultaneous<br>Test | I<br>I None<br>I |
| Model Number: AMP-Trap<br>250V-3 amp<br>Punction: Circuit<br>Protection          |                                 | 100%  <br>                  | 106%                       |                    | E-20             | Simultaneous<br>Test | None             |
| Accuracy: Spec: N/A<br>Demon: N/A<br>Service: Various                            | <br> Chemical  <br> Spray  <br> | N/A                         | N/A                        | N/A                | N/A              | N/A                  | <br>  None<br>   |
| Location: Auxiliary Bldg.  | Radiation                       | 1.97 x 10 <sup>6</sup> RADS | 1.0 x 10 <sup>7</sup> RADS | T I                | E-20             | Simultaneous<br>Test | <br>  None       |
| Flood Level Elev: N/A  <br>Above Flood Level: N/A                                | <br> Aging                      | 40 Years                    | 37.2 Years                 | I                  | E-20             | Type Test            | <br>  None<br>   |
| Needed for:<br>  Hot Shutdown   <u>X</u>  <br>  Cold Shutdren   <u>X</u>         | <br> Submergence <br>           | N/A                         | N/A                        | N/A                | N/A              | N/A                  | <br>  None<br>   |

| Facility: Davis-Besse Unit 1 | SISTEM COMPONENT BARLOATION WORKSHEET | Index 10 2218-054A |
|------------------------------|---------------------------------------|--------------------|
| Docket: 50~346               |                                       | Rev.:2             |
| n/                           | NOTES                                 |                    |
| Prepared by: Date            | 1.10                                  |                    |
| checked by: Date (           | 1413                                  |                    |
|                              |                                       |                    |
|                              |                                       |                    |

- 1. One year operating time is used as a conservative maximum specification.
- 2. This device has demonstrated operability during testing for 107 hours. This is considered sufficient to demonstrate qualification for 1.1 years because the postulated accident temperature conditions return to normal ambient within 20 minutes. After 107 hours gualification is enveloped by the gualified life and radiation testing.
- 3. The initial peak accident temperature of 221°P occurs almost instantaneously and returns to within the qualified temperature of 212°P within 10 seconds. Due to thermal lag considerations, this equipment will not be heated to even 212°P within that short length of time. Therefore, the initial temperature spike is not considered to have an effect upon the qualification of this device.
- 4. Examination of the relatively rugged construction of this device indicates that it would be unaffected by the pressure spike of only approximately 5 psi which occurs post-accident.





Index No.: 221H-055 Rev.: 2

'acility: Davis-Besse Unit 1 locket: 50-346

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SYSTER COMPONENT EVALUATION WORKSHEET

repared by: Nilerio Date: 11/183 thecked by: Date: 11/2/13

| POUTDURING DECODIECTON  |                             | ENVIRONMENT                 |                                     | DOCUMENTATION REF. |                  | Qualification        | Outstanding |
|---|-----------------------------|-----------------------------|-------------------------------------|--------------------|------------------|----------------------|-------------|
| EQUIPMENT DESCRIPTION   | Parameter                   | Specification               | Qualification                       | Specification      | Qualification    | Method               | Items       |
| System: Generic 1E Elec-<br>trical Components                               | Operating<br>Time           | l Year                      | 1.1 Years                           | F                  | Note 2, 3        | Analysis             | None        |
| Component: Disconnect  <br>Switch Cabinet (CD)  <br>(Note 1) Terminal Block | Temperature<br>(°F)         | 208.0                       | 307.0                               | C-304              | V-36B<br>E-14    | Simultaneous<br>Test | None        |
| Manufacturer:<br>Cabinet: GE<br>Block: The States Co.                       | Pressure<br>(PSIA)          | 15.83                       | 61.0                                | C-304              | V-36B<br>E-14    | Simultaneous<br>Test | None        |
| Model Number: ZWM-250  <br>Function: Switching &  <br>Control               | Relative<br>Humidity<br>(%) | 100.0                       | 100.0                               | A                  | V 36B<br>E-14    | Simultaneous<br>Test | None        |
| Accuracy: Spec: N/A  <br>Demon: N/A  <br>Service: Electrical                | <br> Chemical<br> Spray     | N/A                         | N/A                                 | N/A                | N/A              | N/A                  | None        |
| Control  <br>Location: Auxiliary Bldg. <br>Rm. 304                          | Radiation                   | 6.53 x 10 <sup>4</sup> RADS | 2.0 x 10 <sup>6</sup> RADS          | <br>  Т            | CAL-92<br>Note 2 | Analysis             | None        |
| Flood Level Elev: N/A  <br>Above Flood Level: N/A                           | Aging                       | 40 Years                    | Greater than<br>40 Years<br>@ 104°F | I                  | CAL-92<br>Note 2 | Analysis             | None        |
| Needed for:<br>Hot Shutdown   X  <br>Cold Shutdown   X                      | Submergence                 | N/A                         | N/A                                 | N/A                | N/A              | N/A                  | None        |



SYSTEM COMPONENT EVALUATION WORKSHEET



'acility: Davis-Besse Unit 1 locket: 50-346

NOTES

NLOU Date 'repared by: Date thecked by:

. Disconnect Switch Cabinets are sheet steel enclosed cabinets with terminal blocks mounted inside.

. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

The test performed on the States terminal blocks fully envelopes all outside containment temperature and pressure profile and also includes sufficient margin.





Facility: Davis-Besse Unit 1 50-346 Docket:

Checkel by:

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Prepared by: Nheins Date: Checked by: State Date: Date:

Component: Terminal Block Plant I.D. No.: CDE11B-1 Model No.: ZWM-250

Index No.: 221H-055B

Rev.: 2

|  |  | THERMAL AGI   | NG I         | RADIATION  |           |
|--|--|---|--------------|--|-----------|
| Parts List   | Materials List                                     | Qualification   | Reference    | Qualification  | Reference |
| Base   | General Purpose                                    | Greater than<br>40 Years @ 104°F                                | CAL-92       | 1.0 x 10 <sup>7</sup> RADS   | CAL-92    |
| Barrier  | Polypropolene<br>Plaskon 1083 or                   | Greater than<br>40 Years @ 104°F                                | CAL-92  <br> | 2.0 x 10° RADS   | <br>      |
| Terminal Strip<br>Screws<br>Electrical Strips<br>Bivet | Galvanized Steel<br>Steel<br>Copper Alloy<br>Nylon | Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>Greater than | CAL-92       | Not Affected<br>Not Affected<br>Not Affected<br>6.0 x 10 <sup>7</sup> RADS | CAL-92    |
| Screws<br>Electrical Strips<br>Rivet                   | Steel<br>  Copper Alloy<br>  Nylon                 | Not Sensitive<br>Greater than<br>40 Years @ 104°F               | CAL-92       | Not Affected<br>6.0 x 10 <sup>7</sup> RADS                                 |           |

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Material & Parts List Reference: V-36A



SYSTEM COMPONENT EVALUATION WORKSHEET



Facility: Davis-Besse Unit 1 Jocket: 50-346

Prepared by: Nouno Date: 11/1/12 Checked by: Aright Date: 11/2/13

| DESCRIPTION   |                             | ENVIRONMENT                 |                                     | DOCUMENTATION REF. |                   | Qualification        | Outstanding |
|---|-----------------------------|-----------------------------|-------------------------------------|--------------------|-------------------|----------------------|-------------|
| EQUIPMENT DESCRIPTION   | Parameter                   | Specification               | Qualification                       | Specification      | Qualification     | Method               | Items       |
| System: Generic 1E Elec-<br>trical Components                           | Operating<br>Time           | l Year                      | 1.1 Years                           | F                  | Note 2, 3         | Analysis             | None        |
| Component: Disconnect<br>Switch Cabinet (CD)<br>(Note 1) Terminal Block | Temperature<br>(°F)         | 208.0                       | 307.0                               | <br>  C-304        | V-36B  <br>  E-14 | Simultaneous<br>Test | None        |
| Manufacturer:<br>Cabinet: GE<br>Block: The States Co.                   | Pressure<br>(PSIA)          | 15.83                       | 61.0                                | C-304              | V~36D<br>E-14     | Simultaneous<br>Test | None        |
| Model Number: ZWM-250   | Relative<br>Humidity<br>(%) | 100.0                       | 100.0                               | A                  | V-36B<br>E-14     | Simultaneous<br>Test | None        |
| Accuracy: Spec: N/A<br>Demon: N/A                                       | <br> Chemical<br> Spray     | N/A                         | N/A                                 | N/A                | N/A               | N/A                  | None        |
| Control<br>Location: Auxiliary Bldg.<br>Rm. 304                         | Radiation                   | 6.53 x 10 <sup>4</sup> RADS | 2.0 x 10 <sup>6</sup> RADS          | T                  | CAL-92<br>Note 2  | Analysis             | None        |
| Flood Level Elev: N/A   | Aging                       | 40 Years                    | Greater than<br>40 Years<br>@ 104°F | I                  | CAL-92<br>Note 2  | Analysis             | None        |
| Newded for:<br>Hot Shutdown   <u>X</u>  <br>Cold Shutdown   <u>X</u>    | Submergence                 | N/A                         | N/A                                 | N/A                | N/A               | N/A                  | None        |

| Date 11/1/83 | Rev.: 2             |
|--------------|---------------------|
|              | Date II/1/2/13NOTES |

.. Disconnect Switch Cabinets are sheet steel enclosed cabinets with terminal blocks mounted inside.

?. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

3. The test performed on the States terminal blocks fully envelopes all outside containment temperature and pressure profile and also includes sufficient margin.



Facility: Davis-Besse Unit 1 Docket: 50-346

COMPONENT MATERIALS EVALUATION SHEET



Prepared by: Nleuis Da Checked by: Hung Da

Date: 11(1/93 Date: 11/2/73

| Plant I.D. N  | o.: CDE11B-2   | Component:   | Termi            | nal Block  |                            |
|---|--|--|------------------|--|----------------------------|
| Manufacturer  | : States Co.   | Model No.:   | Z                | WM-250   |                            |
|   | 1  | THERMAL AGIN   | NG I             | RADIATION  |                            |
| Parts List  | Materials List   | Qualification  | Reference        | Qualification  | Reference                  |
| Base<br>Barrier<br>Terminal Strip<br>Screws<br>Electrical Strips<br>Rivet | General Purpose<br>Durez #791<br>Polypropolene<br>Plaskon 1083 or<br>Moplen CKV0-8<br>Galvanized Steel<br>Steel<br>Copper Alloy<br>Nylon | Greater chan<br>40 Years @ 104°F<br>Greater than<br>40 Years @ 104°F<br>Not Sensitive<br>Not Sensitive<br>Greater than<br>40 Years @ 104°F | CAL-92<br>CAL-92 | 1.0 x 10 <sup>7</sup> RADS<br>2.0 x 10 <sup>6</sup> RADS<br>Not Affected<br>Not Affected<br>Not Affected<br>6.0 x 10 <sup>7</sup> RADS | CAL-92<br>CAL-92<br>CAL-92 |

Material & Parts List Reference: V-36A





Index No.: 221H-057 Rev.: 2

'acility: Davis-Besse Unit 1 )ocket: 50-346

SYSTEM COMPONENT EVALUATION WORKSHEET

repared by: Nlauis Date: 11/1/193 Checked by: Aran Date: 11/1/13

| EQUIPMENT DESCRIPTION   | ENVIRONMENT                 |                             |                                     | DOCUMENTATION REF. |                  | Qualification        | Outstanding |
|---|-----------------------------|-----------------------------|-------------------------------------|--------------------|------------------|----------------------|-------------|
|   | Parameter                   | Specification               | Qualification                       | Specification      | Qualification    | Method               | Items       |
| System: Generic 1E Elec-<br>trical Components                           | Operating<br>Time           | l Year                      | 1.1 Years                           | F                  | Note 2, 3        | Analysis             | None        |
| Component: Disconnect<br>Switch Cabinet (CD)<br>(Note 1) Terminal Block | Temperature<br>(°F)         | 208.0                       | 307.0                               | C-304              | V-36B<br>E-14    | Simultaneous<br>Test | None        |
| Manufacturer:<br>Cabinet: GE<br>Block: The States Co.                   | Pressure<br>(PSIA)          | 15.83                       | 61.0                                | c-304              | V-36B<br>E-14    | Simultaneous<br>Test | None        |
| Model Number: ZWM-250<br>Function: Switching &                          | Relative<br>Humidity<br>(%) | 100.0                       | 100.0                               | A                  | V-36B<br>E-14    | Simultaneous<br>Test | None        |
| Accuracy: Spec: N/A<br>Demon: N/A                                       | Chemical<br>Spray           | N/A                         | N/A                                 | N/A                | N/A              | N/A                  | None        |
| Control<br>Location: Auxiliary Bldg.<br>Rm. 304                         | Radiation                   | 6.53 x 10 <sup>4</sup> RADS | 2.0 x 10 <sup>6</sup> RADS          | T                  | CAL-92<br>Note 2 | Analysis             | None        |
| <br> Flood Level Elev: N/A  <br> Above Flood Level: N/A                 | Aging                       | 40 Years                    | Greater than<br>40 Years<br>@ 104°F | I                  | CAL-92<br>Note 2 | Analysis             | None        |
| Needed for:<br>  Hot Shutdown   X  <br>  Cold Shutdown   X              | Submergence                 | N/A                         | N/A                                 | N/A                | N/A              | N/A                  | None        |





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'acility: Davis-Besse Unit 1 Docket: 50-346

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NLow Date 'repared by: Date :hecked by :

.. Disconnect Switch Cabinets are sheet steel enclosed cabinets with terminal blocks mounted inside.

?. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

 The test performed on the States terminal blocks fully envelopes all outside containment temperature and pressure profile and also includes sufficient margin.


COMPONENT MATERIALS EVALUATION SHEET



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Facility: Davis-Besse Unit 1 50-346 Docket:

Prepared by: Nhauis Date: 11/1/93 Checked by: Haland Date: 11/14/83

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Plant I.U. No.: CDE11C Manufacturer: States Co.

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| Compo | nent: | Terminal Block |
|-------|-------|----------------|
| Model | No.:  | ZWM-250        |
|       |       |                |

|  | and the second second second second  | THERMAL AGI   | NG        | RADIATION  |           |  |
|--|--|---|-----------|--|-----------|--|
| Parts List   | Materials List   | Qualification   | Reference | Qualification  | Reference |  |
| Base   | General Purpose  | Greater than  | CAL-92    | 1.0 x 10 <sup>7</sup> RADS   | CAL-92    |  |
| Barrier  | Durez #791<br>Polypropolene  | 40 Years @ 104°F<br>Greater than<br>40 Years @ 104°F                                | CAL-92    | 2.0 x 10 <sup>6</sup> RADS   | CAL-92    |  |
| Terminal Strip<br>Screws<br>Electrical Strips<br>Rivet | Plaskon 1083 of<br>  Moplen CRV0-8<br>  Galvanized Steel<br>  Steel<br>  Copper Alloy<br>  Nylon | Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>Greater than<br>40 Years @ 104°F | CAL-92    | Not Affected<br>Not Affected<br>Not Affected<br>6.0 x 10 <sup>7</sup> RADS | CAL-92    |  |
|  |  |   |           |  |           |  |
|  |  |   |           |  |           |  |

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SYSTEM COMPONENT EVALUATION WORKSHEET



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Facility: Davis-Besse Unit 1 50-346 Docket:

Prepared by: Nlewis Date: 11/1/03 Checked by: Encilonsy Date: 11/1/03

| POUTDMENT DESCRIPTION   | ENVIRONMENT                 |                             |                                     | DOCUMENTATION REF. |                  | Qualification | Outstanding |
|---|-----------------------------|-----------------------------|-------------------------------------|--------------------|------------------|---------------|-------------|
| EQUIPMENT DESCRIPTION   | Parameter                   | Specification               | Qualification                       | Specification      | Qualification    | Method        | Items       |
| System: Generic 1E Elec-<br>trical Components                           | Operating<br>Time           | l Year                      | 40 Years                            | F                  | Note 3, 4        | Analysis      | None        |
| Component: Disconnect<br>Switch Cabinet (CD)<br>(Note 1) Terminal Block | Temperature<br>(°F)         | N/A                         | N/A                                 | Note 2             | N/A              | N/A           | None        |
| Manufacturer:<br>Cabinet:General Electric<br>Block: The States Co.      | Pressure<br>(PSIA)          | N/A                         | N/A                                 | Note 2             | N/A              | N/A           | None        |
| Model Number: ZWM-250<br>Function: Switching &<br>Control               | Relative<br>Humidity<br>(%) | N/A                         | N/A                                 | Note 2             | N/A              | N/A           | None        |
| Accuracy: Spec: N/A<br>Demon: N/A                                       | Chemical<br>Spray           | N/A                         | N/A                                 | N/A                | N/A              | N/A           | None        |
| Service: Electrical   |                             |                             |                                     | 1                  |                  |               |             |
| Location: Auxiliary Bldg.   | Radiation                   | 1.62 x 10 <sup>6</sup> RADS | 2.0 x 10 <sup>6</sup> RADS          | т                  | CAL-92<br>Note 3 | Analysis      | None        |
| Flood Level Elev: N/A<br>Above Flood Level: N/A                         | Aging                       | 40 Years                    | Greater than<br>40 Years<br>@ 104°F | I                  | CAL-92<br>Note 3 | Analysis      | None        |
| Needed for:<br>Hot Shutdown X   | Submergence                 | N/A                         | N/A                                 | N/A                | N/A              | N/A           | None        |



SYSTEM COMPONENT EVALUATION WORKSHEET



acility: Davis-Besse Unit 1 ocket: 50-346

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NLou Date repared by : Date hecked by:

Disconnect Switch Cabinets are sheet steel enclosed cabinets with terminal blocks mounted inside.

The only harsh environment seen is increased radiation due to recirculated fluids.

Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

The test performed on the States terminal blocks fully envelopes all outside containment temperature and pressure profile and also includes sufficient margin.





Index No. : 221H-058B Rev.: 2

Facility: Davis-Besse Unit 1 50-346 Docket:

COMPONENT MATERIALS EVALUATION SHEET

Prepared by: Nhew Checked by:

Date:

Date:

Plant I.D. No.: CDE11D

Manufacturer: States Co.

Component: \_\_\_\_\_ Terminal Block Model No.: ZWM-250

|  | 1  | THERMAL AGI   | NG I      | RADIATION  |                  |
|--|--|---|-----------|--|------------------|
| Parts List   | Materials List   | Qualification   | Reference | Qualification  | Reference        |
| Base<br>Barrier  | General Purpose<br>Durez #791<br>Polypropolene   | Greater than<br>40 Years @ 104°F<br>Greater than<br>40 Years @ 104°F                | CAL-92    | 1.0 x 10 <sup>7</sup> RADS<br>2.0 x 10 <sup>6</sup> RADS                   | CAL-92<br>CAL-92 |
| Terminal Strip<br>Screws<br>Electrical Strips<br>Rivet | Plaskon 1083 or<br>  Moplen CRV0-8<br>  Galvanized Steel<br>  Steel<br>  Copper Alloy<br>  Nylon | Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>Greater than<br>40 Years @ 104°F | CAL-92    | Not Affected<br>Not Affected<br>Not Affected<br>6.0 x 10 <sup>7</sup> RADS | CAL-92           |



acility: Davis-Besse Unit 1 ocket: 50-346

SYSTEM COMPONENT EVALUATION WORKSHEET



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repared by: NLewis Date: 11/183 thecked by: Dring Date: 11/2/83

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| NUTDARY DECODIDUTON   | ENVIRONMENT                 |                             |                                     | DOCUMENTATION REF.          |                  | Qualification | Outstanding |
|---|-----------------------------|-----------------------------|-------------------------------------|-----------------------------|------------------|---------------|-------------|
| QUIPMENT DESCRIPTION  | Parameter                   | Specification               | Qualification                       | Specification Qualification |                  | Method        | Items       |
| System: Generic 1E Elec-  <br>trical Components<br>Plant ID No. CDF11A-1    | Operating<br>Time           | l Year                      | 40 Years                            | F                           | Note 3, 4        | Analysis      | None        |
| Component: Disconnect  <br>Switch Cabinet (CD)  <br>(Note 1) Terminal Block | Temperature<br>(°F)         | N/A                         | N/A                                 | Note 2                      | N/A              | N/A           | None        |
| Manufacturer:<br>Cabinet: GE<br>Block: The States Co.                       | Pressure<br>(PSIA)          | N/A                         | N/A                                 | Note 2                      | N/A              | N/A           | None        |
| Nodel Number: ZWM-250<br>Function: Switching &  <br>Control                 | Relative<br>Humidity<br>(%) | N/A                         | N/A                                 | Note 2                      | N/A              | N/A           | None        |
| Accuracy: Spec: N/A<br>Demon: N/A<br>Service: Electrical                    | Chemical<br>Spray           | N/A                         | N/A                                 | N/A                         | N/A              | N/A           | None        |
| Control<br>Location: Auxiliary Bldg.<br>Rm. 427                             | Radiation                   | 3.12 x 10 <sup>5</sup> RADS | 2.0 x 10 <sup>6</sup> RADS          | T                           | CAL-92<br>Note 3 | Analysis      | None        |
| Flood Level Elev: N/A Above Flood Level: N/A                                | Aging                       | 40 Years                    | Greater than<br>40 Years<br>@ 104°# | I                           | CAL-92<br>Note 3 | Analysis      | None        |
| Needed for:<br>Hot Shutdown   X    <br>Cold Shutdown   X                    | <br> Submergence            | N/A                         | N/A                                 | N/A                         | N/A              | N/A           | None        |

| Facility: Davis-Besse Unit 1<br>Docket: 50-346<br>Prepared by: NLeuris Date 11/1<br>Checked by: Saca David Date 11/1- | SYSTEM COMPONENT EVALUATION WORKSHEET<br>NOTES   | Index No.: 221H-959A<br>Rev.: 2 |
|---|--|---------------------------------|
| <ol> <li>Disconnect Switch Cabinets are sheet sto</li> <li>The only harsh environment seen is increased.</li> </ol>   | eel enclosed cabinets with terminal blocks mounted inside as a set of the set | če.                             |

- 3. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.
- 4. The test performed on the States terminal blocks fully envelopes all outside containment temperature and pressure profile and also includes sufficient margin.



Facility: Davis-Besse Unit 1 Docket: 50-346



Index No.: 221H-059B Rev.: 2

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COMPONENT MATERIALS EVALUATION SHEET

Prepared by: Nicing Date: 11/1/93 Checked by: Dates 11/1/93 Dates 11/0/19



| Plant L.D. No.: CDF11A-1 | Component: Tenninal Block |
|--------------------------|---------------------------|
| Prance Province Prance   | Model No.: ZWM-250        |
| Manufacturer: States Co. | HOULE HOLE                |

|  |   | THERMAL AGI   | NG I      | RADIATION  |           |
|--|---|---|-----------|--|-----------|
| Parts List   | Materials List  | Qualification   | Reference | Qualification  | keference |
| Base   | General Purpoise  | Greater than  | CAL-92    | 1.0 x 10 <sup>7</sup> RADS   | CAL-92    |
| Barrier  | Durez #791<br>  Polypropolene<br>  Plasmon 1083 or                  | Greater than<br>40 Years @ 104°F  | CAL-92    | 2.0 x 10 <sup>6</sup> RADS   | CAL-92    |
| Terminal Strip<br>Screws<br>Electrical Strips<br>Rivet | Moplen CRV0-8<br>Galvanized Steel<br>Steel<br>Copper Alloy<br>Nylon | Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>Greater than<br>40 Years @ 104°F | CAL-92    | Not Affected<br>Not Affected<br>Not Affected<br>6.0 x 10 <sup>7</sup> RADS | CAL-92    |





Index No.: 221H-060 Rev.: 2

acility: Davis-Besse Unit 1 ocket: 50-346

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SYSTEM COMPONENT EVALUATION WORKSHEET

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|---|-------|---------|
|   | Date: | 11/1/83 |
| 2 | Date: | 11/2/13 |

| POUTDHENIT DESCRIPTION  | ENVIRONMENT                 |                             |                                     | DOCUMENTATION REF. |                  | Qualification | Outstanding   |  |
|---|-----------------------------|-----------------------------|-------------------------------------|--------------------|------------------|---------------|---------------|--|
| EQUIPMENT DESCRIPTION   | Parameter                   | Specification               | Qualification                       | Specification      | Qualification    | Method        | Items         |  |
| System: Generic 1E Elec-<br>trical Components<br>Plant ID No. CDF11A-2      | Operating<br>Time           | l Year                      | 40 Years                            | F                  | Note 3, 4        | Analysis      | None          |  |
| Component: Disconnect  <br>Switch Cabinet (CD)  <br>(Note 1) Terminal Block | Temperature<br>(°F)         | N/A                         | N/A                                 | Note 2             | N/A              | N/A           | None          |  |
| Manufacturer:<br>Cabinet: GE<br>Block: The States Co.                       | Pressure<br>(PSIA)          | N/A                         | N/A                                 | Note 2             | N/A              | N/A           | None          |  |
| Model Number: ZWM-250  <br>Function: Switching &  <br>Control               | Relative<br>Humidity<br>(%) | N/A                         | N/A                                 | Note 2             | N/A              | N/A           | None          |  |
| Accuracy: Spec: N/A  <br>Demon: N/A   | Chemical<br>Spray           | N/A                         | N/A                                 | N/A                | N/A              | N/A           | None          |  |
| Control<br>Location: Auxiliary Bldg.<br>Rm. 427                             | Radiation                   | 3.12 x 10 <sup>5</sup> RADS | 2.0 x 10 <sup>6</sup> RADS          | т                  | CAL-92<br>Note 3 | Analysis      | None          |  |
| Flood Level Elev: N/A Above Flood Level: N/A                                | Aging                       | 40 Years                    | Greater than<br>40 Years<br>@ 104°F | I                  | CAL-92<br>Note 3 | Analysis      | None<br>      |  |
| Needed for:<br>Hot Shutdown   X  <br>Cold Shutdown   X                      | <br> Submergence            | N/A                         | N/A                                 | N/A                | N/A              | N/A           | None<br> <br> |  |

| Facility: Davis-Besse Unit 1<br>Docket: 50-346<br>Frepared by: Nleuis Date<br>Checked by: Ethanist Date | SYSTEM COMPONENT EVALUATION WORKSHEET<br>NOTES   | Index No.: 221H-060A<br>Rev.: 2 |
|---|--|---------------------------------|
| 1. Disconnect Switch Cabinets are shee  | t steel enclosed cabinets with terminal blocks mounted inst<br>increased radiation due to recirculated fluids. | (de.                            |

- 3. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.
- 4. The test performed on the States terminal blocks fully envelopes all outside containment temperature and pressure profile and also includes sufficient margin.

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COMPONENT MATERIALS EVALUATION SHEET



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Facility: Davis-Besse Unit 1 50-346 Docket:

Prepared by: Nheins Date: 11/83 Checked by: Drian Date: 11/1/83 Date: 11/1/13

7.0

Plant I.D. No.: CDF11A-2 Manufacturer: States Co.

| Compon | ent: | Terminal | Block |
|--------|------|----------|-------|
| Model  | No.: | ZWM-     | 250   |

RADIATION

|  |   | THERMAL AGI   | NG        | TVIC XIII X CU.  |                  |
|--|---|---|-----------|--|------------------|
| Parts List   | Materials List  | Qualification   | Reference | Qualification  | Reference        |
| Base<br>Barrier  | General Purpose<br>Durez #791<br>Polypropolene<br>Plaskon 1083 or   | Greater than<br>40 Years @ 104°F<br>Greater than<br>40 Years @ 104°F                | CAL-92    | 1.0 x 10 <sup>7</sup> RADS<br>2.0 x 10 <sup>6</sup> RADS                   | CAL-92<br>CAL-92 |
| Terminal Strip<br>Screws<br>Electrical Strips<br>Rivet | Moplen CRV0-8<br>Galvanized Steel<br>Steel<br>Copper Alloy<br>Nylon | Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>Greater than<br>40 Years @ 104°F | CAL-92    | Not Affected<br>Not Affected<br>Not Affected<br>6.0 x 10 <sup>7</sup> RADS | CAL-92           |

Material & Parts List Reference: V-36A





Index No.: 221H-061 Rev.: 2

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Facility: Davis-Besse Unit 1 Jocket: 50-346

SYSTEM COMPONENT EVALUATION WORKSHEET

Prepared by: Nieuro Date: 11/1/17 Checked by: Anno Date: 11/0/13

Se Sector

|   | ENVIRONMENT                 |                             |                                     | DOCUMENTATION REF. |                  | Qualification        | Outstanding   |
|---|-----------------------------|-----------------------------|-------------------------------------|--------------------|------------------|----------------------|---------------|
| EQUIPMENT DESCRIPTION   | Parameter                   | Specification               | Qualification                       | Specification      | Qualification    | Method               | Items         |
| System: Generic 1E Elec-<br>trical Components                           | Operating<br>Time           | l Year                      | 1.1 Years                           | F                  | Note 2, 3        | Analysis             | None          |
| Component: Disconnect<br>Switch Cabinet (CD)<br>Note (1) Terminal Block | Temperature<br>(°F)         | 198.0                       | 307.0                               | <br>  C-236<br>    | V-36B<br>E-14    | Simultaneous<br>Test | None          |
| Manufacturer:<br>Cabinet:General Electric<br>Block: The States Co.      | Pressure<br>(PSIA)          | 15.51                       | 61.0                                | C-236              | V-36B<br>E-14    | Simultaneous<br>Test | None          |
| Model Number: ZWM-250   | Relative<br>Humidity<br>(%) | 100.0                       | 100.0                               | A                  | V-36B<br>E-14    | Simultaneous<br>Test | None          |
| Accuracy: Spec: N/A<br>Demon: N/A                                       | Chemical<br>Spray           | N/A                         | N/A                                 | N/A                | N/A              | N/A                  | None          |
| Location: Auxiliary Bldg.   | Radiation                   | 1.97 x 10 <sup>6</sup> RADS | 2.0 x 10 <sup>6</sup> RADS          | Т                  | CAL-92<br>Note 2 | Analysis             | None          |
| Flood Level Elev: N/A<br>Above Flood Level: N/A                         | Aging                       | 40 Years                    | Greater than<br>40 Years<br>@ 104°F | I                  | CAL-92<br>Note 2 | Analysis             | None          |
| Needed for:<br>Hot Shutdown IX<br>Cold Shutdown IX                      | Submergence                 | N/A                         | N/A                                 | N/A                | N/A              | N/A                  | None<br> <br> |

| ۲                            | 0                                     |                       |
|------------------------------|---------------------------------------|-----------------------|
| Facility: Davis-Besse Unit 1 | SYSTEM COMPONENT EVALUATION WORKSHEET | Index No. : 2211-001A |
| Docket: 50-346               |                                       | Re V. :               |
|                              | NOTES                                 |                       |
| Prenamed by: N Louis Date    | 11/1/13                               |                       |
| Chacked by: the be if Date   | 11/2/ 82                              |                       |
| checked by:                  |                                       |                       |
|                              |                                       |                       |
|                              |                                       |                       |

1. Disconnect Switch Cabinets are a sheet steel enclosed cabinet with terminal blocks mounted inside.

2. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

3. The test performed on the States terminal blocks fully envelopes all outside containment temperature and pressure profile and also includes sufficient margin.

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Index No.: 221H-061B

Reference

CAL-92

CAL-92

CAL-92

Facility: Davis-Besse Unit 1

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Base

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Barrier

Docket: 50-346

Parts List

Checked by: Har

Prepared by: N Lauis Date: 111

Plant I.D. No.: CDF11C Manufacturer: States Co.

Component: Terminal Block 2WM-250 Model No.:

CAL-92

RADIATION

Not Affected

Not Affected  $5.0 \times 10^7$  RADS

| 1 | Materials List  | Qualification  | Reference | Qualification  |
|---|---|--|-----------|--|
|   | General Purpose<br>Durez #791<br>Polypropolene<br>Plaskon 1083 or | Greater than<br>40 Years @ 104°F<br>Greater than<br>40 Years @ 104°F | CAL-92    | 1.0 x 10 <sup>7</sup> RADS<br>2.0 x 10 <sup>6</sup> RADS |
| H | Moplen CRV0-8   | Not Sensitive  |           | Not Affected   |

Not Sensitive

Not Sensitive

Greater than

40 Years @ 104°F

THERMAL AGING

|                   | Moplen CRV0-8    |
|-------------------|------------------|
| Terminal Strip    | Galvanized Steel |
| Screws            | Steel            |
| Electrical Strips | Copper Alloy     |
| Rivet             | Nylon            |



Rev.: 2







'acility: Davis-Besse Unit 1 locket: 50-346

1 4

Prepared by: Niferio Date: 11/1/83 Thecked by: Arcanony Date: 11/1/13

| TOUTDMENT DESCRIPTION   |                             | ENVIRONMENT                 |                                     | DOCUMENTA     | TION REF.        | Qualification | Outstanding |
|---|-----------------------------|-----------------------------|-------------------------------------|---------------|------------------|---------------|-------------|
| EQUIPMENT DESCRIPTION   | Parameter                   | Specification               | Qualification                       | Specification | Qualification    | Method        | Items       |
| System: Generic 1E Elec-<br>trical Components                               | Operating<br>Time           | l Year                      | 40 Years                            | F             | Note 3, 4        | Analysis      | None        |
| Component: Disconnect  <br>Switch Cabinet (CD)  <br>Note (1) Terminal Block | Temperature<br>(°F)         | N/A                         | N/A                                 | Note 2        | N'A              | N/A           | None        |
| Manufacturer:<br>Cabinet:General Electric<br>Block: The States Co.          | Pressure<br>(PSIA)          | N/A                         | N/A                                 | Note 2        | N/A              | N/A           | None        |
| Model Number: ZWM-250<br>Function: Switching &<br>Control                   | Relative<br>Humidity<br>(%) | N/A                         | N/A                                 | Note 2        | N/A              | N/A           | None        |
| Accuracy: Spec: N/A  <br>Demon: N/A  <br>Service: Electrical                | <br> Chemical<br> Spray     | N/A                         | N/A                                 | N/A           | N/A              | N/A           | None        |
| Control<br>Location: Auxiliary Bldg.<br>Rm. 227                             | Radiation                   | 1.62 x 10 <sup>6</sup> RADS | 2.0 x 10 <sup>6</sup> RADS          | т             | CAL-92<br>Note 3 | Analysis      | None        |
| Flood Level Elev: N/A Above Flood Level: N/A                                | Aging                       | 40 Years                    | Greater than<br>40 Years<br>@ 104°F | I             | CAL-92<br>Note 3 | Analysis      | None        |
| Needed for:<br>Hot Shutdown X   | <br> Submergence            | N/A                         | N/A                                 | N/A           | N/A              | N/A           | None        |



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IMAGE EVALUATION TEST TARGET (MT-3)







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| acility: Davis-Besse Unit 1 | SYSTEM COMPONENT EVALUATION WORKSHEET | Index No.: 221H-062A<br>Rev.: 2 |
|-----------------------------|---------------------------------------|---------------------------------|
| ocket: 50-346               | / . NOTES                             |                                 |
| repared by: N Laura         | Date 11/1/93                          |                                 |
| checked by: Annont          | Date 11/14/13                         |                                 |
|                             |                                       |                                 |

- 2. The only harsh environment seen is increased radiation due to recirculated fluids.
- 3. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.
- The test performed on the States terminal blocks fully envelopes all outside containment temperature and pressure profile and also includes sufficient margin.



Facility: Davis-Besse Unit 1 Docket: 50-346

COMPONENT MATERIALS EVALUATION SHEET



Date: 11/2/12 Prepared by: NLan Checked by: Square

| Plant          | I.D. No.: | CDF11D         | Component:    | Termi     | nal Block                  |           |
|----------------|-----------|----------------|---------------|-----------|----------------------------|-----------|
| Manufacturer:  |           | States Co.     | Model No.:    | Z         | WM-250                     |           |
| and the second | 1         |                | THERMAL AGIN  | NG I      | RADIATION                  |           |
| Parts List     | 1         | Materials List | Qualification | Reference | Qualification              | Reference |
| Base           | Ge        | eneral Purpose | Greater than  | CAL-92    | 1.0 x 10 <sup>7</sup> RADS | CAL-92    |

| and the second |                  |                                  |        |                            | and the second se |
|--|------------------|----------------------------------|--------|----------------------------|---|
| Base   | General Purpose  | Greater than                     | CAL-92 | 1.0 x 10 <sup>7</sup> RADS | CAL-92  |
|  | Durez #791       | 40 Years @ 104°F                 | 1      |                            | 1 011 02  |
| Barrier  | Polypropolene    | Greater than                     | CAL-92 | 2.0 x 10° RADS             | CAL-92  |
|  | Plaskon 1093 or  | 40 Years @ 104°F                 | 1      |                            |   |
|  | Moplen CRV0-8    | 1                                | 1      |                            | 1 - C - C - C - C   |
| Terminal Strip   | Galvanized Steel | Not Sensitive                    |        | Not Affected               |   |
| Screws   | Steel            | Not Sensitive                    | ! !    | Not Affected               | 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -   |
| Electrical Strips  | Copper Alloy     | Not Sensitive                    |        | Not Affected               |   |
| Rivet  | Nylon            | Greater than                     | CAL-92 | 6.0 x 10' RADS             | CAL-92  |
| Rivet  | Nylon            | Greater than<br>40 Years @ 104°F | CAL-92 | 6.0 x 10' RADS             | CAL-9   |



'acility: Davis-Besse Unit 1
)ocket: 50-346

SYSTEM COMPONENT EVALUATION WORKSHEET



repared by: Nhewis

Date: 11/1/83 Date: 11/2/13

Outstanding Qualification DOCUMENTATION REF. ENVIRONMENT EQUIPMENT DESCRIPTION 11 Qualification | Specification | Qualification Method Items Specification || Parameter None Note 2, 3 Analysis F 1.1 Years System: Generic 1E Elec- || Operating 1 Year trical Components | Time Plant ID No. CDYE2 11 Component: Disconnect 11 None V-36B Simultaneous C-304 307.0 208.0 [ Temperature Switch Cabinet (CD) Test E-14 (Note 1) Terminal Block || (°F) 11 Manufacturer: None V-36B Simultaneous C-304 61.0 15.83 ||Pressure Block: The States Co. Test E-14 (| (PSIA) Model Number: ZWM-250 11 None V-36B Simultaneous A 100.0 100.0 Relative Test E-14 | |Humidity Function: Switching & Cont rol 11 (8) Accuracy: Spec: N/A None N/A N/A N/A N/A N/A [[Chemical Demon: N/A Spray Service: Electrical Cont rol CAL-92 Location: Auxiliary Bldg. !! 16.53 x 10<sup>4</sup> RADS 2.0 x 10<sup>6</sup> RADS Analysis None Note 2 T **||Radiation** Rm. 304 Greater than N/A Flood Level Elev: None Analysis CAL-92 I **40 Years** 40 Years Aging Above Flood Level: N/A Note 2 @ 104°F Needed for: X 11 Hot Shutdown None N/A N/A N/A N/A N/A [|Submergence] :1 Cold Shutdown XI

| Pacility: Davis-Besse Unit 1              | SYSTEM COMPONENT EVALUATION WORKSHEET | Index No.: 221H-063A<br>Rev.: 2 |
|---|---------------------------------------|---------------------------------|
| Prepared by: NLauis<br>Thecked by: Mulour | Date 11/1/13<br>Date 11/2/13          |                                 |

1. Disconnect Switch Cabinets are sheet steel enclosed cabinets with terminal blocks mounted inside.

2. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

3. The test performed on the States terminal blocks fully envelopes all outside containment temperature and pressure profile and also includes sufficient margin.



Facility: Davis-Besse Unit 1 Docket: 50-346

COMPONENT MATERIALS EVALUATION SHEET



Prepared by: NLewis Date: 11/1/93 Checked by: House Date: 11/0/93

| Plant I.D. No.: CDYE2     | Component: Terminal Block  |  |
|---------------------------|--|--|
| Hanufactumer States Co.   | Model No.: ZWM-250   |  |
| Maniffacturer: States co. | Manual Parallelistic Parallelist |  |

|  |   | THERMAL AGI   | NG I      | RADIATION  |           |
|--|---|---|-----------|--|-----------|
| Parts List   | Materials List  | Qualification   | Reference | Qualification  | Reference |
| Base   | General Purpose   | Greater than  | CAL-92    | 1.0 x 10 <sup>7</sup> RADS   | CAL-92    |
| Barrier  | Durez #791<br>  Polypropolene<br>  Plaskon 1083 or                          | Greater than<br>40 Years @ 104°F  | CAL-92    | 2.0 x 10 <sup>6</sup> RADS   | CAL-92    |
| Terminal Strip<br>Screws<br>Electrical Strips<br>Rivet | Moplen CRV0-8<br>  Galvanized Steel<br>  Steel<br>  Copper Alloy<br>  Nylon | Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>Greater than<br>40 Years @ 104°F | CAL-92    | Not Affected<br>Not Affected<br>Not Affected<br>6.0 x 10 <sup>7</sup> RADS | CAL-92    |
|  | 그는 것 같은 것 같이 많이 많이 많이 없다.   |   | 1         |  | 1         |

Material & Parts List Reference: V-36A



Prepared by :

Checked by:

Facility: Davis-Besse Unit 1 Docket: 50-346

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SYSTEM COMPONENT EVALUATION WORKSHEET



Date: 11/1/93

Outstanding Qualification ENVIRONMENT DOCUMENTATION REF. EQUIPMENT DESCRIPTION Method Items Qualification Specification Qualification || Parameter Specification Analysis None F Note 3, 4 System: Generic 1E Elec- || Operating 1 Year 40 Years trical Components || Time Plant ID No. CDYF2 N/A N/A None N/A Note 2 N/A []Temperature] Component: Disconnect (°F) 11 Switch Cabinet (CD) (Note 1) Terminal Block Manufacturer: N/A N/A None Note 2 N/A N/A ||Pressure Cabinet: GE ||(PSIA) Block: The States Co. 11 Model Number: ZWM-250 11 N/A None N/A N/A Note 2 N/A ||Relative Function: Switching & Humidity Control (8) Accuracy: Spec: N/A 1 /A None N/A N/A N/A N/A Chemical Demon: N/A Spray Service: Electrical 11 Cont rol CAL-92 Location: Auxiliary Bldg. || 13.12 x 10<sup>5</sup> RADS 2.0 x 10<sup>6</sup> RADS None Analysis Note 3 T IRadiation Rm. 427 Greater than Flood Level Elev: N/A 11 Analysis None CAL-92 I 40 Years 40 Years Above Flood Level: N/A Aging Note 3 @ 104°F Needed for: X Hot Shutdown None N/A N/A N/A N/A N/A ||Submergence| Cold Shutdown | X 11

| Facility: Davis-Besse Unit 1                | SYSTEM COMPONENT EVALUATION WORKSHEET                              | Index No.: 221H-064A<br>Rev.: 2 |
|---|--|---------------------------------|
| Prepared by: Nheuis<br>Checked by: Handhalf | Date 11/1/33<br>Date 11/2/83                                       |                                 |
| Disconnect Switch Cabinets as               | re sheet steel enclosed cabinets with terminal blocks mounted insi | lde.                            |

The only harsh environment seen is increased radiation due to recirculated fluids. 2.

1.

- Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation. 3.
- The test performed on the States terminal blocks fully envelopes all outside containment temperature and pressure profile 4. and also includes sufficient margin.



Facility: Davis-Besse Unit 1 COMPONENT MATERIALS EVALUATION SHEET Docket: 50-346



Prepared by: Nlows Date: 11/1/82 Checked by: Date: 11/0/13

| Plant I.D. No.: CDYF2<br>Manufacturer: States Co.      |   | Component:<br>Model No.:  | Termin<br>ZV | nal Block<br>WM-250  |           |
|--|---|---|--------------|--|-----------|
|  | 1   | THERMAL AGIN  | IG I         | RADIATION  |           |
| Parts List   | Materials List  | Qualification   | Reference    | Qualification  | Reference |
| Base   | General Purpose   | Greater than<br>40 Years 0 104°F                                | CAL-92       | 1.0 x 10 <sup>7</sup> RADS   | CAL-92    |
| Barrier  | Polypropolene<br>  Plaskon 1083 or  | Greater than<br>40 Years @ 104°F                                | CAL-92       | 2.0 x 10 <sup>6</sup> RADS   | CAL-92    |
| Terminal Strip<br>Screws<br>Electrical Strips<br>Rivet | Moplen CRV0-8<br>  Galvanized Steel<br>  Steel<br>  Copper Alloy<br>  Nylon | Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>Greater than | CAL-92       | Not Affected<br>Not Affected<br>Not Affected<br>6.0 x 10 <sup>7</sup> RADS | CAL-92    |
|  |   | 40 jears e 104 r  |              |  | İ         |
|  |   |   |              |  |           |
|  | i i   |   |              |  |           |

Facility: Davis-Besse Unit 1 SYSTEM COMPONENT E Docket: 50-346

JUATION WORKSHEET

Index No 221H Rev.: 2 221H-065

Prepared by: Neuro Date: 11/1/83 Checked by: Arrison Date: 11/2/63

| EQUIPMENT DESCRIPTION                                     | II ENVIRONMENT            |                                  |                                  | DOCUMENTATION REF. |                                  | Qualification                     | Outstanding |
|---|---------------------------|----------------------------------|----------------------------------|--------------------|----------------------------------|-----------------------------------|-------------|
|   | Parameter                 | Specification                    | Qualification                    | Specification      | Qualification                    | Method                            | Items       |
| <br> System: Generic 1E Elec-<br>  trical Components      | <br> Operating  <br> Time | l Year                           | 1.1 Years                        | F                  | E-3<br>Note 1<br>V-23B           | Simultaneous<br>Test              | None        |
| Plant ID No. CS1  <br> <br> Component: Cable              | Temperature               | 283.0                            | 320.0                            | н, х               | E-3<br>V-238                     | Simultaneous<br>Test              | None        |
| Manufacturer: Kerite  <br> <br> Model Number: Note 4      | Pressure  <br>  (PSIA)    | 52.0                             | 96.7                             | G, X               | E-3<br>V-23B                     | Simultaneous<br>Test              | None        |
| Function: Control   |                           | 100.0                            | 100.0                            | A                  | E-3<br>V-23B                     | Simultaneous<br>Test              | None        |
| Demon: N/A  | <br> Chemical  <br> Spray | Boric Acid<br>1800 ppm<br>pH 5.0 | Boric Acid<br>1800 ppm<br>pH 5.0 | A                  | E-3<br>V-23B<br>CAL-40<br>Note 2 | Simultaneous<br>Test,<br>Analysis | None        |
| Location: Containment                                     | Radiation                 | 3.87 x 10 <sup>7</sup> RADS      | 1.0 x 10 <sup>8</sup> RADS       | CAL-44             | е-3<br>V-23в                     | Sequential Test                   | None        |
| Flood Level Elev: 572'-2"<br> Above Flood Level: No  <br> | Aging                     | 40 Years                         | 40 Years                         | I                  | CAL-91<br>E-3<br>V-23B           | Sequential<br>Test                | None        |
| Hot Shutdown   X    <br>  Cold Shutdown   X               | Submergence               | 572'-2"                          | Note 3                           | В                  | Note 3                           | Note 3                            | None        |

| Facility:<br>Docket:     | Davis-Besse Unit 1<br>50-346 | SYSTEM       | COMPONENT CLUATION WORKSHEET | Index No. 221H-065A<br>Rev.: 2 |
|--------------------------|------------------------------|--------------|------------------------------|--------------------------------|
| Prepared b<br>Checked by | y: 1 Leuis                   | Date 9/30/83 | NOTES                        |                                |

 The test subjected the cabling to an initial transient of 320°F and 96.7 psia for 13 hours, followed by a cooldown to ambient. The cabling was then subjected to a second transient of 223°F and 19.7 psia for 118 hours. The temperature in containment peaks at 283°F in 17 seconds. The pressure in containment peaks at 52 psia in 50 seconds. At 13 hours, the conditions are 172°F and 20.5 psia. The conditions in containment return to ambient after 7 days.

Based on this information, it can be concluded that the test subjected the cabling to an overall more severe environment than the postulated LOCA. Since the cabling remained functional throughout the test and after completion of the test, it can be concluded that the cabling would remain functional during and after exposure to the accident environment which would result from the postulated LOCA. (Reference G, H, X)

- 2. CAL-40 qualifies components tested in a high pH boric acid spray to a pH value of 5.
- 3. Cables are not affected by submergence. Cables do not service components located below maximum containment flood level.
- Cable is Kerite Company stranded copper wire control cable 2C No. 12 AWG with Kerite FR insulation and Kerite FR jacket. (References E-11, ROC-23A, and ROC-23B)

Docket: 50-346

Facility: Davis-Besse Unit 1 SYSTEM COMPONENT EVALUATION WORKSHEET



Prepared by: Nicerio Date: 11/183 Checked by: Equandor Date: 11/183

|  | ENVIRONMENT                         |                                  |                                      | DOCUMENTATION REF. |                                  | Qualification                     | Outstanding |
|--|-------------------------------------|----------------------------------|--------------------------------------|--------------------|----------------------------------|-----------------------------------|-------------|
| 1  | Parameter                           | Specification                    | Qualification                        | Specification      | Qualification                    | Method                            | Items       |
| System: Generic 1E Elec-<br>trical Components      | <br> Operating  <br> Time           | l Year                           | l 1.1 Years                          | F                  | E-3<br>Note 1<br>V-23B           | Simultaneous  <br>Test            | None        |
| Plant ID No. CS2                                   | Temperature<br>(°F)                 | 283.0                            | 320.0 <sup>-</sup>                   | н, х               | E-3<br>V-23B                     | Simultaneous<br>Test              | None        |
| Manufacturer: Kerite                               | Pressure<br>(PSIA)                  | 52.0                             | <br>  96.7<br>                       | G, X               | E-3<br>V-23B                     | Simultaneous<br>Test              | None        |
| Function: Control                                  | Relative<br>  Humidity   <br>   (%) | 100.0                            | 100.0                                | I A                | E-3<br>V-23B                     | Simultaneous<br>Test              | None        |
| Demon: N/A<br>Service: Control Cable               | <br>  Chemical<br>  Spray           | Boric Acid<br>1800 ppm<br>pH 5.0 | Boric Acid<br>  1800 ppm<br>  pH 5.0 | A                  | E-3<br>V-23B<br>CAL-40<br>Note 2 | Simultaneous<br>Test,<br>Analysis | None        |
| Location: Containment                              | Radiation                           | 3.87 x 10 <sup>7</sup> RADS      | <br> 1.0 x 10 <sup>8</sup> RADS      | CAL-44             | E-3<br>V-23B                     | Sequential Test                   | None        |
| Flood Level Elev: 572'-2"<br>Above Flood Level: No | Aging                               | 40 Years                         | <br>  40 Years<br>                   | I                  | CAL-91<br>E-3<br>V-23B           | Sequential<br>Test                | None        |
| Hot Shutdown   X  <br>Cold Shutdown   X            | <br>  Submergence<br>               | 572'-2"                          | <br>  Note 3<br>                     | B                  | Note 3                           | Note 3                            | None        |

| 'acility: Da Besse Unit 1 | SYSTEM COMPONENT QUATION WORKSHEET | Index No. 21H-066A |
|---------------------------|------------------------------------|--------------------|
| Prepared by: 7 Leuis      | Date 9/30/83 NOTES                 | Rev.:2             |
| Thecked by: Amand         | Date 9/20/13                       |                    |

1. The test subjected the cabling to an initial transient of 320°F and 96.7 psia for 13 hours, followed by a cooldown to ambient. The cabling was then subjected to a second transient of 223°F and 19.7 psia for 118 hours. The temperature in containment peaks at 283°F in 17 seconds. The pressure in containment peaks at 52 psia in 50 seconds. At 13 hours, the conditions are 172°F and 20.5 psia. The conditions in containment return to ambient after 7 days.

Based on this information, it can be concluded that the test subjected the cabling to an overall more severe environment than the postulated LOCA. Since the cabling remained functional throughout the test and after completion of the test, it can be concluded that the cabling would remain functional during and after exposure to the accide environment which would result from the postulated LOCA. (Reference G, H, X)

- 2. CAL-40 qualifies components tested in a high pH boric acid spray to a pH value of 5.
- 3. Cables are not affected by submergence. Cables do not service components located below maximum containment flood level.
- Cable is Kerite Company stranded copper wire control cable 4C No. 12 AWG with Kerite FR insulation and Kerite FR jacket. (References E-11, ROC-23A, and ROC-23B)

Docket: 50-346

Facility: Davis-Besse Unit 1 SYSTEM COMPONENT EVALUATION WORKSHEET



Prepared by: N Louis Date: 11/1/83 Checked by: Ancocon Date: 11/2/83

| EQUIPMENT DESCRIPTION                              | ENVIRONMENT                        |                                  |                                  | DOCUMENTATION REF. |  | Qualification                     | Outstanding |
|--|------------------------------------|----------------------------------|----------------------------------|--------------------|--|-----------------------------------|-------------|
|  | Parameter                          | Specification                    | Qualification                    | Specification      | Qualification                          | Method                            | Items       |
| System: Generic 1E Elec-                           | <br> Operating  <br> Time          | l Year                           | 1.1 Years                        | F                  | E-3<br>  Note 1<br>  V-23B             | Simultaneous  <br>Test            | None        |
| Plant ID No. CS3<br>Component: Cable               | Temperature                        | 283.0                            | 320.0                            | н, х<br>I          | E-3<br>V-23B                           | Simultaneous<br>Test              | None        |
| Manufacturer: Kerite<br> <br> Model Number: Note 4 | Pressure  <br>  (PSIA)             | 52.0                             | 96.7                             | <br>  G, X<br>     | I E-3<br>I V-23B                       | Simultaneous<br>Test              | None        |
| Function: Control                                  | Relative  <br> Humidity  <br>  (%) | 100.0                            | 100.0                            | A                  | <br>  E-3<br>  V-23B                   | Simultaneous<br>Test              | None        |
| Demon: N/A   | <br> Chemical  <br> Spray          | Boric Acid<br>1800 ppm<br>pH 5.0 | Boric Acid<br>1800 ppm<br>pH 5.0 | A                  | E-3<br>  V-23B<br>  CAL-40<br>  Note 2 | Simultaneous<br>Test,<br>Analysis | None        |
| Location: Containment                              | Radiation                          | 3.87 x 10 <sup>7</sup> RADS      | 1.0 x 10 <sup>8</sup> RADS       | CAL-44             | E-3<br>V-23B                           | Sequential Test                   | None        |
| Flood Level Elev: 572'-2"<br>Above Flood Level: No | Aging                              | 40 Years                         | 40 Years                         | I                  | CAL-91<br>  E-3<br>  V-23B             | Sequential<br>Test                | None        |
| Hot Shutdown   X  <br>  Cold Shutdown   X          | Submergence                        | 572"-2"                          | Note 3                           | B                  | <br>  Note 3<br>                       | Note 3                            | None        |

| Facility: Date-Besse Unit 1                        | SYSTEM COMPONENT QUATION WORKSHEET | Index No 21H-067A |
|--|------------------------------------|-------------------|
| Docket: 50-346<br>Prepared by: <b>7 Livis</b> Date | 9/30/83 NOTES                      | Rev.:2            |
| Checked by: Apria and Date                         | 9/2-/83                            |                   |

 The test subjected the cabling to an initial transient of 320°F and 96.7 psia for 13 hours, followed by a cooldown to ambient. The cabling was then subjected to a second transient of 223°F and 19.7 psia for 118 hours. The temperature in containment peaks at 283°F in 17 seconds. The pressure in containment peaks at 52 psia in 50 seconds. At 13 hours, the conditions are 172°F and 20.5 psia. The conditions in containment return to ambient after 7 days.

Based on this information, it can be concluded that the test subjected the cabling to an overall more severe environment than the postulated LOCA. Since the cabling remained functional throughout the test and after completion of the test, it can be concluded that the cabling would remain functional during and after exposure to the accident environment which would result from the postulated LOCA. (Reference G, H, X)

- 2. CAL-40 qualifies components tested in a high pH boric acid spray to a pH value of 5.
- 3. Cables are not affected by submergence. Cables do not service components located below maximum containment flord level.
- Cable is Kerite Company stranded copper wire control cable 7C No. 12 AWG with Kerite FR insulation and Kerite FR jacket. (References E-11, ROC-23A, and ROC-23B)

Docket: 50-346

Facility: Davis-Besse Unit 1 SYSTEM COMPONENT EVALUATION WORKSHEET



Prepared by: N Ceino Date: 11/1/03 Checked by: Arcadonal Date: 11/2/83

| EQUIPMENT DESCRIPTION                              | ENVIRONMENT                        |                                  |                                  | DOCUMENTATION REF. |                                  | Qualification                         | Outstanding |
|--|------------------------------------|----------------------------------|----------------------------------|--------------------|----------------------------------|---------------------------------------|-------------|
|  | Parameter                          | Specification                    | Qualification                    | Specification      | pecification Qualification       |                                       | Items       |
| System: Generic 1E Elec-<br>trical Components      | <br> Operating  <br> Time          | l Year                           | 1.1 Years                        | F                  | E-3<br>Note 1<br>V-23B           | Simultaneous  <br>Test                | None        |
| Plant ID No. CS5                                   | Temperature                        | 283.0                            | 320.0                            | Н, Х               | E-3<br>V-23B                     | Simultaneous  <br>Test                | None        |
| Manufacturer: Kerite                               | Pressure  <br>  (PSIA)             | 52.0                             | 96.7                             | G, X               | E-3<br>V-23B                     | Simultaneous  <br>Test                | None        |
| Function: Control                                  | Relative  <br> Humidity  <br>  (%) | 100.0                            | 100.0                            | A                  | E-3<br>V-23B                     | Simultaneous  <br>Test                | None        |
| Demon: N/A<br>Service: Control Cable               | <br> Chemical  <br> Spray  <br>    | Boric Acid<br>1800 ppm<br>pH 5.0 | Boric Acid<br>1800 ppm<br>pH 5.0 | A                  | E-3<br>V-23B<br>CAL-40<br>Note 2 | Simultaneous  <br>Test,  <br>Analysis | None        |
| Location: Containment                              | Radiation                          | 3.87 x 10 <sup>7</sup> RADS      | 1.0 x 10 <sup>8</sup> RADS       | CAL-44             | E-3<br>V-23B                     | Sequential Test                       | None        |
| Flood Level Elev: 572'-2"<br>Above Flood Level: No | Aging                              | 40 Years                         | 40 Years                         | I                  | CAL-91<br>E-3<br>V-23B           | Sequential  <br>Test                  | None        |
| Hot Shutdown   X  <br>Cold Shutdown   X            | <br> Submergence <br>              | 572'-2"                          | Note 3                           | B                  | Note 3                           | Note 3                                | None        |

SYSTEM COMPONENT ATION WORKSHEET 21H-068A -Besse Unit 1 Index No. 'acility: Day 50-346 Rev.: 2 bocket: NOTES Date 'repared by: Date thecked by:

The test subjected the cabling to an initial transient of 320°F and 95.7 psia for 13 hours, followed by a cooldown to ambient. The cabling was then subjected to a second transient of 223°F and 19.7 psia for 118 hours. The temperature in containment peaks at 283°F in 17 seconds. The pressure in containment peaks at 52 psia in 50 seconds. At 13 hours, the conditions are 172°F and 20.5 psia. The conditions in containment return to ambient after 7 days.

Based on this i formation, it can be concluded that the test subjected the cabling to an overall more severe environment than the postulated LOCA. Since the cabling remained functional throughout the test and after completion of the test, it can be concluded that the cabling would remain functional during and after exposure to the accident environment which would result from the postulated LOCA. (Reference G, H, X)

- 2. CAL-40 qualifies components tested in a high pH boric acid spray to a pH value of 5.
- 3. Cables are not affected by submergence. Cables do not service components located below maximum containment flood level.
- Cable is Kerite Company stranded copper wire control cable 2C No. 9 AWG with Kerite FR insulation and Kerite FR jacket. (References E-11, ROC-23A, and ROC-23B)

Pacility: Davis-Besse Unit 1 SYSTEM COMPONENT EVALUATION WORKSHEET Docket: 50-346



Prepared by: NLouis Date: 1/1/12 Checked by: Macong Date: 11/2/13

|   | ENVIRONMENT                         |   |                                  | DOCUMENTATION REF.          |  | Qualification                     | Outstanding |
|---|-------------------------------------|---|----------------------------------|-----------------------------|--|-----------------------------------|-------------|
| 1   | Parameter                           | Parameter   Specification   Qualification |                                  | Specification Qualification |  | Method                            | Items       |
| System: Generic 1E Elec-<br>trical Components         | Operating  <br> Time                | l Year                                    | 1.1 Years                        | F                           | E-3<br>Note 1<br>V-23B                 | Simultaneous<br>Test              | None        |
| Plant ID No. CS6                                      | Temperature                         | 283.0                                     | 320.0                            | Н, Х                        | E-3<br>V-23B                           | Simultaneous<br>Test              | None        |
| Manufacturer: Kerite  <br> <br> Model Number: Note 4  | Pressure<br>  (PSIA)                | 52.0                                      | 96.7                             | G, X                        | E-3<br>V-23B                           | Simultaneous<br>Test              | None        |
| Function: Control  <br> <br> <br> Accuracy: Spec: N/A | Relative  <br> Humidity  <br>   (%) | 100.0                                     | 100.0                            | A                           | E-3<br>V-23B                           | Simultaneous  <br>Test            | None        |
| Demon: N/A  | <br>  Chemical  <br>  Spray  <br>   | Boric Acid<br>1800 ppm<br>pH 5.0          | Boric Acid<br>1800 ppm<br>pH 5.0 | A                           | E-3<br>  V-23B<br>  CAL-40<br>  Note 2 | Simultanecus<br>Test,<br>Analysis | None        |
| Location: Containment                                 | Radiation                           | 3.87 x 10 <sup>7</sup> RADS               | 1.0 x 10 <sup>8</sup> RADS       | CAL-44                      | E-3<br>V-23B                           | Sequential Test                   | None        |
| Flood Level Elev: 572'-2"<br>Above Flood Level: No    | <br>  Aging                         | 40 Years                                  | <br>  40 Years<br>               | I                           | CAL-91<br>  E-3<br>  V-23B             | Sequential<br>Test                | None        |
| Hot Shutdown   X  <br> <br>  Cold Shutdown   X        | <br>  Submergence <br>              | 572'-2"                                   | Note 3                           | B                           | Note 3                                 | Note 3                            | None        |

| Facility: Davis-Besse Unit 1<br>Docket: 50-346       | SYSTEM COMPONENT CLUATION WORKSHEET | Index No. 221H-069A<br>Rev.: 2 |
|--|-------------------------------------|--------------------------------|
| Prepared by: <b>A Leuis</b><br>Checked by: Aristonal | Date 9/30/83<br>Date 9/30/83        |                                |

 The test subjected the cabling to an initial transient of 320°F and 96.7 psia for 13 hours, followed by a cooldown to ambient. The cabling was then subjected to a second transient of 223°F and 19.7 psia for 118 hours. The temperature in containment peaks at 283°F in 17 seconds. The pressure in containment peaks at 52 psia in 50 seconds. At 13 hours, the conditions are 172°F and 20.5 psia. The conditions in containment return to ambient after 7 days.

Based on this information, it can be concluded that the test subjected the cabling to an overall more severe environment than the postulated LOCA. Since the cabling remained functional throughout the test and after completion of the test, it can be concluded that the cabling would remain functional during and after exposure to the accident environment which would result from the postulated LOCA. (Reference G, H, X)

- 2. CAL-40 qualifies components tested in a high pH boric acid spray to a pH value of 5.
- 3. Cables are not affected by submergence. Cables do not service components located below maximum containment flood level.
- 4. Cable is Kerite Company stranded copper wire control cable 4C No. 9 AWG with Kerite FR insulation and Kerite FR jacket. (References E-11, ROC-23A, and ROC-23B)

Pacility: Des-Besse Unit 1 SYSTEM COMPONENT Docket: 50-346

UATION WORKSHEET

221H-070 Index M Rev.: 2

Date: 11/1/83 Date: 11/1/83 Prepared by: N Louis Checked by:

| EQUIPMENT DESCRIPTION   | ENVIRONMENT                            |               |                          | DOCUMENTATION REF. |                    | Qualification        | Outstanding    |
|---|--|---------------|--------------------------|--------------------|--------------------|----------------------|----------------|
| ۱۱  | Parameter                              | Specification | Qualification            | Specification      | Qualification      | Method               | Items          |
| <br> System: Generic 1E Elec-  <br>  trical Components                    | Operating  <br> Time                   | l Year        | <br>  l.l Years<br> <br> | Note 2             | Note 1  <br>Note 3 | Simultaneous<br>Test | None<br>       |
| Plant ID No.: £C5017  | <br> Temperature <br>  (°F)            | 203.0         | <br>  345.0<br>          | C-515              | Note 3             | Simultaneous<br>Test | <br>  None<br> |
| Manufacturer: Stanwick  | <br>  Pressure  <br> (PSIA)            | 15.60         | 74.7                     | C-515              | Note 3             | Simultaneous<br>Test | None           |
| Function: Electrical  <br>Circuit  <br>Termination                        | Relative   <br>  Humidity   <br>   (%) | 100.0         | <br>  100.0<br>          | <br>  A<br>        | Note 3             | Simultaneous<br>Test | None<br>I      |
| Accuracy: Spec: N/A  <br>Demon: N/A  <br>Service: Electrical  <br>Control |  | N/A           | <br>  N/A<br> <br>       | <br>  N/A<br>      | N/A                | N/A                  | None           |
| Location: Auxiliary Bldg. <br>Rm. 515                                     | Radiation                              | N/A           | <br>  N/A                | <br>  N/A          | N/A                | N/A                  | None           |
| Flood Level Elev: N/A  <br> Above Flood Level: N/A  <br>                  | Aging  <br>  Aging                     | 40 Years      | <br>  40 Years<br>       | I                  | CAL-79  <br>Note 4 | Analysis             | None           |
| Hot Shutdown   X    <br>  Cold Shutdown   X                               | <br>  Submergence <br>                 | N/A           | <br>  N/A<br>            | N/A                | N/A                | N/A                  | None           |

| Facility: Davis-Besse Unit 1<br>Docket: 50-346         | AVIS-Besse Unit 1 SYSTEM COMPONENT CALUATION WORKSHEET |  |
|--|--|--|
| Prepared by: NLauis Date:<br>Checked by: Manager Date: | <u>ulil83</u><br><u>NOTES</u>                          |  |

1. The test subjected the terminal block to a peak temperature of 345°F. At 30 minutes after the start of the test, the temperature was 320°F, at 1 hour the temperature was 300°F, at 1-1/2 hours the temperature was 290°F, at 2 hours the temperature was 280°F, at 3 hours the temperature was 260°F, at 4 hours the temperature was 255°F, at 8 hours the temperature was 235°F, at 12 hours the temperature was 225°F, and at 18 hours the temperature was 220°F which was maintained for the duration of the 96-hour test. The test pressure peak was 74.7 psia and at 35 minutes the test pressure was down to 19.7 psia which was maintained for the duration of the 96 hours. The temperature in Room 515 peaks at 203°F in 35.2 seconds. The pressure in Room 515 peaks at 15.6 psia in 9.4 seconds. The temperature and pressure in Room 515 return to ambient conditions in 19 minutes. (Reference C-515)

Based on this information, it can be concluded that the laboratory test subjected the terminal block to an overall more severe environment than that which would result from a postulated HELB. Since the terminal block remained operable throughout the test and functional after the test, it can be concluded that the terminal block will remain functional during and after exposure to the accident environment which would result from the postulated HELB.

In addition, the terminal blocks were tested for temperature and humidity by the Stanwick Electrical Products Company. The high temperature test of 150°F for 8 hours was passed successfully with a test voltage of 600 volts D.C. (References V-35A, and V-35B). Maximum continuous use temperatures for the terminal block base and barrier materials (only non-metallic parts) are 302°F and 275°F, respectively (References W-2, AA). Stanwick also conducted a humidity test on the terminal blocks with 90%  $\pm$  10% relative humidity at 68°F using a test voltage of 500 volts D.C. No shorting or arcing occurred during the test (References V-35A, V-35B).

- 2. One year operating time is used as a conservative maximum specification.
- 3. This test data was obtained from a test performed by Duke Power Corporation on Stanwick terminal blocks (Reference ROC-35A). This test report is not available as a reference document.
- 4. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.
COMPONENT MATERIALS EVALUATION SHEET



Prepared by: Nhours Date: 11/1/83 Checked by: Analor Date: 11/2/83

| Plant I.D. No   | D.: EC5017   | Component:   | Termi            | nal Block  |                  |
|---|--|--|------------------|--|------------------|
| Manufacturer  | :Stanwick  | Model No.:   | Туј              | pe G   |                  |
|   |  | I THERMAL AGIN   | IG I             | RADIATION  |                  |
| Parts List  | Materials List   | Qualification  | Reference        | Qualification  | Reference        |
| Terminal Block Links<br>Mounting Rods<br>Bolts<br>Insert<br>Nuts<br>Terminal Block Base<br>Terminal Block Barrier | Brass<br>Metallic<br>Silicone Bronze<br>Brass<br>Durez #791 Phenolic<br>Glass - Melamine | Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>40 Years @ 230°F<br>Greater than<br>40 Years @ 122°F | CAL-79<br>CAL-79 | Not Affected<br>Not Affected<br>Not Affected<br>Not Affected<br>3.0 x 10 <sup>8</sup> RADS<br>1.6 x 10 <sup>8</sup> RADS | CAL-79<br>CAL-79 |

Docket: 50-346

Facility: Davis-Besse Unit 1 SYSTEM COMPONENT EVALUATION WORKSHEET



Prepared by: Nlewis Date: 11/1/83 Checked by: Statecourt Date: 11/1/83

| EQUIPMENT DESCRIPTION   | ENVIRONMENT                              |               |                    | DOCUMENTATION REF. |                      | Qualification        | <br>  Outstanding |
|---|--|---------------|--------------------|--------------------|----------------------|----------------------|-------------------|
| II  | Parameter                                | Specification | Qualification      | Specification      | Qualification        | Method               | Items             |
| <br> System: Generic 1E Elec-  <br>  trical Components                    | Operating  <br> Time                     | l Year        | l.l Years          | Note 2             | Note 1  <br>Note 3   | Simultaneous<br>Test | None              |
| Plant ID No.: EC5018  | <br> Temperature <br>  (°F)              | 203.0         | 345.0              | C-515              | Note 3               | Simultaneous<br>Test | None              |
| Manufacturer: Stanwick  <br> <br> Model Number: Type G                    |  | 15.60         | 74.7               | c-515              | Note 3               | Simultaneous<br>Test | <br>  None<br>    |
| Function: Electrical<br>Circuit<br>Termination                            | <br> Relative  <br> Humidity  <br>   (%) | 100.0         | 100.0              |                    | Note 3               | Simultaneous<br>Tesț | <br>  None<br>    |
| Accuracy: Spec: N/A  <br>Demon: N/A  <br>Service: Electrical  <br>Control |  | N/A           | N/A                | <br>  N/A<br>      | N/A                  | N/A                  | <br>  None<br>    |
| Location: Auxiliary Bldg.<br>Rm. 515                                      | Radiation                                | N/A           | N/A                | N/A                | N/A                  | N/A                  | l None            |
| Flood Level Elev: N/A<br> Above Flood Level: N/A<br>                      |  | 40 Years      | <br>  40 Years<br> | I                  | CAL-79  <br>  Note 4 | Analysis             | <br>  None<br>    |
| Hot Shutdown   <u>X</u>    <br>  Cold Shutdown   <u>X</u>                 | <br>  Submergence <br>                   | N/A           | <br>  N/A<br>      | N/A                | N/A                  | N/A                  | <br>  None<br>    |

| Pacility:                | Davis-Besse Unit 1 |                | SYSTEM ( | COMPONENT EVALUATION WORKSHEET | Index No. 2218-071A<br>Rev.: 2 |
|--------------------------|--------------------|----------------|----------|--------------------------------|--------------------------------|
| Prepared b<br>Checked by | W: N Laine         | Date:<br>Date: | 11/1/83  | NOTES                          |                                |

1. The test subjected the terminal block to a peak temperature of 345°F. At 30 minutes after the start of the test, the temperature was 320°F, at 1 hour the temperature was 300°F, at 1-1/2 hours the temperature was 290°F, at 2 hours the temperature was 280°F, at 3 hours the temperature was 260°F, at 4 hours the temperature was 255°F, at 8 hours the temperature was 235°F, at 12 hours the temperature was 225°F, and at 18 hours the temperature was 220°P which was maintained for the duration of the 96-hour test. The test pressure peak was 74.7 psia and at 35 minutes the test pressure was down to 19.7 psia which was maintained for the duration of the duration of the 96 hours. The temperature in Room 515 peaks at 203°F in 35.2 seconds. The pressure in Room 515 peaks at 15.6 psia in 9.4 seconds. The temperature and pressure in Room 515 return to ambient conditions in 19 minutes. (Reference C-515)

Based on this information, it can be concluded that the laboratory test subjected the terminal block to an overall more severe environment than that which would result from a postulated HELB. Since the terminal block remained operable throughout the test and functional after the test, it can be concluded that the terminal block will remain functional during and after exposure to the accident environment which would result from the postulated HELB.

In addition, the terminal blocks were tested for temperature and humidity by the Stanwick Electrical Products Company. The high temperature test of 150°F for 8 hours was passed successfully with a test voltage of 600 volts D.C. (References V-35A, and V-35B). Maximum continuous use temperatures for the terminal block base and barrier materials (only non-metallic parts) are 302°F and 275°F, respectively (References W-2, AA). Stanwick also conducted a humidity test on the terminal blocks with  $90\% \pm 10\%$  relative humidity at 68°F using a test voltage of 500 volts D.C. No shorting or arcing occurred during the test (References V-35A, V-35B).

- 2. One year operating time is used as a conservative maximum specification.
- 3. This test data was obtained from a test performed by Duke Power Corporation on Stanwick terminal blocks (Reference ROC-35A). This test report is not available as a reference document.
- 4. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

Index No. 221H-071B Rev.: 2

Prepared by: N Lewis Date: 11/1/83 Checked by: Analan Date: 11/1/83

| Plant I.D. No   | D.: EC5018  | Component:   | Termi            | Terminal Block   |                  |  |
|---|---|--|------------------|--|------------------|--|
| Manufacturer  | Stanwick  | Model No.: Type G  |                  | pe G   |                  |  |
|   | I   | THERMAL AGING RADIATIO   |                  |  | 1                |  |
| Parts List  | Materials List  | Qualification  | Reference        | Qualification  | Reference        |  |
| Terminal Block Links<br>Mounting Rods<br>Bolts<br>Insert<br>Nuts<br>Terminal Block Base<br>Terminal Block Barrier | Brass<br>  Metallic<br>  Silicone Bronze<br>  Brass<br>  Brass<br>  Durez #791 Phenolic<br>  Glass - Melamine<br> <br> <br> <br> <br> <br> <br> | <pre>Not Sensitive Not Sensitive Not Sensitive Not Sensitive A0 Years @ 230°P Greater than 40 Years @ 122°P </pre> | CAL-79<br>CAL-79 | Not Affected<br>Not Affected<br>Not Affected<br>Not Affected<br>3.0 x 10 <sup>8</sup> RADS<br>1.6 x 10 <sup>8</sup> RADS | CAL-79<br>CAL-79 |  |

COMPONENT MATERIALS EVALUATION SHEET

Docket: 50-346

Facility: Davis-Besse Unit 1 SYSTEM COMPONENT ENLUATION WORKSHEET

Index No. 221H-072 Rev.: 2

Prepared by: Nheins Date: 11/1/93 Checked by: Date: 1/2/02

| EOUIPMENT DESCRIPTION   |  | ENVIRONMENT   |                    | DOCUMENTAT     | ION REF.             | Qualification        | Outstanding |  |
|---|--|---------------|--------------------|----------------|----------------------|----------------------|-------------|--|
|   | Parameter                                  | Specification | Qualification      | Specification  | Qualification        | Method               | Items       |  |
| <br> System: Generic 1E Elec-  <br>  trical Components                  | <br>  Operating   <br>  Time               | l Year        | 1.1 Years          | Note 2  <br>   | Note 1 1<br>Note 3 1 | Simultaneous<br>Test | None        |  |
| Plant ID No.: EC5056<br>Component: Terminal Block                       | Temperature <br>   (°P)                    | 203.0         | 345.0              | c-515          | Note 3               | Simultaneous<br>Test | None        |  |
| Manufacturer: Stanwick  <br> <br> Model Number: Type G                  | Pressure  <br>  (PSIA)                     | 15,60         | 74.7               | c-515          | Note 3               | Simultaneous<br>Test | None        |  |
| Function: Electrical  <br>  Circuit<br>  Termination                    | <br>  Relative  <br>  Humidity  <br>   (%) | 100.0         | 100.0              |                | Note 3               | Simultaneous<br>Test | None        |  |
| Accuracy: Spec: N/A  <br>Demon: N/A  <br>Service: Electrical<br>Control | <br>  Chemical  <br>  Spray  <br>          | N/A           | N/A                | N/A            | N/A                  | N/A                  | None        |  |
| Location: Auxiliary Bldg.<br>Rm. 515                                    | <br>  Radiation  <br>                      | N/A           | N/A                | <br>  N/A      | N/A                  | N/A                  | None        |  |
| Flood Level Elev: N/A<br> Above Flood Level: N/A<br>                    | <br>  Aging   <br>                         | 40 Years      | <br>  40 Years<br> | III            | CAL-79               | Analysis             | None        |  |
| Hot Shutdown   X  <br>  Cold Shutdown   X                               | <br>  Submergence <br>                     | N/A           | <br>  N/A          | N/A  <br>  N/A | N/A                  | N/A                  | None        |  |

Facility: Davis-Besse Unit 1 SYSTEM COMPONENT LUATION WORKSHEET Index No 221H-072A 50-346 Rev.: Docket: NOTES Date: Prepared by: Date: Checked by:

1. The test subjected the terminal block to a peak temperature of 345°F. At 30 minutes after the start of the test, the temperature was 320°F, at 1 hour the temperature was 300°F, at 1-1/2 hours the temperature was 290°F, at 2 hours the temperature was 280°F, at 3 hours the temperature was 260°F, at 4 hours the temperature was 255°F, at 8 hours the temperature was 235°F, at 12 hours the temperature was 225°F, and at 18 hours the temperature was 220°F which was maintained for the duration of the 96-hour test. The test pressure peak was 74.7 psia and at 35 minutes the test pressure was down to 19.7 psia which was maintained for the duration of the duration of the duration of the 96 hours. The temperature in Room 515 peaks at 203°F in 35.2 seconds. The pressure in Room 515 peaks at 15.6 psia in 9.4 seconds. The temperature and pressure in Room 515 return to ambient conditions in 19 minutes. (Reference C-515)

Based on this information, it can be concluded that the laboratory test subjected the terminal block to an overall more severe environment than that which would result from a postulated HELB. Since the terminal block remained operable throughout the test and functional after the test, it can be concluded that the terminal block will remain functional during and after exposure to the accident environment which would result from the postulated HELB.

In addition, the terminal blocks were tested for temperature and humidity by the Stanwick Electrical Products Company. The high temperature test of  $150\,^{\circ}$ F for 8 hours was passed successfully with a test voltage of 600 volts D.C. (References V-35A, and V-35B). Maximum continuous use temperatures for the terminal block base and barrier materials (only non-metallic parts) are 302°F and 275°F, respectively (References W-2, AA). Stanwick also conducted a humidity test on the terminal blocks with 90% ± 10% relative humidity at 68°F using a test voltage of 500 volts D.C. No shorting or arcing occurred during the test (References V-35A, V-35B).

- 2. One year operating time is used as a conservative maximum specification.
- 3. This test data was obtained from a test performed by Duke Power Corporation on Stanwick terminal blocks (Reference ROC-35A). This test report is not available as a reference document.
- 4. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

Docket: 50-346

Facility: Davis-Besse Unit 1 COMPONENT MATERIALS EVALUATION SHEET



Prepared by: N Lewis Date: 1/1/83 Checked by: Surround Date: 1/2/13

|   | Plant I.D. No   | D.:EC5056   |   | Component:   | Termi            | nal Block  |                  |
|---|---|---|---|--|------------------|--|------------------|
|   | Manufacturer: Stanwick  |   |   | Model No.:   | Ту               | pe G   |                  |
|   |   |   | 1 | THERMAL AGI  | NG I             | RADIATIO   | N                |
| Ĺ | Parts List  | Materials List  | 1 | Qualification  | Reference        | Qualification  | Reference        |
|   | Terminal Block Links<br>Mounting Rods<br>Bolts<br>Insert<br>Nuts<br>Terminal Block Base<br>Terminal Block Barrier | Brass<br>  Metallic<br>  Silicone Bronze<br>  Brass<br>  Brass<br>  Durez #791 Phenolic<br>  Glass - Melamine |   | Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>40 Years @ 230°F<br>Greater than<br>40 Years @ 122°F | CAL-79<br>CAL-79 | Not Affected<br>Not Affected<br>Not Affected<br>Not Affected<br>3.0 x 10 <sup>8</sup> RADS<br>1.6 x 10 <sup>8</sup> RADS | CAL-79<br>CAL-79 |

Pacility: Davis-Bease Unit 1 SYSTEM COMPONENT E Docket: 50-346

UATION WORKSHEET

Index No. 2218-073 Rev.: 2

Prepared by: Nheins Date: 11/1/87 Checked by: Attachant Date: 11/2/82

| EQUIPMENT DESCRIPTION   |  | ENVIRONMENT   |               | DOCUMENTA     | TION REF.          | Qualification        | Outstanding |
|---|--|---------------|---------------|---------------|--------------------|----------------------|-------------|
|   | Parameter                                  | Specification | Qualification | Specification | Qualification      | Method               | Items       |
| <br> System: Generic 1E Elec-  <br>  trical Components              | Operating  <br>  Time                      | l Year        | 1.1 Years     | Note 2        | Note 1  <br>Note 3 | Simultaneous<br>Test | None        |
| Plant ID No.: EC5057  | Temperature <br>   (°F)                    | 203.0         | 345.0         | C-515         | Note 3             | Simultaneous<br>Test | None        |
| Manufacturer: Stanwick  <br> <br> Model Number: Type G  <br>        |  | 15.60         | 74.7          | <br>  C-515   | Note 3             | Simultaneous<br>Test | None        |
| Function: Electrical  <br>  Circuit  <br>  Termination              | <br>  Relative  <br>  Humidity  <br>   (%) | 100.0         | 100.0         | ι λ<br>Ι      | Note 3             | Simultaneous<br>Test | None        |
| Accuracy: Spec: N/A<br>Demon: N/A<br>Service: Electrical<br>Control | <br> Chemical  <br> Spray  <br>            | N/A           | N/A           | <br>  N/A<br> | N/A                | N/A                  | None        |
| Location: Auxiliary Bldg.<br>Rm. 515                                | Radiation                                  | N/A           | N/A           | N/A           | N/A  <br>  N/A     | N/A                  | None        |
| Flood Level Elev: N/A  <br>Above Flood Level: N/A                   | Aging  <br>  Aging                         | 40 Years      | 40 Years      | I             | CAL-79             | Analysis             | None        |
| Hot Shutdown   X  <br>Cold Shutdown   X                             | <br>  Submergence <br>                     | N/A           | N/A           | <br>  N/A<br> | N/A                | N/A                  | None        |

Pacility: Davis-Besse Unit 1 SYSTEM COMPONENT LUATION WORKSHEET Index No 221H-073A 50-346 Docket : Rev.: NOTES Prenared hy: Checked by: Date:

1. The test subjected the terminal block to a peak temperature of 345°F. At 30 minutes after the start of the test, the temperature was 320°F, at 1 hour the temperature was 300°F, at 1-1/2 hours the temperature was 290°F, at 2 hours the temperature was 280°F, at 3 hours the temperature was 260°F, at 4 hours the temperature was 255°F, at 8 hours the temperature was 235°F, at 12 hours the temperature was 225°F, and at 18 hours the temperature was 220°F which was maintained for the duration of the 96-hour test. The test pressure peak was 74.7 psia and at 35 minutes the test pressure was down to 19.7 psia which was maintained for the duration of the 96 hours. The temperature in Room 515 peaks at 203°F in 35.2 seconds. The pressure in Room 515 peaks at 15.6 psia in 9.4 seconds. The temperature and pressure in Room 515 return to ambient conditions in 19 minutes. (Reference C-515)

Based on this information, it can be concluded that the laboratory test subjected the terminal block to an overall more severe environment than that which would result from a postulated HELB. Since the terminal block remained operable throughout the test and functional after the test, it can be concluded that the terminal block will remain functional during and after exposure to the accident environment which would result from the postulated HELB.

In addition, the terminal blocks were tested for temperature and humidity by the Stanwick Electrical Products Company. The high temperature test of 150 °F for 8 hours was passed successfully with a test voltage of 600 volts D.C. (References V-35A, and V-35B). Maximum continuous use temperatures for the terminal block base and barrier materials (only non-metallic parts) are 302 °F and 275 °F, respectively (References W-2, AA). Stanwick also conducted a humidity test on the terminal blocks with 90% ± 10% relative humidity at 68 °F using a test voltage of 500 volts D.C. No shorting or arcing occurred during the test (References V-35A, V-35B).

- 2. One year operating time is used as a conservative maximum specification.
- 3. This test data was obtained from a test performed by Duke Power Corporation on Stanwick terminal blocks (Reference ROC-35A). This test report is not available as a reference document.
- 4. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

COMPONENT MATERIALS EVALUATION SHEET



Prepared by: NLeurs Date: 11/1/83 Checked by: Ancesting Date: 11/1/83

| Plant I.D. No.: <u>EC5057</u><br>Manufacturer: <u>Stanwick</u> |   |   | Component:<br>Model No.: | Te        | Type | al Block<br>e G            |           | 1  |
|--|---|---|--------------------------|-----------|------|----------------------------|-----------|----|
|  |   |   | THERMAL AGIN             | IG        | 1    | RADIATIO                   | N         | 1  |
| Parts List   | Materials List  | 1 | Qualification            | Reference | 1    | Qualification              | Reference | e  |
|  | l de la companya de l | 1 |                          | 1         | 1    |                            | 1         | -1 |
| Terminal Block Links   | Brass   | 1 | Not Sensitive            | 1         | 1    | Not Affected               | 1         | 1  |
| Mounting Rods  | Metallic  | 1 | Not Sensitive            | 1         | 1    | Not Affected               | 1         | 1  |
| Bolts  | Silicone Bronze   | 1 | Not Sensitive            | 1.        | 1    | Liot Affected              | 1         | 1  |
| Insert   | Brass   | 1 | Not Sensitive            | 1         | 1    | Not Affected               | 1         | 1  |
| Nuts   | Brass   | 1 | Not Sensitive            | 1         | 1    | Not Affected               | 1         | 1  |
| Terminal Block Base  | Durez #791 Phenolic   | 1 | 40 Years @ 230°F         | CAL-79    | 1    | 3.0 x 10 <sup>8</sup> RADS | 1 CAL-79  | 1  |
| Terminal Block Barrier   | Glass - Melamine  | 1 | Greater than             | CAL-79    | 1    | 1.6 x 10 <sup>8</sup> RADS | 1 CAL-79  | 1  |
|  |   | 1 | 40 Years @ 122°F         | 1         | 1    |                            | 1         | 1  |

SYSTEM COMPONENT EVALUATION WORKSHEET



Prepared by: Nheins Date: 11/1/83 Checked by: Arminer Date: 4/2/02

| EQUIPMENT DESCRIPTION   |  | ENVIRONMENT   |               | DOCUMENTATION REF. |                            | Qualification        | Outstanding |  |
|---|--|---------------|---------------|--------------------|----------------------------|----------------------|-------------|--|
|   | Parameter                                  | Specification | Qualification | Specification      | Qualification              | Method               | Items       |  |
| System: Generic 1E Elec-<br>trical Components                           | Operating  <br>  Time  <br>                | l Year        | l.l Years     | Note 2             | Note 1                     | Simultaneous<br>Test | None        |  |
| Plant ID No.: EV01060<br>Component: Terminal Block                      | <br>  Temperature <br>   (°P)              | 267.0         | 345.0         | C-501              | Note 3                     | Simultaneous<br>Test | None        |  |
| Manufacturer: Stanwick  <br>Model Number: Type G                        |  | 15.61         | 74.7          | i<br>i c-501       | <br>  Note 3    <br>       | Simultaneous<br>Test | None        |  |
| Function: Electrical<br>Circuit<br>Termination                          | <br>  Relative  <br>  Humidity  <br>   (%) | 100.0         | 100.0         | <br>  A<br>        | <br>  Note 3  <br>         | Simultaneous<br>Test | None        |  |
| Accuracy: Spec: N/A  <br>Demon: N/A  <br>Service: Electrical<br>Control | <br>  Chemical  <br>  Spray  <br>          | N/A           | N/A           | <br>  N/A<br>      | <br>  N/A  <br>            | N/A                  | None        |  |
| Location: Auxiliary Bldg.<br>Rm. 501                                    | <br>  Radiation                            | N/A           | N/A           | I N/A              | N/A                        | N/A                  | None        |  |
| Flood Level Elev: N/A<br>Above Flood Level: N/A                         |  | 40 Years      | 40 Years      | II                 | <br>  CAL-79  <br>  Note 4 | Analysis             | None        |  |
| Hot Shutdown   X  <br>Cold Shutdown   X                                 | Submergence                                | N/A           | N/A           | <br>  N/A<br>      | N/A                        | N/A                  | None        |  |

Facility: Davis-Besse Unit 1 SYSTEM COMPONENT UATION WORKSHEET Index No. 221H-0074A 50-346 Docket: Rev. : 2 NOTES Prepared by: Checked by: Date:

1. The test subjected the terminal block to a peak temperature of 345°F. At 30 minutes after the start of the test, the temperature was 320°F, at 1 hour the temperature was 300°F, at 1-1/2 hours the temperature was 290°F, at 2 hours the temperature was 280°F, at 3 hours the temperature was 260°F, at 4 hours the temperature was 255°F, at 8 hours the temperature was 235°F, at 12 hours the temperature was 225°F, and at 18 hours the temperature was 220°F which was maintained for the duration of the 96-hour test. The test pressure peak was 74.7 psia and at 35 minutes the test pressure was down to 19.7 psia which was maintained for the duration of the duration of the duration of the 96 hours. The temperature in Room 501 peaks at 267°F in 31 seconds. The pressure in Room 501 peaks at 15.6 psia in 9.5 seconds. The temperature and pressure in Room 501 return to ambient conditions in 19 minutes. (Reference C-501)

Based on this information, it can be concluded that the laboratory test subjected the terminal block to an overall more severe environment than that which would result from a postulated HELB. Since the terminal block remained operable throughout the test and functional after the test, it can be concluded that the terminal block will remain functional during and after exposure to the accident environment which would result from the postulated HELB.

In addition, the terminal blocks were tested for temperature and humidity by the Stanwick Electrical Products Company. The high temperature test of 150°F for 8 hours was passed successfully with a test voltage of 600 volts D.C. (References V-35A, and V-35B). Maximum continuous use temperatures for the terminal block base and barrier materials (only non-metallic parts) are 302°F and 275°F, respectively (References W-2, AA). Stanwick also conducted a humidity test on the terminal blocks with 90% ± 10% relative humidity at 68°F using a test voltage of 500 volts D.C. No shorting or arcing occurred during the test (References V-35A, V-35B).

- One year operating time is used as a conservative maximum specification.
- 3. This test data was obtained from a test performed by Duke Power Corporation on Stanwick terminal blocks (Reference ROC-35A). This test report is not available as a reference document.
- 4. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

COMPONENT MATERIALS EVALUATION SHEET



Prepared by: Nheurs Date: 11/1/83 Checked by: Marcand Date: 11/1/83

| I. | Plant I.D. No.: <u>EV01060</u><br>Manufacturer: <u>Stanwick</u>   |   | Component:<br>Model No.:  |   | Termi  | Terminal Block<br>Type G                           |  |   |                  |
|----|---|---|---|---|--|--|--|---|------------------|
|    |   |   |   |   | Туј  |  |  |   |                  |
|    |   | L |   | 1 | THERMAL AGI  | NG I   | RADIATION  |   |                  |
| _  | Parts List  | 1 | Materials List  | 1 | Qualification  | Reference  | Qualification  | F | eference         |
|    | Terminal Block Links<br>Mounting Rods<br>Bolts<br>Insert<br>Nuts<br>Terminal Block Base<br>Terminal Block Barrier |   | Brass<br>Metallic<br>Silicone Bronze<br>Brass<br>Brass<br>Durez #791 Phenolic<br>Glass - Melamine |   | Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>40 Years @ 230°F<br>Greater than<br>40 Years @ 122°F | <br>     <br>     <br>  CAL-79  <br>  CAL-79  <br> | Not Affected<br>Not Affected<br>Not Affected<br>Not Affected<br>Not Affected<br>$3.0 \times 10^8$ RADS<br>$1.6 \times 10^8$ RADS |   | CAL-79<br>CAL-79 |

Docket: 50-346

Facility: Davis-Besse Unit 1 SYSTEM COMPONENT: ENJOATION WORKSHEET

Index No. 221H-075 Rev.: 2

Prepared by: NLours Date: 11/1/83 Checked by: Municonst Date: 11/1/83

|   |                                    | ENVIRONMENT   |               | DOCUMENTAT    | TION REF.                   | Qualification        | Outstanding |  |
|---|------------------------------------|---------------|---------------|---------------|-----------------------------|----------------------|-------------|--|
| 1   | Parameter                          | Specification | Qualification | Specification | Specification Qualification |                      | Items       |  |
| <br> System: Generic 1E Elec-<br>  trical Components                      | Operating  <br> Time               | l Year        | 1.1 Years     | Note 2        | Note 1                      | Simultaneous<br>Test | None        |  |
| Plant ID No.: EV0106A<br>Component: Terminal Block                        | <br> Temperature <br>  (°F)        | 267.0         | 345.0         | <br>  C-501   | Note 3                      | Simultaneous<br>Test | None        |  |
| Manufacturer: Stanwick  <br> <br> Model Number: Type G                    | Pressure  <br> (PSIA)              | 15.61         | 74.7          | C-501         | Note 3                      | Simultaneous<br>Test | None        |  |
| Function: Electrical  <br>  Circuit  <br>  Termination                    | Relative  <br> Humidity  <br>  (%) | 100.0         | 100.0         | і<br>  А<br>  | Note 3 1                    | Simultaneous<br>Test | None        |  |
| Accuracy: Spec: N/A  <br>Demon: N/A  <br>Service: Electrical  <br>Control | <br> Chemical  <br> Spray  <br>    | N/A           | N/A           | <br>  N/A<br> | N/A                         | N/A                  | None        |  |
| Location: Auxiliary Bldg.<br>Rm. 501                                      | Radiation                          | N/A           | N/A           | <br>  N/A     | N/A                         | N/A                  | None        |  |
| Flood Level Elev: N/A  <br> Above Flood Level: N/A  <br>                  | Aging                              | 40 Years      | 40 Years      | I             | CAL-79  <br>Note 4          | Analysis             | None        |  |
| Hot Shutdown   X    <br>  Cold Shutdown   X                               | Submergence <br>  Submergence      | N/A           | N/A           | <br>  N/A<br> | N/A                         | N/A                  | None        |  |

| Facility:<br>Docket:     | Davis-Besse Unit 1<br>50-346 |                | SYSTEM COMPONENT | Index No. 221H-075A<br>Rev.: 2 |
|--------------------------|------------------------------|----------------|------------------|--------------------------------|
| Prepared b<br>Checked by | : Nheurs                     | Date:<br>Date: | 11/1/83<br>NOTES |                                |

1. The test subjected the terminal block to a peak temperature of 345°F. At 30 minutes after the start of the test, the temperature was 320°F, at 1 hour the temperature was 300°F, at 1-1/2 hours the temperature was 290°F, at 2 hours the temperature was 280°F, at 3 hours the temperature was 260°F, at 4 hours the temperature was 255°F, at 8 hours the temperature was 235°F, at 12 hours the temperature was 225°F, and at 18 hours the temperature was 220°F which was maintained for the duration of the 96-hour test. The test pressure peak was 74.7 psia and at 35 minutes the test pressure was down to 19.7 psia which was maintained for the duration of the duration of the duration of the 96 hours. The temperature in Room 501 peaks at 267°F in 31 seconds. The pressure in Room 501 peaks at 15.6 psia in 9.5 seconds. The temperature and pressure in Room 501 return to ambient conditions in 19 minutes. (Reference C-501)

Based on this information, it can be concluded that the laboratory test subjected the terminal block to an overall more severe environment than that which would result from a postulated HELB. Since the terminal block remained operable throughout the test and functional after the test, it can be concluded that the terminal block will remain functional during and after exposure to the accident environment which would result from the postulated HELB.

In addition, the terminal blocks were tested for temperature and humidity by the Stanwick Electrical Products Company. The high temperature test of 150°F for 8 hours was passed successfully with a test voltage of 600 volts D.C. (References V-35A, and V-35B). Maximum continuous use temperatures for the terminal block base and barrier materials (only non-metallic parts) are 302°F and 275°F, respectively (References W-2, AA). Stanwick also conducted a humidity test on the terminal blocks with  $90\% \pm 10\%$  relative humidity at 68°F using a test voltage of 500 volts D.C. No shorting or arcing occurred during the test (References V-35A, V-35B).

- 2. One year operating time is used as a conservative maximum specification.
- 3. This test data was obtained from a test performed by Duke Fower Corporation on Stanwick terminal blocks (Reference ROC-35A). This test report is not available as a reference document.
- 4. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

Facility: Davis-Besse Unit 1 COMPONENT MATERIA. Docket: 50-346

EVALUATION SHEET



Prepared by: Nheuro Date: 11/1/83 Checked by: Shallonell Date: 11/1/83

| Plant I.D.             | No. | : EV0106A           |     | Component:       |     | Ter       | minal | Block                      |   |           |
|------------------------|-----|---------------------|-----|------------------|-----|-----------|-------|----------------------------|---|-----------|
| Manufacture            | r : | Stanwick            |     | Model No.:       | -   |           | Туре  | G                          |   |           |
|                        | 1   |                     | 1   | THERMAL AG       | ING |           | 1     | RADIATIO                   | N |           |
| Parts List             | 1   | Materials List      | 1   | Qualification    | 1   | Reference | 1     | Qualification              | 1 | Reference |
|                        | 1   |                     | . 1 |                  | 1   |           | 1     |                            | 1 |           |
| Terminal Block Links   | 1   | Brass               | 1   | Not Sensitive    | 1   |           | 1     | Not Affected               | 1 |           |
| Mounting Rods          | 1   | Metallic            | 1.1 | Not Sensitive    | 1   |           | 1     | Not Affected               | 1 |           |
| Bolts                  | 1   | Silicone Bronze     | 1   | Not Sensitive    | 1   |           | 1     | Not Affected               | 1 |           |
| Insert                 | 1   | Brass               | 1   | Not Sensitive    | 1   |           | 1     | Not Affected               | 1 |           |
| Nuts                   | 1   | Brass               | 1.1 | Not Sensitive    | 1   |           | 1     | Not Affected               | 1 |           |
| Terminal Block Base    | 1   | Durez #791 Phenolic | 1   | 40 Years @ 230°F | 1   | CAL-79    | 1     | 3.0 x 10 <sup>8</sup> RADS | 1 | CAL-79    |
| Terminal Block Barrier | 1   | Glass - Melamine    | 1   | Greater than     | 1   | CAL-79    | 1     | 1.6 x 10 <sup>8</sup> RADS | 1 | CAL-79    |
|                        | i.  |                     | 1   | 40 Years @ 122°F | 1   |           | 1     |                            | 1 |           |
|                        |     |                     |     |                  |     |           |       |                            |   |           |

Facility: Davis-Besse Unit 1

Jocket: 50-346

SYSTEM COMPONENT EVALUATION WORKSHEET



Prepared by: NLewis Date: 11/1/83 Shecked by: Marcard Date: 11/1/83

| EQUIPMENT DESCRIPTION   |                                 | ENVIRONMENT   |                 | DOCUMENTA     | TION REF.                  | Qualification        | Outstanding |
|---|---------------------------------|---------------|-----------------|---------------|----------------------------|----------------------|-------------|
|   | Parameter                       | Specification | Qualification   | Specification | Qualification              | Method               | Items       |
| System: Generic 1E Elec-  <br>trical Components                           |                                 | l Year        | 1.1 Years       | Note 2        | Note 1                     | Simultaneous<br>Test | None        |
| Plant ID No.: EV01070<br>Component: Terminal Block                        | Temperature                     | 267.0         | 345.0           | C-501         | Note 3                     | Simultaneous<br>Tast | None        |
| Manufacturer: Stanwick  <br> <br> Model Number: Type G                    | Pressure  <br> (PSIA)           | 15.61         | 74.7            | C-501         | <br>  Note 3  <br>         | Simultaneous<br>lest | None        |
| Function: Electrical  <br>Circuit  <br>Termination                        |                                 | 100.0         | <br>  100.0<br> | A<br>         | Note 3  <br>       <br>    | Simultaneous<br>Test | None        |
| Accuracy: Spec: N/A  <br>Demon: N/A  <br>Service: Electrical  <br>Control | <br> Chemical  <br> Spray  <br> | N/A           | <br>  N/A<br>   | <br>  N/A<br> | N/A                        | N/A                  | None        |
| Location: Auxiliary Bldg. <br>Rm. 501                                     |                                 | N/A           | N/A             | <br>  N/A     | <br>  N/A  <br>            | N/A                  | None        |
| Flood Level Elev: N/A<br>Above Flood Level: N/A                           | Aging                           | 40 Years      | 40 Years<br>    | I I           | CAL-79  <br>  Note 4  <br> | Analysis             | None        |
| Hot Shutdown   X  <br>Cold Shutdown   X                                   |                                 | N/A           | N/A             | <br>  N/A<br> | N/A  <br>                  | N/A                  | None        |

| Pacility:                  | Davis-Besse Unit 1 |                | SYSTEM  | COMPONENT EVALUATION WORKSHEET | Index No. 221H-076A<br>Rev.: 2 |
|----------------------------|--------------------|----------------|---------|--------------------------------|--------------------------------|
| Prepared by<br>Checked by: | N Leurs            | Date:<br>Date: | 11/1/83 | NOTES                          |                                |

1. The test subjected the terminal block to a peak temperature of 345°F. At 30 minutes after the start of the test, the temperature was 320°F, at 1 hour the temperature was 300°F, at 1-1/2 hours the temperature was 290°F, at 2 hours the temperature was 280°F, at 3 hours the temperature was 260°F, at 4 hours the temperature was 255°2, at 8 hours the temperature was 235°F, at 12 hours the temperature was 225°F, and at 18 hours the temperature was 220°F which was maintained for the duration of the 96-hour test. The test pressure peak was 74.7 psia and at 35 minutes the test pressure was down to 19.7 psia which was maintained for the duration of the 96 hours. The temperature in Room 501 peaks at 267°F in 31 seconds. The pressure in Room 501 peaks at 15.6 psia in 9.5 seconds. The temperature and pressure in Room 501 return to ambient conditions in 19 minutes. (Reference C-501).

Based on this information, it can be concluded that the laboratory test subjected the terminal block to an overall more severe environment than that which would result from a postulated HELB. Since the terminal block remained operable throughout the test and functional after the test, it can be concluded that the terminal block will remain functional during and after exposure to the accident environment which would result from the postulated HELB.

In addition, the terminal blocks were tested for temperature and humidity by the Stanwick Electrical Products C pany. The high temperature test of 150°F for 8 hours was passed successfully with a test voltage of 600 volts D.C. (References V-35A, and V-35B). Maximum continuous use temperatures for the terminal block base and barrier materials (only non-metallic parts) are  $302^{\circ}$ F and  $275^{\circ}$ F, respectively (References W-2, AA). Stanwick also conducted a humidity test on the terminal blocks with 90% ± 10% relative humidity at 68°F using a test voltage of 500 volts D.C. No shorting or arcing occurred during the test (References V-35A, V-35B).

- 2. One year operating time is used as a conservative maximum specification.
- This test data was obtained from a test performed by Duke Power Corporation on Stanwick terminal blocks (Reference ROC-35A). This test report is not available as a reference document.
- 4. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

Prepared by:

Date: 11/1/83 Date: 11/1/83 NLein Checked by: Anal

Plant I.D. No.: EV01070



Component:



Terminal Block

| Material and Parts Reference L | ist: V-35A | , V-35B, | ROC-35B |
|--------------------------------|------------|----------|---------|
|--------------------------------|------------|----------|---------|

| 1 | Manuf acturer   | : Stanwick  |   | Model No.:   |                                    | Тур | e G  |                  |
|---|---|---|---|--|------------------------------------|-----|--|------------------|
| 1 |   |   | 1 | THERMAL AG   | ING                                | 1   | RADIATION  | 1                |
| 1 | Parts List  | Materials List  | 1 | Qualification  | Reference                          | 1   | Qualification  | Reference        |
|   | Terminal Block Links<br>Mounting Rods<br>Bolts<br>Insert<br>Nuts<br>Terminal Block Base<br>Terminal Block Barrier | Brass<br>  Metallic<br>  Silicone Bronze<br>  Brass<br>  Brass<br>  Durez #791 Phenolic<br>  Glass - Melamine |   | Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>40 Years @ 230°F<br>Greater than<br>40 Years @ 122°F | <br> <br> <br>  CAL-79<br>  CAL-79 |     | Not Affected<br>Not Affected<br>Not Affected<br>Not Affected<br>Not Affected<br>$3.0 \times 10^8$ RADS<br>$1.6 \times 10^8$ RADS | CAL-79<br>CAL-79 |

SYSTEM COMPONENT EVALUATION WORKSHEET



Prepared by: Nheuns Date: 11/1/83 Checked by: Amuchanell Date: 11/2/20

| FOUTPMENT DESCRIPTION   | 1                                  | ENVIRONMENT   |                 | DOCUMENTA                   | ATION REF.                 | Qualification        | Outstanding |  |
|---|------------------------------------|---------------|-----------------|-----------------------------|----------------------------|----------------------|-------------|--|
| byoirmant bebonni i i   | Parameter                          | Specification | Qualification   | Specification Qualification |                            | Method               | Items       |  |
| System: Generic 1E Elec-  <br>trical Components                           | Operating  <br> Time               | l Year        | 1.1 Years       | <br>  Note 2<br>            | Note 1  <br>  Note 3  <br> | Simultaneous<br>Test | None        |  |
| Plant ID No.: EV0107A  <br>Component: Terminal Block                      | Temperature                        | 267.0         | <br>  345.0<br> | C-501                       |                            | Simultanecus<br>Test | None        |  |
| Manufacturer: Stanwick  <br> <br>Model Number: Type G                     | Pressure  <br> (PSIA)              | 15.61         | <br>  74.7<br>  | <br>  C-501<br>             |                            | Simultaneous<br>Test | None        |  |
| Function: Electrical  <br>Circuit  <br>Termination                        | Relative  <br> Humidity  <br>  (%) | 100.0         | <br>  100.0<br> | A I                         | Note 3                     | Simultaneous<br>Test | None        |  |
| Accuracy: Spec: N/A  <br>Pemon: N/A  <br>Service: Electrical  <br>Control | <br> Chemical  <br> Spray  <br>    | N/A           | <br>  N/F.<br>  | <br>  N/A<br>               | <br>  N/A  <br>            | N/A                  | None        |  |
| Nocation: Auxiliary Bldg. <br>Rm. 501                                     |                                    | N/A           | <br>  N/A       | <br>  N/A                   | N/A                        | N/A                  | None        |  |
| Flood Level Elev: N/A  <br>Above Flood Level: N/A                         | <br> Aging  <br>                   | 40 Years      | 40 Years        | I                           | CAL-79  <br>  Note 4       | Analysis             | None        |  |
| Needed for:<br>Hot Shutdown   X    <br>Cold Shutdown   X                  | <br> Submergence                   | N/A           | <br>  N/#.<br>  | <br>  N/A<br>               | N/A                        | N/A                  | None        |  |

|                              |                                       | •                              |
|------------------------------|---------------------------------------|--------------------------------|
| Facility: Davis-Besse Unit 1 | SYSTEM COMPONENT EVALUATION WORKSHEET | Index No. 221H-077A<br>Rev.: 2 |
| Prepared by: NLeuis Date:    | 11/1/83 NOTES                         |                                |
| Shecked by: Mana Date:       | 4/2/13                                |                                |

1. The test subjected the terminal block to a peak temperature of 345°F. At 30 minutes after the start of the test, the temperature was 320°F, at 1 hour the temperature was 300°F, at 1-1/2 hours the temperature was 290°F, at 2 hours the temperature was 280°F, at 3 hours the temperature was 260°F, at 4 hours the temperature was 255°F, at 8 hours the temperature was 235°F, at 12 hours the temperature was 225°F, and at 18 hours the temperature was 220°F which was maintained for the duration of the 96-hour test. The test pressure peak was 74.7 psia and at 35 minutes the test pressure was down to 19.7 psia which was maintained for the duration of the 96 hours. The temperature in Room 501 peaks at 267°F in 31 seconds. The pressure in Room 501 peaks at 15.6 psia in 9.5 seconds. The temperature and pressure in Room 501 return to ambient conditions in 19 minutes. (Reference C-501)

Based on this information, it can be concluded that the laboratory test subjected the terminal block to an overall more severe environment than that which would result from a postulated HELB. Since the terminal block remained operable throughout the test and functional after the test, it can be concluded that the terminal block will remain functional during and after exposure to the accident environment which would result from the postulated HELB.

In addition, the terminal blocks were tested for temperature and humidity by the Stanwick Electrical Products Company. The high temperature test of 150°F for 8 hours was passed successfully with a test voltage of 600 volts D.C. (References V-35A, and V-35B). Maximum continuous use temperatures for the terminal block base and barrier materials (only non-metallic parts) are  $302^{\circ}$ F and  $275^{\circ}$ F, respectively (References W-2, AA). Stanwick also conducted a humidity test on the terminal blocks with  $90\% \pm 10\%$  relative humidity at 68°F using a test voltage of 500 volts D.C. No shorting or arcing occurred during the test (References V-35A, V-35B).

- 2. One year operating time is used as a conservative maximum specification.
- This test data was obtained from a test performed by Duke Power Corporation on Stanwick terminal blocks (Reference ROC-35A). This test report is not available as a reference document.
- 4. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

COMPONENT MATERIALS EVALUATION SHEET



Prepared by: Nheins Date: 11/1/23 Checked by: Standard Date: 11/2/02

| Plant I.D. No<br>Manufacturer   | Stanwick  | Component:<br>Model No.:  | Termi<br>Ty      | nal Block<br>pe G  |                  |
|---|---|---|------------------|--|------------------|
|   |   | I THERMAL AGIN  | 4G I             | RADIATION  | 1                |
| Parts List  | Materials List  | Qualification   | Reference        | Qualification  | Reference        |
| Terminal Block Links<br>Mounting Rods<br>Bolts<br>Insert<br>Nuts<br>Terminal Block Base<br>Terminal Block Barrier | Brass<br>Metallic<br>Silicone Bronze<br>Brass<br>Brass<br>Durez #791 Phenolic<br>Glass - Melamine | <pre>Not Sensitive Not Sensitive Not Sensitive Not Sensitive Not Sensitive Not Sensitive A0 Years @ 230°F Greater than 40 Years @ 122°F</pre> | CAL-79<br>CAL-79 | Not Affected<br>Not Affected<br>Not Affected<br>Not Affected<br>3.0 x 10 <sup>8</sup> RADS<br>1.6 x 10 <sup>8</sup> RADS | CAL-79<br>CAL-79 |

'acility: Davis-Besse Unit 1

SYSTEM COMPONENT EVALUATION WORKSHEET



locket: 50-346

repared by: Nheins Date: 11/1/83 Thecked by: Antonial Date: 11/1/13

| EQUIPMENT DESCRIPTION   | 1                           | ENVIRONMENT                |                                 | DOCUMENTAT      | TION REF.          | Qualification        | Outstanding |  |
|---|-----------------------------|----------------------------|---------------------------------|-----------------|--------------------|----------------------|-------------|--|
| 1   | Parameter                   | Specification              | Qualification                   | Specification   | Qualification      | Method               | Items       |  |
| <br>System: Generic 1E Elec-  <br>trical Components                       | Operating                   | l Year                     | <br>  1.1 Years                 | Note 2          | Note 1  <br>Note 3 | Simultaneous<br>Test | None        |  |
| Plant ID No.: EV0240B<br>Component: Terminal Block                        | Temperature<br>(°F)         | 221.0                      | 1<br>  345.0                    | C-314           | Note 3             | Simultaneous<br>Test | None        |  |
| Manufacturer: Stanwick  <br>  <br>Model Number: Type G                    | Pressure<br>(PSIA)          | 19.76                      | 74.7                            | c-314           | Note 3             | Simultaneous<br>Test | None        |  |
| Function: Electrical  <br>Circuit  <br>Termination                        | Relative<br>Humidity<br>(%) | 100.0                      | 100.0                           | A               | Note 3             | Simultaneous<br>Test | None        |  |
| Accuracy: Spec: N/A  <br>Demon: N/A  <br>Service: Electrical  <br>Control | <br> Chemical<br> Spray<br> | N/A                        | <br>  N/A<br>                   | N/A             | N/A                | N/A                  | None        |  |
| Location: Auxiliary Bldg. <br>Rm. 314                                     | Radiation                   | 1.0 x 10 <sup>6</sup> RADS | <br> 1.6 x 10 <sup>8</sup> RADS | т               | CAL-79<br>Note 4   | Analysis             | None        |  |
| Flood Level Elev: N/A  <br>Above Flood Level: N/A                         | <br> Aging<br>              | 40 Years                   | <br>  40 Years<br>              | I               | CAL-79<br>Note 4   | Analysis             | None        |  |
| Needed for:   | <br> Submergence            | N/A                        | <br>  N/A<br>                   | <br>  N/A  <br> | N/A                | N/A                  | None        |  |

| •  | CYCTEM CONDONENT EDILIATION WORKSHEET | Index No. 221H-078A |
|--|---------------------------------------|---------------------|
| 'acility: Davis-Besse Unit 1<br>bocket: 50-346 | SISTEM COMPONENT EVALUATION WORKSHEET | Rev.: 2             |
| repared by: Nhering Dat                        | e: N/1/23                             |                     |
| thecked by: Mucound Dat                        | e: <u>11/2/13</u>                     |                     |

The test subjected the terminal block to a peak temperature of 345°F. At 30 minutes after the start of the test, the temperature was 320°F, at 1 hour the temperature was 300°F, at 1-1/2 hours the temperature was 290°F, at 2 hours the temperature was 280°F, at 3 hours the temperature was 260°F, at 4 hours the temperature was 255°F, at 8 hours the temperature was 235°F, at 12 hours the temperature was 225°F, and at 18 hours the temperature was 220°F which was maintained for the duration of the 96-hour test. The test pressure peak was 74.7 psia and at 35 minutes the test pressure was down to 19.7 psia which was maintained for the duration of the 96 hours. The temperature in Room 314 peaks at 221°F in 1.55 seconds. The pressure in Room 314 peaks at 19.76 psia in .09 seconds. The temperature and pressure in Room 314 return to ambient conditions in 8 minutes (Reference C-314).

Based on this information, it can be concluded that the laboratory test subjected the terminal block to an overall more severe environment than that which would result from a postulated HELB. Since the terminal block remained operable throughout the test and functional after the test, it can be concluded that the terminal block will remain functional during and after exposure to the accident environment which would result from the postulated HELB.

In addition, the terminal blocks were tested for temperature and humidity by the Stanwick Electrical Products Company. The high temperature test of 150°F for 8 hours was passed successfully with a test voltage of 600 volts D.C. (References V-35A, and V-35B). Maximum continuous use temperatures for the terminal block base and barrier materials (only non-metallic parts) are  $302^{\circ}$ F and  $275^{\circ}$ F, respectively (References W-2, AA). Stanwick also conducted a humidity test on the terminal blocks with 90% ± 10% relative humidity at 68°F using a test voltage of 500 volts D.C. No shorting or arcing occurred during the test (References V-35A, V-35B).

- 2. One year operating time is used as a conservative maximum specification.
- 3. This test data was obtained from a test performed by Duke Power Corporation on Stanwick terminal blocks (Reference ROC-35A). This test report is not available as a reference document.

4. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

Facility: Davis-Besse Unit 1 50-346 Docket:

Prepare Checked

COMPONENT MATERIALS EVALUATION SHEET



| d by: | N heris | Date: | 11/1/82 |
|-------|---------|-------|---------|
| by:   | Aucoult | Date: | 1/2/13  |

| Plant I.D. No.: EV0240B | Component: Terminal Block |  |
|-------------------------|---------------------------|--|
| Manufacturer: Stanwick  | Model No.: Type G         |  |

|   | 1   | I THERMAL AG  | ING              | RADIATIO   | N                             |
|---|---|---|------------------|--|-------------------------------|
| Parts List  | Materials List  | Qualification   | Reference        | Qualification  | Reference                     |
| Terminal Block Links<br>Mounting Rods<br>Bolts<br>Insert<br>Nuts<br>Terminal Block Base<br>Terminal Block Barrier | Brass<br>  Metallic<br>  Silicone Bronze<br>  Brass<br>  Brass<br>  Durez #791 Phenolic<br>  Glass - Melamine | Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>40 Years @ 230°F<br>Greater than<br>40 Years @ 122°F | CAL-79<br>CAL-79 | Not Affected<br>Not Affected<br>Not Affected<br>Not Affected<br>3.0 x 10 <sup>8</sup> RADS<br>1.6 x 10 <sup>8</sup> RADS | <br> <br>  CAL-79<br>  CAL-79 |

Facility: Davis-Besse Unit 1

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No. 221H-079 Rev.: 2

)ocket: 50-346

Prepared by: Nheurs Date: 11/1/83 Thecked by: Smarcement Date: 11/1/83

| FOUTDMENT DESCRIPTION   | ENVIRONMENT                       |                            |                                 | DOCUMENTATION REF. |                    | Qualification        | Outstanding |
|---|-----------------------------------|----------------------------|---------------------------------|--------------------|--------------------|----------------------|-------------|
| by off man busic first from   | Parameter                         | Specification              | Qualification                   | Specification      | Qualification      | Method               | Items       |
| System: Generic 1E Elec-  <br>trical Components                           | Operating  <br> Time              | l Year                     | <br>  1.1 Years<br>             | Note 2             | Note 1             | Simultaneous<br>Test | None        |
| Plant ID No.: EV05990<br>Component: Terminal Block                        | Temperature                       | 221.0                      | 1 345.0                         | C-314              | Note 3             | Simultaneous<br>Test | None        |
| Manufacturer: Stanwick  <br>Model Number: Type G                          | Pressure  <br>(PSIA)              | 19.76                      | 74.7                            | C-314              | Note 3             | Simultaneous<br>Test | None        |
| Function: Electrical  <br>Circuit  <br>Termination                        | Relative  <br> Humidity  <br> (%) | 100.0                      | <br>  100.0<br>                 | A                  | Note 3             | Simultaneous<br>Test | None        |
| Accuracy: Spec: N/A  <br>Demon: N/A  <br>Service: Electrical  <br>Control | <br> Chemical  <br> Spray         | N/A                        | <br>  N/A<br>                   | <br>  N/A<br>      | N/A                | N/A                  | None        |
| Location: Auxiliary Bldg.<br>Rm. 314                                      | Radiation                         | 1.0 x 10 <sup>6</sup> RADS | 1<br>1.6 x 10 <sup>8</sup> RADS | т                  | CAL-79<br>Note 4   | Analysis             | None        |
| Flood Level Elev: N/A<br>Above Flood Level: N/A                           | Aging                             | 40 Years                   | <br>  40 Years                  | II                 | CAL-79  <br>Note 4 | Analysis             | None        |
| Needed for:<br>Hot Shutdown   X  <br>Cold Shutdown   X                    | <br> Submergence                  | N/A                        | <br>  N/A<br>                   | N/A                | N/A                | N/A                  | None        |

| 'acility:  | Davis-Besse Unit 1 |         | SYSTEM | COMPONENT | PALUATION WORKSHEET | Ind<br>Rev | ex No. | 221H-079A |
|------------|--------------------|---------|--------|-----------|---------------------|------------|--------|-----------|
| repared by | NLeuis             | Date: 1 | 1/1/83 | -         | OTES                |            |        |           |

The test subjected the terminal block to a peak temperature of 345°F. At 30 minutes after the start of the test, the temperature was 320°F, at 1 hour the temperature was 300°F, at 1-1/2 hours the temperature was 290°F, at 2 hours the temperature was 280°F, at 3 hours the temperature was 260°F, at 4 hours the temperature was 255°F, at 8 hours the temperature was 235°F, at 12 hours the temperature was 225°F, and at 18 hours the temperature was 220°F which was maintained for the duration of the 96-hour test. The test pressure peak was 74.7 psia and at 35 minutes the test pressure was down to 19.7 psia which was maintained for the duration of the 96 hours. The temperature in Room 314 peaks at 221°F in 1.55 seconds. The pressure in Room 314 peaks at 19.76 psia in .09 seconds. The temperature and pressure in Room 314 return to ambient conditions in 8 minutes (Reference C-314).

Based on this information, it can be concluded that the laboratory test subjected the terminal block to an overall more severe environment than that which would result from a postulated HELB. Since the terminal block remained operable throughout the test and functional after the test, it can be concluded that the terminal block will remain functional during and after exposure to the accident environment which would result from the postulated HELB.

In addition, the terminal blocks were tested for temperature and humidity by the Stanwick Electrical Products Company. The high temperature test of 150°F for 8 hours was passed successfully with a test voltage of 600 volts D.C. (References V-35A, and V-35B). Maximum continuous use temperatures for the terminal block base and barrier materials (only non-metallic parts) are 302°F and 275°F, respectively (References W-2, AA). Stanwick also conducted a humidity test on the terminal blocks with 90% ± 10% relative humidity at 68°F using a test voltage of 500 volts D.C. No shorting or arcing occurred during the test (References V-35A, V-35B).

- 2. One year operating time is used as a conservative maximum specification.
- 3. This test data was obtained from a test performed by Duke Power Corporation on Stanwick terminal blocks (Reference ROC-35A). This test report is not available as a reference document.
- 1. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

Parts List

Terminal Block Links

Mounting Rods

Bolts

Nuts

Insert

Date: 11/1/83 NLO Prepared by: Date: Checked by:

Plant I.D. No.:

Manufacturer:

COMPONENT MATERIALS EVALUATION SHEET

Component:

Model No.:

Qualification

Not Sensitive

Not Sensitive

Not Sensitive

Not Sensitive

Not Sensitive

THERMAL AGING



| Referance

CAL-79

CAL-79

RADIATION

Qualification

Not Affected

Not Affected

Not Affected

Not Affected

Not Affected

3.0 x 10<sup>8</sup> RADS

1.6 x 10<sup>8</sup> RADS

Terminal Block

Type G

Reference |

**CAL-79** 

CAL-79

EV05990

Stanwick

Brass

Brass

Brass

Metallic

Silicone Bronze

Materials List

EQUIPMENT DESCRIPTION

acility: Davis-Besse Unit 1 locket: 50-346

Date: 11/183 Neuro 'repared by: :hecked by:

11

11

SYSTEM COMPONENT EN LUATION WORKSHEET

DOCUMENTATION REF.

2218-080 Index No. Rev.: 2

Qualification | Outstanding

ENVIRONMENT

| EUUIPMENT DESCRIPTION   | 1                                  | PHAT WORLIPHT              |                                 |                  | the second s |                              |       |
|---|------------------------------------|----------------------------|---------------------------------|------------------|--|------------------------------|-------|
| I   | Parameter                          | Specification              | Qualification                   | Specification    | Qualification  | Method                       | Items |
| <br>System: Generic 1E Elec-  <br>trical Components                     | Operating  <br> Time               | l Year                     | <br>  l.l Years<br>             | <br>  Note 2<br> | Note 1   | Simultaneous  <br>Test       | None  |
| Plant ID No.: EV06010<br>Component: Terminal Block                      | Temperature                        | 221.0                      | 345.0                           | i C-314          | Note 3   | Simultaneous  <br>Test       | None  |
| Manufacturer: Stanwick  <br>Model Number: Type G                        | Pressure (PSIA)                    | 19.76                      | 74.7                            | <br>  C-314<br>  | Note 3   | Simultaneous  <br>Test  <br> | None  |
| Function: Electrical  <br>Circuit  <br>Termination                      | Relative  <br> Humidity  <br>  (%) | 100.0                      | 100.0                           | A<br>            | Note 3   | Simultaneous  <br>Test       | None  |
| Accuracy: Spec: N/A  <br>Demon: N/A  <br>Service: Electrical<br>Control | <br> Chemical<br> Spray<br>        | N/A                        | <br>  N/A<br>                   | N/A              | N/A  | N/A                          | None  |
| Location: Auxiliary Bldg. <br>Rm. 314                                   | Radiation                          | 1.0 x 10 <sup>6</sup> RADS | <br> 1.6 x 10 <sup>8</sup> RADS | I<br>I T         | CAL-79  <br>  Note 4   | <br>Analysis  <br>           | None  |
| Flood Level Elev: N/A  <br>Above Flood Level: N/A                       | Aging                              | 40 Years                   | <br>  40 Years<br>              | I                | CAL-79<br>Note 4   | Analysis  <br>               | None  |
| Needed for:<br>Hot Shutdown X   | <br> Submergence                   | N/A                        | N/A                             | <br>  N/A<br>    | N/A  | N/A                          | None  |

| 'acility: Davis-Besse Unit 1               | SYSTEM COMPONENT EXCLUATION WORKSHEET | Index No 221H-080A<br>Rev.: 2 |
|--|---------------------------------------|-------------------------------|
| Prepared by: N Lewis<br>Thecked by: Marcal | Date: $\frac{11/1/23}{11/2/3}$ NOTES  |                               |

1. The test subjected the terminal block to a peak temperature of 345°F. At 30 minutes after the start of the test, the temperature was 320°F, at 1 hour the temperature was 300°F, at 1-1/2 hours the temperature was 290°F, at 2 hours the temperature was 280°F, at 3 hours the temperature was 260°F, at 4 hours the temperature was 255°F, at 8 hours the temperature was 235°F, at 12 hours the temperature was 225°F, and at 18 hours the temperature was 220°F which was maintained for the duration of the 96-hour test. The test pressure peak was 74.7 psia and at 35 minutes the test pressure was down to 19.7 psia which was maintained for the duration of the 96 hours. The temperature in Room 314 peaks at 221°F in 1.55 seconds. The pressure in Room 314 peaks at 19.76 psia in .09 seconds. The temperature and pressure in Room 314 return to ambient conditions in 8 minutes (Reference C-314).

Based on this information, it can be concluded that the laboratory test subjected the terminal block to an overall more severe environment than that which would result from a postulated HELB. Since the terminal block remained operable throughout the test and functional after the test, it can be concluded that the terminal block will remain functional during and after exposure to the accident environment which would result from the postulated HELB.

In addition, the terminal blocks were tested for temperature and humidity by the Stanwick Electrical Products Company. The high temperature test of  $150^{\circ}F$  for 8 hours was passed successfully with a test voltage of 600 volts D.C. (References V-35A, and V-35B). Maximum continuous use temperatures for the terminal block base and barrier materials (only non-metallic parts) are  $302^{\circ}F$  and  $275^{\circ}F$ , respectively (References W-2, AA). Stanwick also conducted a humidity test on the terminal blocks with 90% + 10% relative humidity at 68°F using a test voltage of 500 volts D.C. No shorting or arcing occurred during the test (References V-35A, V-35B).

- One year operating time is used as a conservative maximum specification.
- This test data was obtained from a test performed by Duke Power Corporation on Stanwick terminal blocks (Reference ROC-35A). This test report is not available as a reference document.
- 4. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

COMPONENT MATERIALS EVALUATION SHEET



Prepared by: Nleuns Date: 11/1/83 Checked by: Himburg Date: 11/1/83

| Plant I.D. No.: EV06010 | Component: | Terminal Block | 1 |
|-------------------------|------------|----------------|---|
| Manufacturer: Stanwick  | Model No.: | Type G         | 1 |
|                         |            |                |   |

|  | THER  | MAL AGING  | RADIATIO  | <u>N</u>                           |
|--|---|--|---|------------------------------------|
| Parts List   Materials Lis   | st   Qualificat   | ion   Reference  | Qualification   | Reference                          |
| Terminal Block Links   Brass<br>Mounting Rods   Metallic<br>Bolts   Silicone Bronze<br>Insert   Brass<br>Nuts   Brass<br>Terminal Block Base   Durez #791 Phenols<br>Terminal Block Barrier   Glass - Melamine | <br>  Not Sensiti<br>  Not Sensiti<br>  Not Sensiti<br>  Not Sensiti<br>  Not Sensiti<br>  Not Sensiti<br>  Greater tha | <br>ve  <br>ve  <br>ve  <br>ve  <br>230°F   CAL-79<br>n   CAL-79 | Not Affected         Not Affected         Not Affected         Not Affected         Not Affected         Not Affected         1 3.0 x 10 <sup>8</sup> RADS         1.6 x 10 <sup>8</sup> RADS | <br> <br> <br>  CAL-79<br>  CAL-79 |

11

SYSTEM COMPONENT EVALUATION WORKSHEET

221H-081 Index No. Rev.: 2

| FOUTPMENT DESCRIPTION   | II ENVIRONMENT                    |                             |                            | DOCUMENTATION REF.          |                      | Qualification        | Outstanding         |
|---|-----------------------------------|-----------------------------|----------------------------|-----------------------------|----------------------|----------------------|---------------------|
|   | Parameter   Specification         |                             | Qualification              | Specification Qualification |                      | Method               | Items               |
| System: Generic 1E Elec-<br>trical Components                           |                                   | l Year                      | 1.1 Years                  | <br>  Note 2<br>            | Note 1               | Simultaneous<br>Test | None                |
| Plant ID No.: EV06080<br>Component: Terminal Block                      | <br> Temperature <br>  (°F)       | 218.0                       | 345.0                      | <br>  C~303<br>             | Note 3               | Simultaneous<br>Test | None<br>            |
| Manufacturer: Stanwick  <br>Model Number: Type G                        | Pressure  <br> (PSIA)             | 17.16                       | 74.7                       | C-303                       | Note 3               | Simultaneous<br>Test | None                |
| Function: Electrical<br>Circuit<br>Termination                          | Relative  <br> Humidity  <br> (%) | 100.0                       | 100.0                      | <br>  A<br>                 | Note 3               | Simultaneous<br>Test | None                |
| Accuracy: Spec: N/A  <br>Demon: N/A  <br>Service: Electrical<br>Control | <br> Chemical<br> Spray  <br>     | N/A                         | N/A                        | <br>  N/A<br>               | N/A                  | N/A                  | <br>  None<br> <br> |
| Location: Auxiliary Bldg.<br>Rm. 303                                    | Radiation                         | 1.16 x 10 <sup>6</sup> RADS | 1.6 x 10 <sup>8</sup> RADS | <br>  T                     | CAL-79               | Analysis             | <br>  None          |
| Flood Level Elev: N/A<br>Above Flood Level: N/A                         | Aging                             | 40 Years                    | <br>  40 Years<br>         | I                           | CAL-79  <br>  Note 4 | Analysis             | None                |
| Needed for:<br>Hot Shutdown   <u>X</u>    <br>Cold Shutdown   <u>X</u>  | <br> <br> Submergence <br>        | N/A                         | N/A                        | <br>  N/A<br>               | N/A                  | N/A                  | <br>  None<br>      |

repared by: NLouis Date: 11/1/83 Thecked by: The Amale Date: 11/1/83

|            | •                  | 0                                     |         |
|------------|--------------------|---------------------------------------|---------|
| facility:  | Davis-Besse Unit 1 | SYSTEM COMPONENT EVALUATION WORKSHEET | Rev.: 2 |
| )ocket:    | 50-346             | NOTES                                 |         |
| Prepared b | y: Nleurs          | Date: 11/1/85                         |         |
| Checked by | : Allachand        | Date: 11/2/13                         |         |

1. The test subjected the terminal block to a peak temperature of 345°F. At 30 minutes after the start of the test, the temperature was 320°F, at 1 hour the temperature was 300°F, at 1-1/2 hours the temperature was 290°F, at 2 hours the temperature was 280°F, at 3 hours the temperature was 260°F, at 4 hours the temperature was 255°F, at 8 hours the temperature was 235°F, at 12 hours the temperature was 225°F, and at 18 hours the temperature was 220°F which was maintained for the duration of the 96-hour test. The test pressure peak was 74.7 psia and at 35 minutes the test pressure was down to 19.7 psia which was maintained for the duration of the 96 hours. The temperature in Room 303 peaks at 218°F in 1.5 seconds. The pressure in Room 303 peaks at 17.16 psia in .04 seconds. The temperature and pressure in Room 303 return to ambient conditions in 19 minutes (Reference C-303).

Based on this information, it can be concluded that the laboratory test subjected the terminal block to an overall more severe environment than that which would result from a postulated HELB. Since the terminal block remained operable throughout the test and functional after the test, it can be concluded that the terminal block will remain functional during and after exposure to the accident environment which would result from the postulated HELB.

In addition, the terminal blocks were tested for temperature and humidity by the Stanwick Electrical Products Company. The high temperature test of 150°F for 8 hours was passed successfully with a test voltage of 600 volts D.C. (References V-35A, and V-35B). Maximum continuous use temperatures for the terminal block base and barrier materials (only non-metallic parts) are 302°F and 275°F, respectively (References W-2, AA). Stanwick also conducted a humidity test on the terminal blocks with 90% ± 10% relative humidity at 68°F using a test voltage of 500 volts D.C. No shorting or arcing occurred during the test (References V-35A, V-35B).

- 2. One year operating time is used as a conservative maximum specification.
- This test data was obtained from a test performed by Duke Power Corporation on Stanwick terminal blocks (Reference ROC-35A). This test report is not available as a reference document.
- 4. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

Prepared by: Ni Leurs Date: 11/1/23 Checked by: Survey Date: 11/1/23

COMPONENT MATERIALS EVALUATION SHEET



| Plant I.D. No .: | EV06080  | Component: | Terminal Block |
|------------------|----------|------------|----------------|
| Manufacturer:    | Stanwick | Model No.: | Type G         |

|   | page of the second second   | THERMAL AGING   |           |  | RADIATION        |  |  |
|---|---|---|-----------|--|------------------|--|--|
| Parts List  | Materials List  | Qualification   | Reference | Qualification   Refer  |                  |  |  |
| Terminal Block Links<br>Mounting Rods<br>Polts<br>Insert<br>Nuts<br>Terminal Block Base<br>Terminal Block Barrier | Brass<br>  Metallic<br>  Silicone Bronze<br>  Brass<br>  Brass<br>  Durez #791 Phenolic<br>  Glass - Melamine | Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>40 Years @ 230°F<br>Greater than<br>40 Years @ 122°F | CAL-79    | Not Affected<br>Not Affected<br>Not Affected<br>Not Affected<br>3.0 x 10 <sup>8</sup> RADS<br>1.6 x 10 <sup>8</sup> RADS | CAL-79<br>CAL-79 |  |  |

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No. 221H-082 Rev.: 2

Prepared by: N Lewis Date: 11/1/83 Checked by: Antana Date: 11/1/83

| FOUTPMENT DESCRIPTION   | ENVIRONMENT                 |                             |                            | DOCUMENTATION REF. |                    | Qualification        | Outstanding |
|---|-----------------------------|-----------------------------|----------------------------|--------------------|--------------------|----------------------|-------------|
| by off ment beschirt from   | Parameter                   | Specification               | Qualification              | Specification      | Qualification      | Method               | Items       |
| System: Generic 1E Elec-<br>trical Components                             | Operating  <br> Time        | l Year                      | 1.1 Years                  | Note 2             | Note 1  <br>Note 3 | Simultaneous<br>Test | None        |
| Plant ID No.: EV06120<br>Component: Terminal Block                        | Temperature<br>(°F)         | 218.0                       | 345.0                      | C-303              | Note 3             | Simultaneous<br>Test | None        |
| Manufacturer: Stanwick  <br> <br> Model Number: Type G                    | Pressure<br>(PSIA)          | 17.16                       | 74.7                       | C-303              | Note 3             | Simultaneous<br>Test | None        |
| Function: Electrical<br>Circuit<br>Termination                            | Relative<br>Humidity<br>(%) | 100.0                       | 100.0                      | A                  | Note 3             | Simultaneous<br>Test | None        |
| Accuracy: Spec: N/A  <br>Demon: N/A  <br>Service: Electrical  <br>Control | <br> Chemical<br> Spray<br> | N/A                         | N/A                        | <br>  N/A<br>      | N/A                | N/A                  | None        |
| Location: Auxiliary Bldg.<br>Rm. 303                                      | Radiation                   | 1.16 x 10 <sup>6</sup> RADS | 1.6 x 10 <sup>8</sup> RADS | т                  | CAL-79<br>Note 4   | Analysis             | None        |
| Flood Level Elev: N/A  <br>Above Flood Level: N/A                         | Aging                       | 40 Years                    | 40 Years                   | I                  | CAL-79<br>Note 4   | Analysis             | None        |
| Needed for:<br>Hot Shutdown X   | <br> Submergence            | N/A                         | N/A                        | N/A                | N/A                | N/A                  | None        |

| 'acility:  | Davis-Besse Unit 1<br>50-346<br>by: N Leuro Date: | SYSTEM COMPONENT EVALUATION WORKSHEET | Index No. 221H-082A<br>Rev.: 2 |
|------------|---|---------------------------------------|--------------------------------|
| Prepared b |   | 11/1/83 NOTES                         |                                |
| Checked by | : Standard U                                      | ate: 1/1+/13                          |                                |

. The test subjected the terminal block to a peak temperature of 345°F. At 30 minutes after the start of the test, the temperature was 320°F, at 1 hour the temperature was 300°F, at 1-1/2 hours the temperature was 290°F, at 2 hours the temperature was 280°F, at 3 hours the temperature was 260°F, at 4 hours the temperature was 255°F, at 8 hours the temperature was 235°F, at 12 hours the temperature was 225°F, and at 18 hours the temperature was 220°F which was maintained for the duration of the 96-hour test. The test pressure peak was 74.7 psia and at 35 minutes the test pressure was down to 19.7 psia which was maintained for the duration of the 96 hours. The temperature in Room 303 peaks at 218°F in 1.5 seconds. The pressure in Room 303 peaks at 17.16 psia in .04 seconds. The temperature and pressure in Room 303 return to ambient conditions in 19 minutes (Reference C-303).

Based on this information, it can be concluded that the laboratory test subjected the terminal block to an overall more severe environment than that which would result from a postulated HELB. Since the terminal block remained operable throughout the test and functional after the test, it can be concluded that the terminal block will remain functional during and after exposure to the accident environment which would result from the postulated HELB.

In addition, the terminal blocks were tested for temperature and humidity by the Stanwick Electrical Products Company. The high temperature test of  $150^{\circ}F$  for 8 hours was passed successfully with a test voltage of 600 volts D.C. (References V-35A, and V-35B). Maximum continuous use temperatures for the terminal block base and barrier materials (only non-metallic parts) are  $302^{\circ}F$  and  $275^{\circ}F$ , respectively (References W-2, AA). Stanwick also conducted a humidity test on the terminal blocks with  $90^{\circ} \pm 10^{\circ}$  relative humidity at  $68^{\circ}F$  using a test voltage of 500 volts D.C. No shorting or arcing occurred during the test (References V-35A, V-35B).

- 2. One year operating time is used as a conservative maximum specification.
- This test data was obtained from a test performed by Duke Power Corporation on Stanwick terminal blocks (Reference ROC-35A). This test report is not available as a reference document.
- 4. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.
Facility: Davis-Besse Unit 1 Docket: 50-346

1183 Date: 11/ Nhe Prepared by: Date: Checked by:

COMPONENT MATERIALS EVALUATION SHEET

221H-082B Index No Rev.: 2

 Plant I.D. No.:
 EV06120
 Component:
 Terminal Block

 Manufacturer:
 Stanwick
 Model No.:
 Type G

 I
 THERMAL AGING
 RADIATION

|   |   | I Indiana nor   |           |  |                  |
|---|---|---|-----------|--|------------------|
| Parts List  | Materials List  | Qualification   | Reference | Qualification  | Reference        |
| Terminal Block Links<br>Mounting Rods<br>Bolts<br>Insert<br>Nuts<br>Terminal Block Base<br>Terminal Block Barrier | <br>  Brass<br>  Metallic<br>  Silicone Bronze<br>  Brass<br>  Brass<br>  Durez #791 Phenolic<br>  Glass - Melamine | <pre>Not Sensitive Not Sensitive Not Sensitive Not Sensitive Not Sensitive 40 Years @ 230°F Greater than 40 Years @ 122°F</pre> | CAL-79    | Not Affected<br>Not Affected<br>Not Affected<br>Not Affected<br>3.0 x 10 <sup>8</sup> RADS<br>1.6 x 10 <sup>8</sup> RADS | CAL-79<br>CAL-79 |

'acility: Davis-Besse Unit 1 )ocket: 50-346

SYSTEM COMPONENT EVALUATION WORKSHEET



Prepared by: N hering Date: 11/1/23 Thecked by: Small Date: 11/1/33

| FOULPMENT DESCRIPTION   | II ENVIRONMENT                     |                             |                            | DOCUMENTATION REF. |                      | Qualification | Outstanding |
|---|------------------------------------|-----------------------------|----------------------------|--------------------|----------------------|---------------|-------------|
| 1   | Parameter                          | Specification               | Qualification              | Specification      | Qualification        | Method        | Items       |
| System: Generic 1E Elec-  <br>trical Components                           | Operating  <br> Time               | l Year                      | 40 Years                   | <br>  Note 1<br>   | Note 2  <br>         | Analysis      | None        |
| Plant ID No.: EV0624B<br>Component: Terminal Block                        | Temperature<br>(°F)                | N/A                         | N/A                        | <br>  Note 3<br>   | N/A  <br>            | N/A           | None        |
| Manufacturer: Stanwick<br>Model Number: Type G                            | Pressure<br>(PSIA)                 | N/A                         | N/A                        | <br>  Note 3<br>   | N/A  <br>            | N/A           | None        |
| Function: Electrical<br>Circuit<br>Termination                            | Relative  <br> Humidity  <br>  (%) | N/A                         | N/A                        | Note 3             | N/A  <br>  N/A  <br> | N/A           | None        |
| Accuracy: Spec: N/A  <br>Demon: N/A  <br>Service: Electrical  <br>Control | <br> Chemical<br> Spray            | N/A                         | N/A                        | Note 3             | N/A                  | N/A           | None        |
| Location: Auxiliary Bldg.<br>Rm. 427                                      | Radiation                          | 3.12 x 10 <sup>5</sup> RADS | 1.6 x 10 <sup>8</sup> RADS | <br>  T            | CAL-79               | Analysis      | None        |
| Flood Level Elev: N/A<br>Above Flood Level: N/A                           | Aging                              | 40 Years                    | 40 Years                   | I                  | CAL-79<br>Note 4     | Analysis      | None        |
| Needed for:<br>  Hot Shutdown   X  <br>  Cold Shutdown   X                | <br> Submergence                   | N/A                         | N/A                        | N/A                | N/A                  | N/A           | None        |

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| cility: Davis-Besse Unit 1 | SYSTEM COMPONENT EVALUATION WORKSHE | ET Index Not 221H-0837 |
|----------------------------|-------------------------------------|------------------------|
| cket: 50-346               |                                     | Rev.: 2                |
|                            | NOTES                               |                        |
| epared by: N Leuro         | Date: 11/1/23                       |                        |
| ecked by: Machand          | Date: 11/2/13                       |                        |

1. One year operating time is used as a conservative maximum specification.

- 2. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.
- 3. The only harsh environment seen is increased radiation due to recirculated fluids.

Facility: Davis-Besse Unit 1 Docket:

Plant I.D. No.:

Manufacturer:

Checked by:

50-346

N heurs Prepared by:

11/1/83 Date: Date: 11/0

EV0624B

Stanwick

COMPONENT MATERIALS EVALUATION SHEET



Component:

Terminal Block

Model No.:

Type G

|   |   | THERMAL AGI   | NG I             | RADIATION  |                                    |
|---|---|---|------------------|--|------------------------------------|
| Parts List  | Materials List  | Qualification   | Reference        | Qualification  | Reference                          |
| Terminal Block Links<br>Mounting Rods<br>Bolts<br>Insert<br>Nuts<br>Terminal Block Base<br>Terminal Block Barrier | Brass<br>Metallic<br>Silicone Bronze<br>Brass<br>Brass<br>Durez #791 Phenolic<br>Glass - Melamine | <pre>Not Sensitive Not Sensitive Not Sensitive Not Sensitive Not Sensitive Not Sensitive 40 Years @ 230°F Greater than 40 Years @ 122°F</pre> | CAL-79<br>CAL-79 | Not Affected<br>Not Affected<br>Not Affected<br>Not Affected<br>3.0 x $10^8$ RADS<br>1.6 x $10^8$ RADS | <br> <br> <br>  CAL-79<br>  CAL-79 |

?acility: Davis-Besse Unit 1
Docket: 50-346

SYSTEM COMPONENT EVALUATION WORKSHEET



Prepared by: Nheins Date: 11/1/83 Checked by: Standing Date: 11/2/13

| I EQUIPMENT DESCRIPTION   | ENVIRONMENT                       |                            |                                  | DOCUMENTATION REF. |                  | Qualification        | Outstanding |
|---|-----------------------------------|----------------------------|----------------------------------|--------------------|------------------|----------------------|-------------|
|   | Parameter                         | Specification              | Qualification                    | Specification      | Qualification    | Method               | Items       |
| System: Generic 1E Elec-<br>trical Components                             | Operating  <br> Time              | l Year                     | 1.1 Years                        | Note 2             | Note 1<br>Note 3 | Simultaneous<br>Test | None        |
| Plant ID No.: EV08300<br>Component: Terminal Block                        | Temperature                       | 155.0                      | <br>  345.0<br>                  | C-113              | Note 3           | Simultaneous<br>Test | None<br>    |
| Manufacturer: Stanwick  <br>Model Number: Type G                          | Pressure  <br>(PSIA)              | 16.06                      | 74.7                             | C-113              | Note 3           | Simultaneous<br>Test | None        |
| Function: Electrical<br>Circuit<br>Termination                            | Relative  <br> Humidity  <br> (%) | 100.0                      | 100.0                            | I A<br>I I         | Note 3           | Simultaneous<br>Test | None        |
| Accuracy: Spec: N/A  <br>Demon: N/A  <br>Service: Electrical  <br>Control | <br> Chemical  <br> Spray  <br>   | N/A                        | N/A                              | N/A                | N/A              | N/A                  | None        |
| Location: Auxiliary Bldg.<br>Rm. 113                                      | Radiation                         | 7.1 x 10 <sup>6</sup> RADS | 1<br>11.6 x 10 <sup>8</sup> RADS | I T                | CAL-79<br>Note 4 | Analysis             | None        |
| Flood Level Elev: N/A  <br>Above Flood Level: N/A                         | <br> Aging  <br>                  | 40 Years                   | <br>  40 Years                   | I                  | CAL-79           | Analysis             | None        |
| Needed for:<br>  Hot Shutdown   X    <br>  Cold Shutdown   X              | <br> Submergence                  | N/A                        | <br>  N/A<br>                    | N/A                | N/A              | N/A                  | None        |

| Facility: Davis-Besse Unit 1                | SYSTEM COMPONENT EVALUATION WORKSHEET | Index No. 221H-084A |
|---|---------------------------------------|---------------------|
| Prepared by: Nhewin<br>Checked by: Multiple | Date: $\frac{11/83}{1/2/12}$ NOTES    | Re v. :2            |

1. The test subjected the terminal block to a peak temperature of 345°F. At 30 minutes after the start of the test, the temperature was 320°F, at 1 hour the temperature was 300°F, at 1-1/2 hours the temperature was 290°F, at 2 hours the temperature was 280°F, at 3 hours the temperature was 260°F, at 4 hours the temperature was 255°F, at 8 hours the temperature was 235°F, at 12 hours the temperature was 225°F, and at 18 hours the temperature was 220°F which was maintained for the duration of the 96-hour test. The test pressure peak was 74.7 psia and at 35 minutes the test pressure was down to 19.7 psia which was maintained for the duration of the 96 hours. The temperature in Room 113 peaks at 155°F in 19 seconds. The pressure in Room 113 peaks at 16.06 psia in 1.75 seconds. The temperature and pressure in Room 113 return to ambient conditions in 6.7 minutes (Reference C-113).

Based on this information, it can be concluded that the laboratory test subjected the terminal block to an overall more severe environment than that which would result from a postulated HELB. Since the terminal block remained operable throughout the test and functional after the test, it can be concluded that the terminal block will remain functional during and after exposure to the accident environment which would result from the postulated HELB.

In addition, the terminal blocks were tested for temperature and humidity by the Stanwick Electrical Products Company. The high temperature test of  $150^{\circ}$ F for 8 hours was passed successfully with a test voltage of 600 volts D.C. (References V-35A, and V-35B). Maximum continuous use temperatures for the terminal block base and barrier materials (only non-metallic parts) are  $302^{\circ}$ F and  $275^{\circ}$ F, respectively (References W-2, AA). Stanwick also conducted a humidity test on the terminal blocks with 90% ± 10% relative humidity at 68°F using a test voltage of 500 volts D.C. No shorting or arcing occurred during the test (References V-35A, V-35B).

- 2. One year operating time is used as a conservative maximum specification.
- 3. This test data was obtained from a test performed by Duke Power Corporation on Stanwick terminal blocks (Reference ROC-35A). This test report is not available as a reference document.
- 4. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

Facility: Davis-Besse Unit 1 Docket: 50-346

Date: 11/1/83 Date: 11/2/13 N Leuis Prepared by: Checked by : ym

Plant I.D. No .:

Manufacturer:

COMPONENT MATERIALS EVALUATION SHEET



EV08300 Stanwick

Model No.:

Component:

Terminal Block Type G

|                        | 1                   | THERMAL AGI      | ING I     | RADIATION                  | 1       |
|------------------------|---------------------|------------------|-----------|----------------------------|---------|
| Parts List             | Materials List      | Qualification    | Reference | Qualification              | Referen |
| Terminal Block Links   | Brass               | Not Sensitive    | 1 1       | Not Affected               | 1       |
| Mounting Rods          | Metallic            | Not Sensitive    | 1 1       | Not Affected               | 1. S.   |
| Bolts                  | Silicone Bronze     | Not Sensitive    | 1         | Not Affected               | 1       |
| Insert                 | Brass               | Not Sensitive    | 1 1       | Not Affected               | 1       |
| Nuts                   | Brass               | Not Sensitive    | 1 1       | Not Affected               | 1       |
| Terminal Block Base    | Durez #791 Phenolic | 40 Years @ 230°F | CAL-79    | 3.0 x 10 <sup>8</sup> RADS | CAL-7   |
| Terminal Block Barrier | Glass - Melamine    | Greater than     | CAL-79    | 1.6 x 10 <sup>8</sup> RADS | CAL-7   |
|                        |                     | 40 Years @ 122°F | 1 1       |                            | 1       |

'acility: Davis-Besse Unit 1 )ocket: 50-346

SYSTEM COMPONENT EVALUATION WORKSHEET



Prepared by: Nheurs Date: 11/1/83 Checked by: Skriefer Date: 11/1/83

| CULTRMENT DESCRIPTION   | ENVIRONMENT                 |                            |                            | DOCUMENTATION REF. |                      | Qualification        | Outstanding |
|---|-----------------------------|----------------------------|----------------------------|--------------------|----------------------|----------------------|-------------|
|   | Parameter                   | Specification              | Qualification              | Specification      | Qualification        | Method               | Items       |
| System: Generic 1E Elec-  <br>trical Components                           | Operating<br>Time           | l Year                     | <br>  1.1 Years            | <br>  Note 2<br>   | Note 1               | Simultaneous<br>Test | None        |
| Plant ID No.: EV08310  <br>Component: Terminal Block                      | Temperature<br>(°F)         | 155.0                      | 345.0                      | C-113              | Note 3               | Simultaneous<br>Test | None        |
| Manufacturer: Stanwick  <br> <br>Nodel Number: Type G                     | Pressure<br>(PSIA)          | 16.06                      | 74.7                       | C-113              | <br>  Note 3  <br>   | Simultaneous<br>Test | None        |
| Function: Electrical  <br>Circuit  <br>Termination                        | Relative<br>Humidity<br>(%) | 100.0                      | <br>  100.0<br>            | <br>  A<br>        | Note 3               | Simultaneous<br>Test | None        |
| Accuracy: Spec: N/A  <br>Demon: N/A  <br>Service: Electrical  <br>Control | <br> Chemical<br> Spray     | N/A                        | <br>  N/A<br>              | <br>  N/A<br>      | N/A                  | N/A                  | None        |
| Location: Auxiliary Bldg. <br>Rm. 113                                     | Radiation                   | 7.1 x 10 <sup>6</sup> RADS | 1.6 x 10 <sup>8</sup> RADS | T T                | CAL-79  <br>  Note 4 | Analysis             | None        |
| Flood Level Elev: N/A Above Flood Level: N/A                              | <br> Aging                  | 40 Years                   | <br>  40 Years             | I                  | CAL-79  <br>  Note 4 | Analysis             | None        |
| Needed for:<br>Hot Shutdown   X  <br>Cold Shutdown   X                    | <br> <br> Submergence       | N/A                        | N/A                        | <br>  N/A<br>      | N/A                  | N/A                  | None        |

| Facility: Davis-Besse Unit 1                                 | SYSTEM COMPONENT EVALUATION WORKSHEET | Index No. 221H-085A |
|--|---------------------------------------|---------------------|
| Prepared by: NLeins Date:<br>Checked by: Michael Date: Date: | 11/1/83<br>11/2/03                    |                     |

1. The test subjected the terminal block to a peak temperature of 345°F. At 30 minutes after the start of the test, the temperature was 320°F, at 1 hour the temperature was 300°F, at 1-1/2 hours the temperature was 290°F, at 2 hours the temperature was 280°F, at 3 hours the temperature was 260°F, at 4 hours the temperature was 255°F, at 8 hours the temperature was 235°F, at 12 hours the temperature was 225°F, and at 18 hours the temperature was 220°F which was maintained for the duration of the 96-hour test. The test pressure peak was 74.7 psia and at 35 minutes the test pressure was down to 19.7 psia which was maintained for the duration of the duration of the duration of the 96 hours. The temperature in Room 113 peaks at 155°F in 19 seconds. The pressure in Room 113 peaks at 16.06 psia in 1.75 seconds. The temperature and pressure in Room 113 return to ambient conditions in 6.7 minutes (Reference C-113).

Based on this information, it can be concluded that the laboratory test subjected the terminal block to an overall more severe environment than that which would result from a postulated HELB. Since the terminal block remained operable throughout the test and functional after the test, it can be concluded that the terminal block will remain functional during and after exposure to the accident environment which would result from the postulated HELB.

In addition, the terminal blocks were tested for temperature and humidity by the Stanwick Electrical Products Company. The high temperature test of  $150^{\circ}F$  for 8 hours was passed successfully with a test voltage of 600 volts D.C. (References V-35A, and V-35B). Maximum continuous use temperatures for the terminal block base and barrier materials (only non-metallic parts) are  $302^{\circ}F$  and  $275^{\circ}F$ , respectively (References W-2, AA). Stanwick also conducted a humidity test on the terminal blocks with  $90\% \pm 10\%$  relative humidity at  $68^{\circ}F$  using a test voltage of 500 volts D.C. No shorting or arcing occurred during the test (References V-35A, V-35B).

- 2. One year operating time is used as a conservative maximum specification.
- 3. This test data was obtained from a test performed by Duke Power Corporation on Stanwick terminal blocks (Reference ROC-35A). This test report is not available as a reference document.
- 4. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

Facility: Davis-Besse Unit 1 Docket: 50-346

Prepared by: Nheuro Date: 11/1/83 Checked by: Statute Date: 11/4/03

| Plant I.D. No<br>Manufacturer:  | 5.: EV08310<br>Stanwick   | Component:<br>Model No.:   | Termi<br>Ty         | nal Block<br>pe G  |                  |
|---|---|--|---------------------|--|------------------|
| Parts List  | Materials List  | THERMAL AGIN   | IG  <br>  Reference | RADIATION<br>Qualification   | Reference        |
| Terminal Block Links<br>Mounting Rods<br>Bolts<br>Insert<br>Nuts<br>Terminal Block Base<br>Terminal Block Barrier | Brass<br>Metallic<br>Silicone Bronze<br>Brass<br>Brass<br>Durez #791 Phenolic<br>Glass - Melamine | Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>40 Years @ 230°F<br>Greater than<br>40 Years @ 122°F | CAL-79<br>CAL-79    | Not Affected<br>Not Affected<br>Not Affected<br>Not Affected<br>Not Affected<br>$3.0 \times 10^8$ RADS<br>$1.6 \times 10^8$ RADS | CAL-79<br>CAL-79 |

Material and Parts Reference List: V-35A, V-35B, ROC-35B





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Facility: Davis-Besse Unit 1 SYSTEM COMPONENT EVALUATION WORKSHEET



Facility: Davis-Besse Unit 1 Docket: 50-346

Date: 11/1/83 Prepared by: N Leuis Checked by:

. .

| EQUIPMENT DESCRIPTION  | II ENVIRONMENT                     |                             |                                 | DOCUMENTATION REF. |                    | Qualification        | Outstanding |
|--|------------------------------------|-----------------------------|---------------------------------|--------------------|--------------------|----------------------|-------------|
| I  | Parameter                          | Specification               | Qualification                   | Specification      | Qualification      | Method               | Items       |
| <br>System: Generic 1E Elec-  <br>trical Components                        | <br> Operating  <br> Time          | l Year                      | l.l Years                       | Note 2             | Note 1  <br>Note 3 | Simultaneous<br>Test | None        |
| Plant ID No.: EV1001  <br>Component: Terminal Block                        | Temperature <br>  (°F)             | 344.0                       | 345.0                           | C-602              | Note 3             | Simultaneous<br>Test | None        |
| Manufacturer: Stanwick  <br>Model Number: Type G                           | Pressure  <br> (PSIA)              | 20.0                        | 74.7                            | C-602              | Note 3             | Simultaneous<br>Test | None        |
| Function: Electrical  <br>Circuit  <br>Termination                         | Relative  <br> Humidity  <br>  (%) | 100.0                       | 100.0                           |                    | Note 3             | Simultaneous<br>Test | None        |
| Accuracy: Spec: N/A  <br>Demon: N/A  <br>Service: Electrical  <br>Control  | <br> Chemical  <br> Spray          | N/A                         | <br>  N/A<br>                   | N/A                | N/A                | N/A                  | None        |
| Location: Auxiliary Bldg. <br>Rm. 602                                      | Radiation                          | 1.86 x 10 <sup>4</sup> RADS | <br> 1.6 x 10 <sup>8</sup> RADS |                    | CAL-79  <br>Note 4 | Analysis             | None        |
| Flood Level Elev: N/A  <br>Above Flood Level: N/A                          | <br> Aging  <br>                   | 40 Years                    | <br>  40 Years<br>              | I                  | CAL-79  <br>Note 4 | Analysis             | None        |
| Needed for:<br>  Hot Shutdown   <u>X</u>    <br>  Cold Shutdown   <u>X</u> | <br> Submergence <br>              | N/A                         | <br>  N/A<br>                   | <br>  N/A    <br>  | N/A                | N/A                  | None        |

| Facility: Date-Besse Unit 1<br>Docket: 50-346 | SYSTEM COMPONENT CLUATION WORKSHEET          | Index No 221H-086A<br>Rev.: 2 |
|---|--|-------------------------------|
| Prepared by N Leura<br>Checked by: Antone     | Date: <u>11/1/53</u><br>Date: <u>11/2/83</u> |                               |

1. The test subjected the terminal block to a peak temperature of 345°F. At 30 minutes after the start of the test, the temperature was 320°F, at 1 hour the temperature was 300°F, at 1-1/2 hours the temperature was 290°F, at 2 hours the temperature was 280°F, at 3 hours the temperature was 260°F, at 4 hours the temperature was 255°F, at 8 hours the temperature was 235°F, at 12 hours the temperature was 225°F, and at 18 hours the temperature was 220°F which was maintained for the duration of the 96-hour test. The test pressure peak was 74.7 psia and at 35 minutes the test pressure was down to 19.7 psia which was maintained for the duration of the duration of the duration of the 96 hours. The temperature in Koom 602 peaks at 344°F in 0.4 seconds. The pressure in Room 602 peaks at 20.0 psia in 2.05 seconds. The temperature and pressure in Room 602 return to ambient conditions in 56 minutes. (Reference C - 602)

Based on this information, it can be concluded that the laboratory test subjected the terminal block to an overall more severe environment than that which would result from a postulated HELB. Since the terminal block remained operable throughout the test and functional after the test, it can be concluded that the terminal block will remain functional during and after exposure to the accident environment which would result from the postulated HELB.

In addition, the terminal blocks were tested for temperature and humidity by the Stanwick Electrical Products Company. The high temperature test of 150°F for 8 hours was passed successfully with a test voltage of 600 volts D.C. (References V-35A, and V-35B). Maximum continuous use temperatures for the terminal block base and barrier materials (only non-metallic parts) are 302°F and 275°F, respectively (References W-2, AA). Stanwick also conducted a humidity test on the terminal blocks with 90% + 10% relative humidity at 68°F using a test voltage of 500 volts D.C. No shorting or arcing occurred during the test (References V-35A, V-35B).

- 2. One year operating time is used as a conservative maximum specification.
- 3. This test data was obtained from a test performed by Duke Power Corporation on Stanwick terminal blocks (Reference ROC-35A). This test report is not available as a reference document.
- 4. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.
- 5. Margin is deemed adequate for this component based on the following:
  - 1. The test report temperature envelopes the postulated HELB profile.
  - 2. The time for which the required temperature margin is not available is very short (0.12 seconds).
  - 3. It can be assumed that thermal lag analysis would show that surface temperature would be will within margin requirements.

| Plant I.D. N  | 0.: <u>EV/00/</u>  | Component:<br>Model No.:   | Termin           | nal Block  |                  |  |
|---|--|--|------------------|--|------------------|--|
| Manufacturer  | : Stanwick   | nouse nor r  |                  |  | N                |  |
| Danta List  | Materials List   | THERMAL AGIN   | Reference        | Qualification  | Reference        |  |
| Terminal Block Links<br>Mounting Rods<br>Bolts<br>Insert<br>Nuts<br>Terminal Block Base<br>Terminal Block Barrier | Brass<br>Metallic<br>Silicone Bronze<br>Brass<br>Durez #791 Phenolic<br>Glass - Melamine | Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>40 Years @ 230°F<br>Greater than<br>40 Years @ 122°F | CAL-79<br>CAL-79 | Not Affected<br>Not Affected<br>Not Affected<br>Not Affected<br>3.0 x 10 <sup>8</sup> RADS<br>1.6 x 10 <sup>8</sup> RADS | CAL-79<br>CAL-79 |  |

Material and Parts Reference List: V-35A, V-35B, ROC-35B

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 Facility:
 Davis-Besse Unit 1
 SYSTEM COMPONENT EVALUATION WORKSHEET
 Docket: 50-346



Prepared by: Nhering Date: 11/1/83 Checked by: April Date: 12/83

11



| EQUIPMENT DESCRIPTION   | ENVIRONMENT                       |                             |                            | DOCUMENTATION REF. |                    | Qualification        | Outstanding |
|---|-----------------------------------|-----------------------------|----------------------------|--------------------|--------------------|----------------------|-------------|
|   | Parameter                         | Specification               | Qualification              | Specification      | Qualification      | Method               | Items       |
| System: Generic 1E Elec-  <br>trical Components                     | Operating  <br> Time              | l Year                      | 1.1 Years                  | Note 2             | Note 1  <br>Note 3 | Simultaneous<br>Test | None        |
| Plant ID No.: EV100A<br>Component: Terminal Block                   | Temperature <br>  (°F)            | 344.0                       | 345.0                      | C-602              | Note 3             | Simultaneous<br>Test | None        |
| Manufacturer: Stanwick  <br>Model Number: Type G                    | Pressure  <br> (PSIA)             | 20.0                        | 74.7                       | C-602              | Note 3             | Simultaneous<br>Test | None        |
| Function: Electrical<br>Circuit<br>Termination                      | Relative  <br> Humidity  <br> (%) | 100.0                       | 100.0                      | Α                  | Note 3             | Simultaneous<br>Test | None        |
| Accuracy: Spec: N/A<br>Demon: N/A<br>Service: Electrical<br>Control | <br> Chemical  <br> Spray  <br>   | N/A                         | N/A                        | N/A                | N/A                | N/A                  | None        |
| Location: Auxiliary Bldg.<br>Rm. 602                                | <br> Radiation                    | 1.86 x 10 <sup>4</sup> RADS | 1.6 x 10 <sup>8</sup> RADS | Т                  | CAL-79<br>Note 4   | Analysis             | None        |
| Flood Level Elev: N/A<br>Above Flood Level: N/A                     | <br> Aging  <br>                  | 40 Years                    | 40 Years                   | I                  | CAL-79<br>Note 4   | Analysis             | None        |
| Hot Shutdown   <u>X</u>  <br>Cold Shutdown   <u>X</u>               | <br> Submergence <br>             | N/A                         | N/A                        | <br>  N/A<br>      | N/A                | N/A                  | None        |

| Facility: Da Besse Unit 1   | SYSTEM COMPONENT QUATION WORKSHEET | Index No. 21H-087A |
|---|------------------------------------|--------------------|
| Docket: 50-346  | NOTES                              | Rev.: 2            |
| Prepared by: <u>M hlurs</u> Date:<br>Checked by: <u>Jania-karas</u> Date: | 11/1/83<br>11 2/83                 |                    |

1. The test subjected the terminal block to a peak temperature of 345°F. At 30 minutes after the start of the test, the temperature was 320°F, at 1 hour the temperature was 300°F, at 1-1/2 hours the temperature was 290°F, at 2 hours the temperature was 280°F, at 3 hours the temperature was 260°F, at 4 hours the temperature was 255°F, at 8 hours the temperature was 235°F, at 12 hours the temperature was 225°F, and at 18 hours the temperature was 220°F which was maintained for the duration of the 96-hour test. The test pressure peak was 74.7 psia and at 35 minutes the test pressure was down to 19.7 psia which was maintained for the duration of the duration of the duration of the 96 hours. The temperature in Room 602 peaks at 344°F in 0.4 seconds. The pressure in Room 602 peaks at 20.0 psia in 2.05 seconds. The temperature and pressure in Room 602 return to ambient conditions in 56 minutes. (Reference C - 602)

Based on this information, it can be concluded that the laboratory test subjected the terminal block to an overall more severe environment than that which would result from a postulated HELB. Since the terminal block remained operable throughout the test and functional after the test, it can be concluded that the terminal block will remain functional during and after exposure to the accident environment which would result from the postulated HELB.

In addition, the terminal blocks were tested for temperature and humidity by the Stanwick Electrical Products Company. The high temperature test of  $150^{\circ}F$  for 8 hours was passed successfully with a test voltage of 600 volts D.C. (References V-35A, and V-35B). Maximum continuous use temperatures for the terminal block base and barrier materials (only non-metallic parts) are  $302^{\circ}F$  and  $275^{\circ}F$ , respectively (References W-2, AA). Stanwick also conducted a humidity test on the terminal blocks with  $90^{\circ} \pm 10^{\circ}$  relative humidity at  $68^{\circ}F$  using a test voltage of 500 volts D.C. No shorting or arcing occurred during the test (References V-35A, V-35B).

- 2. One year operating time is used as a conservative maximum specification.
- 3. This test data was obtained from a test performed by Duke Power Corporation on Stanwick terminal blocks (Reference ROC-35A). This test report is not available as a reference document.
- 4. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.
- 5. Margin is deemed adequate for this component based on the following:
  - 1. The test report temperature envelopes the postulated HELB profile.
  - 2. The time for which the required temperature margin is not available is very short (0.12 seconds).
  - 3. It can be assumed that thermal lag analysis would show that surface temperature would be will within margin requirements.

| Plant I.D. N  | O.: EVIODA  | Component:  | Termi            | nal Block  |                  |  |
|---|---|---|------------------|--|------------------|--|
| Manufacturer  | :Stanwick   | Model No.:  | Тут              | Гуре G   |                  |  |
|   | I   | I THERMAL AGIN  | NG I RADIATI     |  | ION              |  |
| Parts List  | Materials List  | Qualification   | Reference        | Qualification  | Referenc         |  |
| Terminal Block Links<br>Mounting Rods<br>Bolts<br>Insert<br>Nuts<br>Terminal Block Base<br>Terminal Block Barrier | Brass<br>Metallic<br>Silicone Bronze<br>Brass<br>Brass<br>Durez #791 Phenolic<br>Glass - Melamine | Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>40 Years @ 230°F<br>Greater than<br>40 Years @ 122°F | CAL-79<br>CAL-79 | Not Affected<br>Not Affected<br>Not Affected<br>3.0 x 10 <sup>8</sup> RADS<br>1.6 x 10 <sup>8</sup> RADS | CAL-79<br>CAL-79 |  |



Facility: Davis-Besse Unit 1 SYSTEM COMPONENT EVALUATION WORKSHEET



Facility: Davis-Besse Unit 1 Docket: 50-346

Prepared by: Nhering Date: 11/1/93 Checked by: interior Date: 11/2/13

| EQUIPMENT DESCRIPTION   | ENVIRONMENT                          |                             |                            | DOCUMENTATION REF. |                             | Qualification        | Outstanding |
|---|--------------------------------------|-----------------------------|----------------------------|--------------------|-----------------------------|----------------------|-------------|
|   | Parameter                            | Specification               | cification   Qualification |                    | Specification Qualification |                      | Items       |
| <br> System: Generic lE Elec-  <br>  trical Components                  | Operating  <br> Time                 | l Year                      | l.l Years                  | <br>  Note 2<br>   | Note 1                      | Simultaneous<br>Test | None        |
| Plant ID No.: EV1011<br>Component: Terminal Block                       | <br> Temperature <br>  (°F)          | 282.0                       | 345.0                      | C-601              | Note 3                      | Simultaneous<br>Test | None        |
| Manufacturer: Stanwick  <br> <br> Model Number: Type G                  |                                      | 17.0                        | 74.7                       | C-601              | Note 3                      | Simultaneous<br>Test | None        |
| Function: Electrical<br>Circuit<br>Termination                          | Relative   <br> Humidity   <br>  (%) | 100.0                       | 100.0                      | <br>  A<br>        | Note 3                      | Simultaneous<br>Test | None        |
| Accuracy: Spec: N/A  <br>Demon: N/A  <br>Service: Electrical<br>Control | <br> Chemical  <br> Spray            | N/A                         | N/A                        | N/A                | N/A                         | N/A                  | None        |
| Location: Auxiliary Bldg.<br>Rm. 601                                    | Radiation                            | 1.86 x 10 <sup>4</sup> RADS | 1.6 x 10 <sup>8</sup> RADS | <br>  T<br>        | CAL-79  <br>  Note 4        | Analysis             | None        |
| Flood Level Elev: N/A  <br> Above Flood Level: N/A  <br>                | Aging                                | 40 Years                    | 40 Years                   | I                  | CAL-79                      | Analysis             | None        |
| Hot Shutdown   X  <br>Cold Shutdown   X                                 | Submergence                          | N/A                         | N/A                        | <br>  N/A<br>      | N/A                         | N/A                  | None        |

| Facility: Da Besse Unit 1  | SYSTEM COMPONENT                          | Index No. |
|----------------------------|---|-----------|
| Docket: 50-346             |   | Rev.: 2   |
|                            | NOTES                                     |           |
| Prepared by: N hluns Date  | 11/1/23                                   |           |
| Checked by: Amichange Date | 11,2/93                                   |           |
|                            | 지 않는 것이 같은 것이 같은 것을 가지 않는 것이 많이 많이 많이 없다. |           |

1. The test subjected the terminal block to a peak temperature of 345°F. At 30 minutes after the start of the test, the temperature was 320°F, at 1 hour the temperature was 300°F, at 1-1/2 hours the temperature was 290°F, at 2 hours the temperature was 280°F, at 3 hours the temperature was 260°F, at 4 hours the temperature was 255°F, at 8 hours the temperature was 235°F, at 12 hours the temperature was 225°F, and at 18 hours the temperature was 220°F which was maintained for the duration of the 96-hour test. The test pressure peak was 74.7 psia and at 35 minutes the test pressure was down to 19.7 psia which was maintained for the duration of the duration of the duration of the 96 hours. The temperature in Room 601 peaks at 282°F in 0.45 seconds. The pressure in Room 601 peaks at 17.0 psia in 2.05 seconds. The temperature and pressure in Room 601 return to ambient conditions in 2 hours and 18 minutes. (Reference C - 601)

Based on this information, it can be concluded that the laboratory test subjected the terminal block to an overall more severe environment than that which would result from a postulated HELB. Since the terminal block remained operable throughout the test and functional after the test, it can be concluded that the terminal block will remain functional during and after exposure to the accident environment which would result from the postulated HELB.

In addition, the terminal blocks were tested for temperature and humidity by the Stanwick Electrical Products Company. The high temperature test of  $150^{\circ}F$  for 8 hours was passed successfully with a test voltage of 600 volts D.C. (References V-35A, and V-35B). Maximum continuous use temperatures for the terminal block base and barrier materials (only non-metallic parts) are  $302^{\circ}F$  and  $275^{\circ}F$ , respectively (References W-2, AA). Stanwick also conducted a humidity test on the terminal blocks with  $90^{\circ} \pm 10^{\circ}$  relative humidity at  $68^{\circ}F$  using a test voltage of 500 volts D.C. No shorting or arcing occurred during the test (References V-35A, V-35B).

- 2. One year operating time is used as a conservative maximum specification.
- 3. This test data was obtained from a test performed by Duke Power Corporation on Stanwick terminal blocks (Reference ROC-35A). This test report is not available as a reference document.
- 4. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

VALUATION SHEET COMPONENT MATEPIA

221H-0888 Index p 2 Rev. :

Facility: Davis-Besse Unit 1 50-346 Docket:

Prepared by: When Date: 11/1/83 Checked by: Strandord Date: 11/1/183

| Plant I.D. No  | .: EV1011  | Component:   | Termin           | nal Block  |                  |
|--|--|--|------------------|--|------------------|
| Manufacturer   | Manufacturer: Stanwick   |  | Тур              | e G  |                  |
|  |  | I THERMAL AGIN   | IG I             | RADIATION  |                  |
| Parts List   | Materials List   | Qualification  | Reference        | Qualification  | Reference        |
| erminal Block Links<br>lounting Rods<br>lolts<br>insert<br>luts<br>erminal Block Base<br>erminal Block Barrier | Brass<br>Metallic<br>Silicone Bronze<br>Brass<br>Durez #791 Phenolic<br>Glass - Melamine | Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>40 Years @ 230°F<br>Greater than<br>40 Years @ 122°F | CAL-79<br>CAL-79 | Not Affected<br>Not Affected<br>Not Affected<br>Not Affected<br>3.0 x 10 <sup>8</sup> RADS<br>1.6 x 10 <sup>8</sup> RADS | CAL-79<br>CAL-79 |

Facility: Davis-Besse Unit 1 Docket: 50-346

SYSTEM COMPONENT EVALUATION WORKSHEET



Checked by: Nlein Date: 11/1/83 Checked by: Entreform Date: 11/2/83

| EQUIPMENT DESCRIPTION   | ENVIRONMENT                       |                             |                            | DOCUMENTATION REF. |                    | Oualification        | Outstanding |
|---|-----------------------------------|-----------------------------|----------------------------|--------------------|--------------------|----------------------|-------------|
|   | Parameter                         | Specification               | Qualification              | Specification      | Qualification      | Method               | Items       |
| <br> System: Generic 1E Elec-  <br>  trical Components                    | <br> Operating  <br> Time         | l Year                      | 1.1 Years                  | Note 2             | Note 1  <br>Note 3 | Simultaneous<br>Test | None        |
| Plant ID No.: EV1018<br> <br> Component: Terminal Block                   | <br> Temperature <br>  (°F)       | 282.0                       | 345.0                      | C-601              | Note 3             | Simultaneous<br>Test | None        |
| Manufacturer: Stanwick  <br> <br> Model Number: Type G                    | <br> Pressure  <br> (PSIA)        | 17.0                        | 74.7                       | C-601 I            | Note 3             | Simultaneous<br>Test | None        |
| Function: Electrical  <br>  Circuit  <br>  Termination                    | Relative  <br> Humidity  <br> (%) | 100.0                       | 100.0                      |                    | Note 3             | Simultaneous<br>Test | None        |
| Accuracy: Spec: N/A  <br>Demon: N/A  <br>Service: Electrical  <br>Control | <br> Chemical  <br> Spray  <br>   | N/A                         | N/A                        | N/A                | N/A                | N/A                  | None        |
| Location: Auxiliary Bldg.<br>Rm. 601                                      | Radiation                         | 1.86 x 10 <sup>4</sup> RADS | 1.6 x 10 <sup>8</sup> RADS |                    | CAL-79  <br>Note 4 | Analysis             | None        |
| Plood Level Elev: N/A  <br>Above Flood Level: N/A                         | Aging                             | 40 Years                    | 40 Years                   | III                | CAL-79  <br>Note 4 | Analysis             | None        |
| Hot Shutdown   X  <br> <br>  Cold Shutdown   X                            | Submergence                       | N/A                         | N/A                        | N/A                | N/A                | N/A                  | None        |

| Facility: Davis-Besse Unit 1          | SYSTEM COMPONENT SALUATION WORKSHEET | Index NO 221H-089A |
|---------------------------------------|--------------------------------------|--------------------|
| Docket: 50-346<br>Prepared by: Nheuis | Date: 11/1/83                        | Rev.: 2            |
| Checked by: Smile Consel              | Date: 11/2/23                        |                    |

1. The test subjected the terminal block to a peak temperature of 345°F. At 30 minutes after the start of the test, the temperature was 320°F, at 1 hour the temperature was 300°F, at 1-1/2 hours the temperature was 290°F, at 2 hours the temperature was 280°F, at 3 hours the temperature was 260°F, at 4 hours the temperature was 255°F, at 8 hours the temperature was 235°F, at 12 hours the temperature was 225°F, and at 18 hours the temperature was 220°F which was maintained for the duration of the 96-hour test. The test pressure peak was 74.7 psia and at 35 minutes the test pressure was down to 19.7 psia which was maintained for the duration of the 96 hours. The temperature in Room 601 peaks at 282°F in 0.45 seconds. The pressure in Room 601 peaks at 17.0 psia in 2.05 seconds. The temperature and pressure in Room 601 return to ambient conditions in 2 hours and 18 minutes. (Reference C - 601)

Based on this information, it can be concluded that the laboratory test subjected the terminal block to an overall more severe environment than that which would result from a postulated HELB. Since the terminal block remained operable throughout the test and functional after the test, it can be concluded that the terminal block will remain functional during and after exposure to the accident environment which would result from the postulated HELB.

In addition, the terminal blocks were tested for temperature and humidity by the Stanwick Electrical Products Company. The high temperature test of  $150^{\circ}F$  for 8 hours was passed successfully with a test voltage of 600 volts D.C. (References V-35A, and V-35B). Maximum continuous use temperatures for the terminal block base and barrier materials (only non-metallic parts) are  $302^{\circ}F$  and  $275^{\circ}F$ , respectively (References W-2, AA). Stanwick also conducted a humidity test on the terminal blocks with  $90^{\circ} + 10^{\circ}$  relative humidity at  $68^{\circ}F$  using a test voltage of 500 volts D.C. No shorting or arcing occurred during the test (References V-35A, V-35B).

- 2. One year operating time is used as a conservative maximum specification.
- 3. This test data was obtained from a test performed by Duke Power Corporation on Stanwick terminal blocks (Reference ROC-35A). This test report is not available as a reference document.
- 4. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

| Manufacturer  | Stanwick  | Component:<br>Model No.:   | Termi            | nal Block  |                  |
|---|---|--|------------------|--|------------------|
| Manur acturer: Stanwick   |   |  |                  |  |                  |
| Parts List  | Materials List  | Qualification  | Reference        | Qualification  | Reference        |
| Terminal Block Links<br>Mounting Rods<br>Bolts<br>Insert<br>Nuts<br>Terminal Block Base<br>Terminal Block Barrier | Brass<br>Metallic<br>Silicone Bronze<br>Brass<br>Brass<br>Durez #791 Phenolic<br>Glass - Melamine | Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>40 Years @ 230°F<br>Greater than<br>40 Years @ 122°F | CAL-79<br>CAL-79 | Not Affected<br>Not Affected<br>Not Affected<br>Not Affected<br>3.0 x 10 <sup>8</sup> RADS<br>1.6 x 10 <sup>8</sup> RADS | CAL-79<br>CAL-79 |



Facility: Davis-Besse Unit 1 Docket: 50-346

Facility: Davis-Besse Unit 1 SYSTEM COMPONENT EVALUATION WORKSHEET



Prepared by: N Lewis Date: 11/1/P3 Checked by:

| EQUIPMENT DESCRIPTION   | ENVIRONMENT                        |                            |                                 | DOCUMENTATION REF. |                    | Qualification        | Outstanding  |
|---|------------------------------------|----------------------------|---------------------------------|--------------------|--------------------|----------------------|--------------|
|   | Parameter                          | Specification              | Qualification                   | Specification      | Qualification      | Method               | Items        |
| System: Generic 1E Elec-  <br>trical Components                           | <br> Operating  <br> Time          | l Year                     | <br>  l.l Years<br> <br>        | Note 2             | Note 1  <br>Note 3 | Simultaneous<br>Test | None<br>None |
| Plant ID No.: EV13280<br>Component: Terminal Block                        | Temperature<br>(°F)                | 221.0                      | 1<br>1 345.0<br>1               | c-314              | Note 3             | Simultaneous<br>Test | None         |
| Manufacturer: Stanwick<br>Model Number: Type G                            | <br> Pressure  <br> (PSIA)         | 19.76                      | 74.7                            | c-314              | Note 3             | Simultaneous<br>Test | None         |
| Function: Electrical<br>Circuit<br>Termination                            | Relative  <br> Humidity  <br>  (%) | 100.0                      | <br>  100.0<br>                 | A                  | Note 3             | Simultaneous<br>Test | None         |
| Accuracy: Spec: N/A  <br>Demon: N/A  <br>Service: Electrical  <br>Control | <br> Chemical  <br> Spray  <br>    | N/A                        | <br>  N/A<br> <br>              | N/A                | N/A                | N/A                  | None         |
| Location: Auxiliary Bldg. <br>Rm. 314                                     | Radiation                          | 1.0 x 10 <sup>6</sup> RADS | <br> 1.6 x 10 <sup>8</sup> RADS | T                  | CAL-79<br>Note 4   | Analysis             | None         |
| Flood Level Elev: N/A  <br>Above Flood Level: N/A                         | <br> Aging  <br>                   | 40 Years                   | <br>  40 Years                  | I                  | CAL-79<br>Note 4   | Analysis             | None         |
| Hot Shutdown   X  <br>Cold Shutdown   X                                   | <br> Submergence                   | N/A                        | <br>  N/A<br>                   | <br>  N/A          | N/A                | N/A                  | None         |

| Facility: Davis-Besse Unit 1 | SYSTEM COMPONENT SILUATION WORKSHEET | Index No 221H-090A |
|------------------------------|--------------------------------------|--------------------|
| Docket: 50-346               |                                      | Rev.: 2            |
|                              | NOTES                                |                    |
| Prepared by: Nheurs          | Date: ////33                         |                    |
| Checked by: Julia Court      | Date: 11/2/53                        |                    |
| - A Latte                    |                                      |                    |
|                              |                                      |                    |

1. The test subjected the terminal block to a peak temperature of 345°F. At 30 minutes after the start of the test, the temperature was 320°F, at 1 hour the temperature was 300°F, at 1-1/2 hours the temperature was 290°F, at 2 hours the temperature was 280°F, at 3 hours the temperature was 260°F, at 4 hours the temperature was 255°F, at 8 hours the temperature was 235°F, at 12 hours the temperature was 225°F, and at 18 hours the temperature was 220°F which was maintained for the duration of the 96-hour test. The test pressure peak was 74.7 psia and at 35 minutes the test pressure was down to 19.7 psia which was maintained for the duration of the 96 hours. The temperature in Room 314 peaks at 221°F in 1.55 seconds. The pressure in Room 314 peaks at 19.76 psia in .09 seconds. The temperature and pressure in Room 314 return to ambient conditions in 8 minutes (Reference C-314).

Based on this information, it can be concluded that the laboratory test subjected the terminal block to an overall more severe environment than that which would result from a postulated HELB. Since the terminal block remained operable throughout the test and functional after the test, it can be concluded that the terminal block will remain functional during and after exposure to the accident environment which would result from the postulated HELB.

In addition, the terminal blocks were tested for temperature and humidity by the Stanwick Electrical Products Company. The high temperature test of 150°F for 8 hours was passed successfully with a test voltage of 600 volts D.C. (References V-35A, and V-35B). Maximum continuous use temperatures for the terminal block base and barrier materials (only non-metallic parts) are 302°F and 275°F, respectively (References W-2, AA). Stanwick also conducted a humidity test on the terminal blocks with 90% + 10% relative humidity at 68°F using a test voltage of 500 volts D.C. No shorting or arcing occurred during the test (References V-35A, V-35B).

- 2. One year operating time is used as a conservative maximum specification.
- 3. This test data was obtained from a test performed by Duke Power Corporation on Stanwick terminal blocks (Reference ROC-35A). This test report is not available as a reference document.
- 4. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

Facility: Devis-Besse Unit 1

50-346 Docket:

Prepared by: IV Leuro Date: 11/1/83 Checked by: Synandard Date: 11/1/83

| Plant I.D. No.:<br>Manufacturer:  | EV13280<br>Stanwick   | Component:<br>Model No.:  | Termi<br>Ty      | nal Block<br>pe G  |                  |
|---|---|---|------------------|--|------------------|
|   |   | THERMAL AGIN  | NG I             | RADIATION  |                  |
| Parts List  | Materials List  | Qualification   | Reference        | Qualification  | Reference        |
| Terminal Block Links<br>Mounting Rods<br>Bolts<br>Insert<br>Nuts<br>Terminal Block Base<br>Terminal Block Barrier | Brass<br>Metallic<br>Silicone Bronze<br>Brass<br>Brass<br>Durez #791 Phenolic<br>Glass ~ Melamine | Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>A0 Years @ 230°F<br>Greater than<br>40 Years @ 122°F | CAL-79<br>CAL-79 | Not Affected<br>Not Affected<br>Not Affected<br>Not Affected<br>3.0 x 10 <sup>8</sup> RADS<br>1.6 x 10 <sup>8</sup> RADS | CAL-79<br>CAL-79 |

Material and Parts Reference List: V-35A, V-35B, ROC-35B

EVALUATION SHEET

221H-090B Index Rev.: 2

COMPONENT MATERI

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Pacility: Davis-Besse Unit 1 Docket: 50-346 SYSTEM COMPONENT EVALUATION WORKSHEET



Prepared by: Nleine Date: 11/1/83 Checked by: Date: 11/2/83

11

| EQUIPMENT DESCRIPTION   | 1                                       | ENVIRONMENT                |                                 | I DOCUMENTA   | TION REF.                  | Qualification        | Outstanding |
|---|---|----------------------------|---------------------------------|---------------|----------------------------|----------------------|-------------|
| II  | Parameter                               | Specification              | Qualification                   | Specification | Qualification              | Method               | Items       |
| <br> System: Generic 1E Elec-   <br>  trical Components                   | Operating  <br> Time                    | l Year                     | <br>  l.l Years<br>             | Note 2        | Note 1                     | Simultaneous<br>Test | None        |
| Plant ID No.: EV13380  <br> <br> Component: Terminal Block                | <br> Temperature <br>  (°F)             | 221.0                      | 1<br>1 345.0                    | C-314         | Note 3                     | Simultaneous<br>Test | None        |
| Manufacturer: Stanwick  <br>   <br> Model Number: Type G  <br>            | Pressure  <br> (PSIA)                   | 19.76                      | 1 74.7                          | C-314         | Note 3                     | Simultaneous<br>Test | None        |
| Function: Electrical  <br>  Circuit  <br>  Termination  <br>              | <br> Relative  <br> Humidity  <br>  (%) | 100.0                      | <br>  100.0<br>                 | <br>  A<br>   | Note 3  <br>  Note 3  <br> | Simultaneous<br>Test | None        |
| Accuracy: Spec: N/A  <br>Demon: N/A  <br>Service: Electrical  <br>Control | <br> Chemical  <br> Spray  <br>         | N/A                        | <br>  N/A<br>                   | <br>  N/A<br> | N/A                        | N/A                  | None        |
| Location: Auxiliary Bldg. <br>Rm. 314                                     | Radiation                               | 1.0 x 10 <sup>6</sup> RADS | <br> 1.6 x 10 <sup>8</sup> RADS | і<br>і т      | CAL-79  <br>  Note 4       | Analysis             | None        |
| Flood Level Elev: N/A  <br> Above Flood Level: N/A  <br>                  | Aging                                   | 40 Years                   | <br>  40 Years<br>              | II            | CAL-79  <br>  Note 4       | Analysis             | None        |
| Hot Shutdown   X    <br>  Cold Shutdown   X                               | <br> Submergence <br>                   | N/A                        | <br>  N/A<br>                   | <br>  N/A<br> | N/A                        | N/A                  | None        |

| Docket: 50-346  | Do ar    |   | and the second value of |
|---|----------|---|-------------------------|
| NUMBER  | Ne V . I | 2 |                         |
| Prepared by: Nheuis Date: 11/1/5.3<br>Checked by: Date: 11/2/53 |          |   |                         |

1. The test subjected the terminal block to a peak temperature of 345°F. At 30 minutes after the start of the test, the temperature was 320°F, at 1 hour the temperature was 300°F, at 1-1/2 hours the temperature was 290°F, at 2 hours the temperature was 280°F, at 3 hours the temperature was 260°F, at 4 hours the temperature was 255°F, at 8 hours the temperature was 235°F, at 12 hours the temperature was 225°F, and at 18 hours the temperature was 220°F which was maintained for the duration of the 96-hour test. The test pressure peak was 74.7 psia and at 35 minutes the test pressure was down to 19.7 psia which was maintained for the duration of the 96 hours. The temperature in Room 314 peaks at 221°F in 1.55 seconds. The pressure in Room 314 peaks at 19.76 psia in .09 seconds. The temperature and pressure in Room 314 return to ambient conditions in 8 minutes (Reference C-314).

Based on this information, it can be concluded that the laboratory test subjected the terminal block to an overall more severe environment than that which would result from a postulated HELB. Since the terminal block remained operable throughout the test and functional after the test, it can be concluded that the terminal block will remain functional during and after exposure to the accident environment which would result from the postulated HELB.

In addition, the terminal blocks were tested for temperature and humidity by the Stanwick Electrical Products Company. The high temperature test of 150°F for 8 hours was passed successfully with a test voltage of 600 volts D.C. (References V-35A, and V-35B). Maximum continuous use temperatures for the terminal block base and barrier materials (only non-metallic parts) are 302°F and 275°F, respectively (References W-2, AA). Stanwick also conducted a humidity test on the terminal blocks with 90% + 10% relative humidity at 68°F using a test voltage of 500 volts D.C. No shorting or arcing occurred during the test (References V-35A, V-35B).

- 2. One year operating time is used as a conservative maximum specification.
- 3. This test data was obtained from a test performed by Duke Power Corporation on Stanwick terminal blocks (Reference ROC-35A). This test report is not available as a reference document.
- 4. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

| Plant I.D. No   | D.: EV13380  | Component:   | Termin           | nal Block  |                  |
|---|--|--|------------------|--|------------------|
| Manufacturer  | : Stanwick   | Model No.:   | Тут              | be G   |                  |
| 철학에 걸 분 것   |  | I THERMAL AGIN   | ig I             | RADIATION  |                  |
| Parts List  | Materials List   | Qualification  | Reference        | Qualification  | Reference        |
| Terminal Block Links<br>Mounting Rods<br>Bolts<br>Insert<br>Nuts<br>Terminal Block Base<br>Terminal Block Barrier | Brass<br>Metallic<br>Silicone Bronze<br>Brass<br>Durez #791 Phenolic<br>Glass - Melamine | Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>40 Years @ 230°F<br>Greater than<br>40 Years @ 122°F | CAL-79<br>CAL-79 | Not Affected<br>Not Affected<br>Not Affected<br>Not Affected<br>3.0 x 10 <sup>8</sup> RADS<br>1.6 x 10 <sup>8</sup> RADS | CAL-79<br>CAL-79 |

Material and Parts Reference List: V-35A, V-35B, ROC-35B



Pacility: Davis-.esse Unit 1 Docket: 50-346

SYSTEM COMPONENT EVALUATION WORKSHEET



Prepared by: Nheuis D Checked by:



| EQUIPMENT DESCRIPTION   | 1   | ENVIRONMENT                |                                 | DOCUMENTATION REF. |                      | Qualification        | Outstanding |
|---|---|----------------------------|---------------------------------|--------------------|----------------------|----------------------|-------------|
| II  | Parameter                                 | Specification              | Qualification                   | Specification      | [Qualification]      | Method               | Items       |
| <br> System: Generic 1E Elec-  <br>  trical Components <br>               | <br> Operating  <br> Time  <br>           | l Year                     | <br>  1.1 Years<br> <br>        | Note 2             | Note 1 1<br>Note 3 1 | Simultaneous<br>Test | None        |
| Plant ID No.: EV13660  <br> <br> Component: Terminal Block                | <br> Temperature <br>  (°F)               | 221.0                      | <br>  345.0<br>                 | <br>  C-314        | <br>  Note 3  <br>   | Simultaneous<br>Test | None        |
| Manufacturer: Stanwick  <br> <br> Model Number: Type G                    | <br> Pressure  <br> (PSIA)                | 19.76                      | <br>  74.7<br>                  | C-314              | Note 3               | Simultaneous<br>Test | None        |
| Function: Electrical  <br>  Circuit  <br>  Termination                    | <br> Relative   <br> Humidity   <br> _(%) | 100.0                      | i<br>1 100.0<br>1               |                    | Note 3               | Simultaneous<br>Test | None        |
| Accuracy: Spec: N/A  <br>Demon: N/A  <br>Service: Electrical  <br>Control | <br> Chemical  <br> Spray  <br>           | N/A                        | <br>  N/A<br>                   | <br>  N/A<br>      | N/A                  | N/A                  | None        |
| Location: Auxiliary Bldg. <br>Rm. 314                                     | Radiation                                 | 1.0 x 10 <sup>6</sup> RADS | <br> 1.6 x 10 <sup>8</sup> RADS | 1<br>1 T           | CAL-79  <br>Note 4   | Analysis             | None        |
| Flood Level Elev: N/A  <br> Above Flood Level: N/A  <br> <br> Needed for: | Aging                                     | 40 Years                   | <br>  40 Years<br>              | I                  | CAL-79  <br>  Note 4 | Analysis             | None        |
| Hot Shutdown   X    <br>  Cold Shutdown   X                               | Submergence                               | N/A                        | <br>  N/A<br>                   | <br>  N/A<br>      | N/A                  | N/A                  | None        |

| Facility: Davis-Besse Unit 1 | SYSTEM COMPONENT SALUATION WORKSHEET   | Index No. 221H-092A |
|------------------------------|--|---------------------|
| Docket: 50-346               |  | Rev.: 2             |
|                              | NOTES  |                     |
| Prepared by: N heuro         | Date: 11/1/67  |                     |
| Checked by: Anileach aff     | Date: 11/2/53  |                     |
|                              | - 'Yes' '이 있는 것이 없는 것이 있 않는 것이 없는 것이 없<br>것이 없는 것이 없이 없는 것이 있 않는 것이 없는 것 않는 것이 없는 것<br>것이 것 같이 않는 것 않는 것 않는 것이 없는 것이 |                     |

1. The test subjected the terminal block to a peak temperature of 345°F. At 30 minutes after the start of the test, the temperature was 320°F, at 1 hour the temperature was 300°F, at 1-1/2 hours the temperature was 290°F, at 2 hours the temperature was 280°F, at 3 hours the temperature was 260°F, at 4 hours the temperature was 255°F, at 8 hours the temperature was 235°F, at 12 hours the temperature was 225°F, and at 18 hours the temperature was 220°F which was maintained for the duration of the 96-hour test. The test pressure peak was 74.7 psia and at 35 minutes the test pressure was down to 19.7 psia which was maintained for the duration of the 96 hours. The temperature in Room 314 peaks at 221°F in 1.55 seconds. The pressure in Room 314 peaks at 19.76 psia in .09 seconds. The temperature and pressure in Room 314 return to ambient conditions in 8 minutes (Reference C-314).

Based on this information, it can be concluded that the laboratory test subjected the terminal block to an overall more severe environment than that which would result from a postulated HELB. Since the terminal block remained operable throughout the test and functional after the test, it can be concluded that the terminal block will remain functional during and after exposure to the accident environment which would result from the postulated HELB.

In addition, the terminal blocks were tested for temperature and humidity by the Stanwick Electrical Products Company. The high temperature test of 150°F for 8 hours was passed successfully with a test voltage of 600 volts D.C. (References V-35A, and V-35B). Maximum continuous use temperatures for the terminal block base and barrier materials (only non-metallic parts) are 302°F and 275°F, respectively (References W-2, AA). Stanwick also conducted a humidity test on the terminal blocks with 90% + 10% relative humidity at 68°F using a test voltage of 500 volts D.C. No shorting or arcing occurred during the test (References V-35A, V-35B).

- 2. One year operating time is used as a conservative maximum specification.
- 3. This test data was obtained from a test performed by Duke Power Corporation on Stanwick terminal blocks (Reference ROC-35A). This test report is not available as a reference document.
- 4. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

| Plant I.D. N  | 0.: EV13660  | Component:   | Termi            | nal Block  |                  |
|---|--|--|------------------|--|------------------|
| Manuf acturer   | : Stanwick   | Model No.:   | Ту               | pe G   |                  |
|   |  | I THERMAL AGIN   | IG I             | RADIATION  |                  |
| Parts List  | Materials List   | Qualification  | Reference        | Qualification  | Referenc         |
| Terminal Block Links<br>Mounting Rods<br>Bolts<br>Insert<br>Nuts<br>Terminal Block Base<br>Terminal Block Barrier | Brass<br>Metallic<br>Silicone Bronze<br>Brass<br>Durez #791 Phenolic<br>Glass - Melamine | Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>40 Years @ 230°F<br>Greater than<br>40 Years @ 122°F | CAL-79<br>CAL-79 | Not Affected<br>Not Affected<br>Not Affected<br>Not Affected<br>3.0 x 10 <sup>8</sup> RADS<br>1.6 x 10 <sup>8</sup> RADS | CAL-79<br>CAL-79 |



Facility: Davis-Besse Unit 1 Docket: 50-346 SYSTEM COMPONENT EVALUATION WORKSHEET



Prepared by: Nlemis Date: 11/1/87 Checked by: Date: 11/2/83

| EQUIPMENT DESCRIPTION  |   | ENVIRONMENT                |                                 | DOCUMENTATION REF. |                    | Qualification        | Outstanding |
|--|---|----------------------------|---------------------------------|--------------------|--------------------|----------------------|-------------|
|  | Parameter   | Specification              | Qualification                   | Specification      | Qualification      | Method               | Items       |
| System: Generic 1E Elec-  <br>  trical Components  | Operating  <br> Time                                  | l Year                     | 1.1 Years                       | Note 2             | Note 1  <br>Note 3 | Simultaneous<br>Test | None        |
| Plant ID No.: EV13670  | Temperature <br>  (°F)                                | 221.0                      | 1<br>1 345.0                    | C-314              | Note 3             | Simultaneous<br>Test | None        |
| Manufacturer: Stanwick  <br>   <br> Model Number: Type G  <br>   | Pressure  <br> (PSIA)                                 | 19.76                      | 1 74.7                          | C-314              | Note 3             | Simultaneous<br>Test | None        |
| Punction:         Electrical         I           I         Circuit         I           I         Termination         I | IRelative     I       IHumidity     I       (%)     I | 100.0                      | 100.0                           | A                  | Note 3             | Simultaneous<br>Test | <br>  None  |
| Accuracy: Spec: N/A  <br>Demon: N/A  <br>Service: Electrical  <br>Control  | <br> Chemical  <br> Spray  <br>                       | N/A                        | <br>  N/A<br>                   | N/A                | N/A                | N/A                  | None<br>I   |
| Location: Auxiliary Bldg. <br>Rm. 314  | Radiation   | 1.0 x 10 <sup>6</sup> RADS | <br> 1.6 x 10 <sup>8</sup> RADS | T                  | CAL-79  <br>Note 4 | Analysis             | None        |
| Flood Level Elev: N/A  <br> Above Flood Level: N/A  <br>   <br> Needed for:  |   | 40 Years                   | <br>  40 Years<br>              | I                  | CAL-79             | Analysis             | None        |
| Hot Shutdown   <u>X</u>    <br>Cold Shutdown   <u>X</u>  | <br> Submergence <br>                                 | N/A                        | <br>  N/A<br>                   | N/A                | N/A                | N/A                  | None        |

|                              |                                      | •                  |
|------------------------------|--------------------------------------|--------------------|
| Pacility: Davis-Besse Unit 1 | SYSTEM COMPONENT EN UATION WORKSHEET | Index No. 21H-093A |
| repared by: Nheuis           | Date: 11/1/53                        |                    |
| hecked by: file and          | Date: 11.2.63                        |                    |

The test subjected the terminal block to a peak temperature of 345°F. At 30 minutes after the start of the test, the temperature was 320°F, at 1 hour the temperature was 300°F, at 1-1/2 hours the temperature was 290°F, at 2 hours the temperature was 280°F, at 3 hours the temperature was 260°F, at 4 hours the temperature was 255°F, at 8 hours the temperature was 235°F, at 12 hours the temperature was 225°F, and at 18 hours the temperature was 220°F which was maintained for the duration of the 96-hour test. The test pressure peak was 74.7 psia and at 35 minutes the test pressure was down to 19.7 psia which was maintained for the duration of the 96 hours. The temperature in Room 314 peaks at 221°F in 1.55 seconds. The pressure in Room 314 peaks at 19.76 psia in .09 seconds. The temperature and pressure in Room 314 return to ambient conditions in 8 minutes (Reference C-314).

Based on this information, it can be concluded that the laboratory test subjected the terminal block to an overall more severe environment than that which would result from a postulated HELB. Since the terminal block remained operable throughout the test and functional after the test, it can be concluded that the terminal block will remain functional during and after exposure to the accident environment which would result from the postulated HELB.

In addition, the terminal blocks were tested for temperature and humidity by the Stanwick Electrical Products Company. The high temperature test of 150°F for 8 hours was passed successfully with a test voltage of 600 volts D.C. (References V-35A, and V-35B). Maximum continuous use temperatures for the terminal block base and barrier materials (only non-metallic parts) are 302°F and 275°F, respectively (References W-2, AA). Stanwick also conducted a humidity test on the terminal blocks with 90% + 10% relative humidity at 68°F using a test voltage of 500 volts D.C. No shorting or arcing occurred during the test (References V-35A, V-35B).

- 2. One year operating time is used as a conservative maximum specification.
- 3. This test data was obtained from a test performed by Duke Power Corporation on Stanwick terminal blocks (Reference ROC-35A). This test report is not available as a reference document.
- 1. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

| Plant I.D. N  | 0.: EV12370  | Component:   | Termi            | nal Block  |                  |
|---|--|--|------------------|--|------------------|
| Manufacturer  | : Stanwick   | Model No.:   | Ту               | pe G   |                  |
|   | 1  | I THERMAL AGIN   | IG I             | RADIATION  |                  |
| Parts List  | Materials List   | Qualification  | Reference        | Qualification  | Referenc         |
| Terminal Block Links<br>Mounting Rods<br>Bolts<br>Insert<br>Nuts<br>Terminal Block Base<br>Terminal Block Barrier | Brass<br>Metallic<br>Silicone Bronze<br>Brass<br>Durez #791 Phenolic<br>Glass - Melamine | Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>40 Years @ 230°F<br>Greater than<br>40 Years @ 122°F | CAL-79<br>CAL-79 | Not Affected<br>Not Affected<br>Not Affected<br>Not Affected<br>3.0 x 10 <sup>8</sup> RADS<br>1.6 x 10 <sup>8</sup> RADS | CAL-79<br>CAL-79 |



Pacility: Davis-Besse Unit 1 Docket: 50-346 SYSTEM COMPONENT EVALUATION WORKSHEET



Prepared by: Nleins Date: 1/1/87 Checked by: And Date: 1/2/83

| EQUIPMENT DESCRIPTION   | 1                                       | ENVIRONMENT                 |                             | DOCUMENTATION REF. |                  | Qualification        | Outstanding         |
|---|---|-----------------------------|-----------------------------|--------------------|------------------|----------------------|---------------------|
|   | Parameter                               | Specification               | Qualification               | Specification      | Qualification    | Method               | Items               |
| System: Generic 1E Elec-<br>trical Components                             | <br> Operating  <br> Time               | l Year                      | 1.1 Years                   | Note 2             | Note 1           | Simultaneous<br>Test | <br>  None<br>      |
| Plant ID No.: EV13830   | <br> Temperature <br>  (°F)             | 198.0                       | 345.0                       | <br>  C-236<br>    | Note 3           | Simultaneous<br>Test | <br>  None<br>      |
| Manufacturer: Stanwick  <br>Model Number: Type G                          | <br> Pressure  <br> (PSIA)              | 15.51                       | 74.7                        | l<br>l C-236       | Note 3           | Simultaneous<br>Test | <br>  None<br>      |
| Function: Electrical<br>Circuit<br>Termination                            | <br> Relative  <br> Humidity  <br>  (%) | 100.0                       | 100.0                       | I A                | Note 3           | Simultaneous<br>Test | <br>  None<br>      |
| Accuracy: Spec: N/A  <br>Demon: N/A  <br>Service: Electrical  <br>Control | <br> Chemical  <br> Spray  <br>         | N/A                         | N/A                         | <br>  N/A<br>      | N/A              | N/A                  | <br>  None<br> <br> |
| Location: Auxiliary Bldg.<br>Rm, 236                                      | Radiation                               | 1.97 x 10 <sup>6</sup> RADS | 11.6 x 10 <sup>8</sup> RADS | <br>  T            | CAL-79<br>Note 4 | Analysis             | I<br>I None         |
| Flood Level Elev: N/A<br>Above Flood Level: N/A                           | <br> Aging                              | 40 Years                    | <br>  40 Years<br>          | I                  | CAL-79<br>Note 4 | Analysis             | <br>  None<br>      |
| Hot Shutdown   X    <br>  Cold Shutdown   X                               | Submergence                             | N/A                         | N/A                         | <br>  N/A<br>      | N/A              | N/A                  | <br>  None<br>      |

| Facility:                 | Davis-Besse Unit 1 |                | SYSTEM  | COMPONENT | EQUATION WORKSHEET | Index<br>Rev.: | No. 21H-094A |
|---------------------------|--------------------|----------------|---------|-----------|--------------------|----------------|--------------|
| JOCKet :                  | 50-540             | 1              |         |           | NOTES              |                |              |
| Prepared by<br>Thecked by | " Stinger and      | Date:<br>Date: | 11/2/43 | -         |                    |                |              |

1. The test subjected the terminal block to a peak temperature of 345°F. At 30 minutes after the start of the test, the temperature was 320°F, at 1 hour the temperature was 300°F, at 1-1/2 hours the temperature was 290°F, at 2 hours the temperature was 280°F, at 3 hours the temperature was 260°F, at 4 hours the temperature was 255°F, at 8 hours the temperature was 235°F, at 12 hours the temperature was 225°F, and at 18 hours the temperature was 220°F which was maintained for the duration of the 96-hour test. The test pressure peak was 74.7 psia and at 35 minutes the test pressure was down to 19.7 psia which was maintained for the duration of the 96 hours. The temperature in Room 236 peaks at 198°F in 19 seconds. The pressure in Room 236 peaks at 15.5 psia in 1.6 seconds. The temperature and pressure in Room 236 return to ambient conditions in 6.7 minutes (Reference C-236).

Based on this information, it can be concluded that the laboratory test subjected the terminal block to an overall more severe environment than that which would result from a postulated HELB. Since the terminal block remained operable throughout the test and functional after the test, it can be concluded that the terminal block will remain functional during and after exposure to the accident environment which would result from the postulated HELB.

In addition, the terminal blocks were tested for temperature and humidity by the Stanwick Electrical Products Company. The high temperature test of 150°F for 8 hours was passed successfully with a test voltage of 600 volts D.C. (References V-35A, and V-35B). Maximum continuous use temperatures for the terminal block base and barrier materials (only non-metallic parts) are 302°F and 275°F, respectively (References W-2, AA). Stanwick also conducted a humidity test on the terminal blocks with 90% + 10% relative humidity at 68°F using a test voltage of 500 volts D.C. No shorting or arcing occurred during the test (References V-35A, V-35B).

- 2. One year operating time is used as a conservative maximum specification.
- 3. This test data was obtained from a test performed by Duke Power Corporation on Stanwick terminal blocks (Reference ROC-35A). This test report is not available as a reference document.
- 4. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.
| Plant I.D. No   | EV13830  | Component:   | Termi            | nal Block  |                  |  |
|---|--|--|------------------|--|------------------|--|
| Manuf acturer   | : Stanwick   | Model No.:   | Ту               | be G   |                  |  |
|   |  | THERMAL AGIN   | G I              | RADIATION  |                  |  |
| Parts List  | Materials List   | Qualification  | Reference        | Qualification  | Referenc         |  |
| Terminal Block Links<br>Mounting Rods<br>Bolts<br>Insert<br>Nuts<br>Terminal Block Base<br>Terminal Block Barrier | Brass<br>Metallic<br>Silicone Bronze<br>Brass<br>Durez #791 Phenolic<br>Glass - Melamine | Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>40 Years @ 230°F<br>Greater than<br>40 Years @ 122°F | CAL-79<br>CAL-79 | Not Affected<br>Not Affected<br>Not Affected<br>Not Affected<br>3.0 x 10 <sup>8</sup> RADS<br>1.6 x 10 <sup>8</sup> RADS | CAL-79<br>CAL-79 |  |



SYSTEM COMPONENT EVALUATION WORKSHEET



Pacility: Davis-Besse Unit 1 Docket: 50-346

Prepared by: N Lauis Date: 11/1/83 Checked by: Date: 11/2/83

| EQUIPMENT DESCRIPTION   | ENVIRONMENT                       |                            |  | DOCUMENTAT | ION REF.             | Qualification        | Outstanding |  |
|---|-----------------------------------|----------------------------|--|------------|----------------------|----------------------|-------------|--|
|   | Parameter                         | Specification              | MENT         DOCUMENTATION REF.           tion   Qualification         Specification   Qualification             1.1 Years         Note 2             1.1 Years         Note 2             345.0         C-314             345.0         C-314             74.7         C-314             100.0         A             100.0         A             100.0         A             1.6 x 10 <sup>8</sup> RADS         T | Method     | Items                |                      |             |  |
| System: Generic 1E Elec-  <br>trical Components                           | <br> Operating  <br> Time         | l Year                     | <br>  1.1 Years<br>  | Note 2     | Note 1 1<br>Note 3 1 | Simultaneous<br>Test | None        |  |
| Plant ID No.: EV1407B  <br>Component: Terminal Block                      | <br> Temperature <br>  (°P)       | 221.0                      | 1<br>1 345.0   | C-314      | Note 3 ' I           | Simultaneous<br>Test | None        |  |
| Manufacturer: Stanwick  <br>Model Number: Type G                          |                                   | 19.76                      | 1 74.7   | C-314      | Note 3               | Simultaneous<br>Test | None        |  |
| Function: Electrical  <br>Circuit  <br>Termination                        | Relative  <br> Humidity  <br> (%) | 100.0                      | 1<br>1 100.0   |            | Note 3               | Simultaneous<br>Test | None        |  |
| Accuracy: Spec: N/A  <br>Demon: N/A  <br>Service: Electrical  <br>Control | <br> Chemical  <br> Spray  <br>   | N/A                        | <br> <br>  N/A<br>   | N/A        | N/A                  | N/A                  | None        |  |
| Location: Auxiliary Bldg. <br>Rm. 314                                     | <br> Radiation                    | 1.0 x 10 <sup>6</sup> RADS | <br> 1.6 x 10 <sup>8</sup> RADS  |            | CAL-79  <br>Note 4   | Analysis             | None        |  |
| Flood Level Elev: N/A  <br>Above Flood Level: N/A  <br>Needed for:        | Aging                             | 40 Years                   | <br>  40 Years<br>   | I          | CAL-79  <br>Note 4   | Analysis             | None        |  |
| Hot Shutdown   X    <br>Cold Shutdown   X                                 | <br> Submergence <br>             | N/A                        | <br>  N/A<br>  | N/A        | N/A  <br>            | N/A                  | None        |  |

| Facility: Davis-Besse Unit 1          | SYSTEM COMPONENT CLUATION WORKSHEET | Index NO 221H-095A |
|---------------------------------------|-------------------------------------|--------------------|
| Docket: 50-346<br>Prepared by: NLeuis | Date: NOTES                         | Rev.: 2            |
| Checked by: 200 and and               | Date:                               |                    |

1. The test subjected the terminal block to a peak temperature of 345°F. At 30 minutes after the start of the test, the temperature was 320°F, at 1 hour the temperature was 300°F, at 1-1/2 hours the temperature was 290°F, at 2 hours the temperature was 280°F, at 3 hours the temperature was 260°F, at 4 hours the temperature was 255°F, at 8 hours the temperature was 235°F, at 12 hours the temperature was 225°F, and at 18 hours the temperature was 220°F which was maintained for the duration of the 96-hour test. The test pressure peak was 74.7 psia and at 35 minutes the test pressure was down to 19.7 psia which was maintained for the duration of the 96 hours. The temperature in Room 314 peaks at 221°F in 1.55 seconds. The pressure in Room 314 peaks at 19.76 psia in .09 seconds. The temperature and pressure in Room 314 return to ambient conditions in 8 minutes (Reference C-314).

Based on this information, it can be concluded that the laboratory test subjected the terminal block to an overall more severe environment than that which would result from a postulated HELB. Since the terminal block remained operable throughout the test and functional after the test, it can be concluded that the terminal block will remain functional during and after exposure to the accident environment which would result from the postulated HELB.

In addition, the terminal blocks were tested for temperature and humidity by the Stanwick Electrical Products Company. The high temperature test of 150°F for 8 hours was passed successfully with a test voltage of 600 volts D.C. (References V-35A, and V-35B). Maximum continuous use temperatures for the terminal block base and barrier materials (only non-matallic parts) are 302°F and 275°F, respectively (References W-2, AA). Stanwick also conducted a humidity test on the terminal blocks with 90% + 10% relative humidity at 68°F using a test voltage of 500 volts D.C. No shorting or arcing occurred during the test (References V-35A, V-35B).

- 2. One year operating time is used as a conservative maximum specification.
- 3. This test data was obtained from a test performed by Duke Power Corporation on Stanwick terminal blocks (Reference ROC-35A). This test report is not available as a reference document.
- 4. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

| Plant I.D. No.: <u>EV/407B</u><br>Manufacturer: <u>Stanwick</u>   |   | Component:   | Termin    | hal Block  |                  |
|---|---|--|-----------|--|------------------|
|   |   | Model No.:   | Тур       | pe G   |                  |
|   |   | I THERMAL AGIN   | IG I      | RADIATION  |                  |
| Parts List  | Materials List  | Qualification  | Reference | Qualification  | Reference        |
| Terminal Block Links<br>Mounting Rods<br>Bolts<br>Insert<br>Nuts<br>Terminal Block Base<br>Terminal Block Barrier | Brass<br>Metallic<br>Silicone Bronze<br>Brass<br>Brass<br>Durez #791 Phenolic<br>Glass - Melamine | Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>40 Years @ 230°F<br>Greater than<br>40 Years @ 122°F | CAL-79    | Not Affected<br>Not Affected<br>Not Affected<br>Not Affected<br>3.0 x 10 <sup>8</sup> RADS<br>1.6 x 10 <sup>8</sup> RADS | CAL-79<br>CAL-79 |

Docket: 50-346

Facility: Davis-Besse Unit 1 SYSTEM COMPONENT EVABUATION WORKSHEET



Prepared by: Nheins Date: 11/1/83 Checked by: Annon Date: 11/2/3

11

| EQUIPMENT DESCRIPTION   | i                          | ENVIRONMENT                |                                 | DOCUMENTATION REF. |                    | Qualification        | Outstanding         |  |
|---|----------------------------|----------------------------|---------------------------------|--------------------|--------------------|----------------------|---------------------|--|
| ystem: Generic 1E Elec-<br>trical Component                         | Parameter                  | Specification              | Qualification                   | Specification      | Qualification      | Method               | Items               |  |
| System: Generic 1E Elec-  <br>trical Components                     | Operating  <br> Time       | l Year                     | <br>  1.1 Years<br> <br>        | Note 2             | Note 1  <br>Note 3 | Simultaneous<br>Test | None<br>I           |  |
| Plant ID No.: EV1411B<br>Component: Terminal Block                  | Temperature<br>(°F)        | 221.0                      | <br>  345.0<br>                 | C-314              | Note 3             | Simultaneous<br>Test | None                |  |
| Manufacturer: Stanwick i<br>Model Number: Type G                    | Pressure<br>  (PSIA)       | 19.76                      | 1 74.7                          | C-314              | Note 3             | Simultaneous<br>Test | <br>  None<br>      |  |
| Function: Electrical<br>Circuit<br>Termination                      | Relative<br>Humidity       | 100.0                      | <br>  100.0<br>                 | і<br>І А<br>І      | <br>  Note 3  <br> | Simultaneous<br>Test | <br>  None<br>      |  |
| Accuracy: Spec: N/A<br>Demon: N/A<br>Service: Electrical<br>Control | <br> Chemical  <br>  Spray | N/A                        | <br>  N/A<br>                   | <br>  N/A<br>      | N/A                | N/A                  | <br>  None<br> <br> |  |
| Location: Auxiliary Bldg.<br>Rm. 314                                | Radiation                  | 1.0 x 10 <sup>6</sup> RADS | <br> 1.6 x 10 <sup>8</sup> RADS | I T                | CAL-79             | Analysis             | <br>  None          |  |
| Flood Level Elev: N/A<br>Above Flood Level: N/A                     | <br>  Aging<br>            | 40 Years                   | <br>  40 Years<br>              | II                 | CAL-79             | Analysis             | <br>  None          |  |
| Hot Shutdown   X  <br>Cold Shutdown   X                             | <br>  Submergence <br>     | N/A                        | <br>  N/A<br>                   | <br>  N/A<br>      | N/A                | N/A                  | None                |  |

| Facility:                | Davis-Besse Unit 1 | SYSTEM COMPONENT SULUATION WORKSHEET            | Index No. 221H-096A |
|--------------------------|--------------------|---|---------------------|
| Docket:                  | 50-346             |   | Rev. 2              |
| Prepared b<br>Checked by | y: N Louis Da      | e: <u>11/1/83</u><br>e: <u>11/5/13</u><br>NOTES |                     |

1. The test subjected the terminal block to a peak temperature of 345°F. At 30 minutes after the start of the test, the temperature was 320°F, at 1 hour the temperature was 300°F, at 1-1/2 hours the temperature was 299°F, at 2 hours the temperature was 280°F, at 3 hours the temperature was 260°F, at 4 hours the temperature was 255°F, at 8 hours the temperature was 235°F, at 12 hours the temperature was 225°F, and at 18 hours the temperature was 220°F which was maintained for the duration of the 96-hour test. The test pressure peak was 74.7 psia and at 35 minutes the test pressure was down to 19.7 psia which was maintained for the duration of the duration of the 96 hours. The temperature in Room 314 peaks at 221°F in 1.55 seconds. The pressure in Room 314 peaks at 19.76 psia in .09 seconds. The temperature and pressure in Room 314 return to ambient conditions in 8 minutes (Reference C-314).

Based on this information, it can be concluded that the laboratory test subjected the terminal block to an overall more severe environment than that which would result from a postulated HELB. Since the terminal block remained operable throughout the test and functional after the test, it can be concluded that the terminal block will remain functional during and after exposure to the accident environment which would result from the postulated HELB.

In addition, the terminal blocks were tested for temperature and humidity by the Stanwick Electrical Products Company. The high temperature test of 150°F for 8 hours was passed successfully with a test voltage of 600 volts D.C. (References V-35A, and V-35B). Maximum continuous use temperatures for the terminal block base and barrier materials (only non-metallic parts) are 302°F and 275°F, respectively (References W-2, AA). Stanwick also conducted a humidity test on the terminal blocks with 90%  $\pm$  10% relative humidity at 68°F using a test voltage of 500 volts D.C. No shorting or arcing occurred during the test (References V-35A, V-35B).

- 2. One year operating time is used as a conservative maximum specification.
- 3. This test data was obtained from a test performed by Duke Power Corporation on Stanwick terminal blocks (Reference ROC-35A). This test report is not available as a reference document.
- 4. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

Pacility: Davis-Besse Unit 1 COMPONENT MATERIA Docket: 50-346

Checked by: Nheins Date: 11/1/83 Checked by: Date: 11/1/83

EVALUATION SHEET



| Plant I.D. No.: <u>EV1411B</u><br>Manufacturer: <u>Stanwick</u> |                     |           | Component:       | Те        | rminal Block |                      |           |
|---|---------------------|-----------|------------------|-----------|--------------|----------------------|-----------|
|   |                     |           | Model No.:       |           | Type G       |                      |           |
|   | 1                   | 1         | THERMAL AG       | ING       | 1            | RADIATION            |           |
| Parts List  | Materials List      | 1         | Qualification    | Reference | Qualifi      | ication              | Reference |
|   | 1                   | 1         |                  | 1         | 1            |                      |           |
| Terminal Block Links  | Brass               | 1         | Not Sensitive    | 1         | Not Aff      | ected                |           |
| Mounting Rods   | Metallic            | 1         | Not Sensitive    | 1         | Not Aff      | ected                |           |
| Bolts   | Silicone Bronze     | 1         | Not Sensitive    | 1         | Not Aff      | ected                |           |
| Insert  | Brass               | 1         | Not Sensitive    | 1         | I Not Aff    | ected                |           |
| Nuts  | Brass               | 1         | Not Sensitive    | 1         | Not Aff      | ected                |           |
| Terminal Block Base   | Durez #791 Phenolic | 1         | 40 Years @ 230°F | CAL-79    | 1 3.0 x 1    | 10 <sup>8</sup> RADS | CAL-79    |
| Terminal Block Barrier  | Glass - Melamine    | 1.1.1     | Greater than     | CAL-79    | 1 1.6 x 1    | 08 RADS              | CAL-79    |
|   | 1                   | 1         | 40 Years @ 122°F | 1         | 1            | 1                    |           |
|   |                     | · · · · · |                  |           | 1            | 1                    |           |
|   |                     |           |                  |           |              |                      |           |

Pacility: Davis-Besse Unit 1 Docket: 50-346

11

SYSTEM COMPONENT EVALUATION WORKSHEET



Prepared by: N Lawis Date: 11/1/83 Checked by: Stranger Date: 11/1/83 Date: 11/2/12

| EQUIPMENT DESCRIPTION   | ENVIRONMENT                                  |                            |                                 | DOCUMENTAT    | ION REF.           | Qualification        | Outstanding    |  |
|---|--|----------------------------|---------------------------------|---------------|--------------------|----------------------|----------------|--|
|   | Parameter                                    | Specification              | Qualification                   | Specification | Qualification      | Method               | Items          |  |
| System: Generic 1E Elec-<br>trical Components                           | Operating   <br>  Time                       | l Year                     | <br>  1.1 Years<br>             | Note 2        | Note 1  <br>Note 3 | Simultaneous<br>Test | None           |  |
| Plant ID No.: EV1467<br>Component: Terminal Block                       | Temperature                                  | 155.0                      | 1<br>1 345.0                    | c-113         | Note 3             | Simultaneous<br>Test | <br>  None<br> |  |
| Manufacturer: Stanwick  <br>Model Number: Type G                        | Pressure                                     | 16.06                      | 1 74.7                          | C-113         | Note 3             | Simultaneous<br>Test | <br>  None<br> |  |
| Function: Electrical<br>Circuit<br>Termination                          | <br>  Relative   <br>  Humidity   <br>   (%) | 100.0                      | <br>  100.6<br>                 |               | Note 3             | Simultaneous<br>Test | None<br>I      |  |
| Accuracy: Spec: N/A  <br>Demon: N/A  <br>Service: Electrical<br>Control | <br> Chemical  <br> Spray  <br>              | N/A                        | <br>  N/A<br>                   | N/A           | N/A                | N/A                  | None           |  |
| Location: Auxiliary Bldg.<br>Rm. 113                                    | Radiation                                    | 7.1 x 10 <sup>6</sup> RADS | <br> 1.6 x 10 <sup>8</sup> RADS |               | CAL-79             | Analysis             | None           |  |
| Flood Level Elev: N/A<br>Above Flood Level: N/A                         | Aging  | 40 Years                   | <br>  40 Years<br>              | III           | CAL-79             | Analysis             | None           |  |
| Hot Shutdown   X  <br>Cold Shutdown   X                                 | <br>  Submergence <br>                       | N/A                        | <br>  N/A<br>                   | N/A           | N/A  <br>          | N/A                  | None           |  |

s-Besse Unit 1 SYSTEM COMPONENT SALUATION WORKSHEET Facility: Dave Index No 221H-097A 50-346 Docket: Rev. NOTES Prepared by: Date: Checked by:

1. The test subjected the terminal block to a peak temperature of 345°F. At 30 minutes after the start of the test, the temperature was 320°F, at 1 hour the temperature was 300°F, at 1-1/2 hours the temperature was 290°F, at 2 hours the temperature was 280°F, at 3 hours the temperature was 260°F, at 4 hours the temperature was 255°F, at 8 hours the temperature was 235°F, at 12 hours the temperature was 225°F, and at 18 hours the temperature was 220°F which was maintained for the duration of the 96-hour test. The test pressure peak was 74.7 psia and at 35 minutes the test pressure was down to 19.7 psia which was maintained for the duration of the duration of the duration of the 96 hours. The temperature in Room 113 peaks at 155°F in 19 seconds. The pressure in Room 113 peaks at 16.06 psia in 1.75 seconds. The temperature and pressure in Room 113 return to ambient conditions in 6.7 minutes (Reference C-113).

Based on this information, it can be concluded that the laboratory test subjected the terminal block to an overall more severe environment than that which would result from a postulated HELB. Since the terminal block remained operable throughout the test and functional after the test, it can be concluded that the terminal block will remain functional during and after exposure to the accident environment which would result from the postulated HELB.

In addition, the terminal blocks were tested for temperature and humidity by the Stanwick Electrical Products Company. The high temperature test of 150°F for 8 hours was passed successfully with a test voltage of 600 volts D.C. (References V-35A, and V-35B). Maximum continuous use temperatures for the terminal block base and barrier materials (only non-metallic parts) are 302°F and 275°F, respectively (References W-2, AA). Stanwick also conducted a humidity test on the terminal blocks with  $90\% \pm 10\%$  relative humidity at 68°F using a test voltage of 500 volts D.C. No shorting or arcing occurred during the test (References V-35A, V-35B).

- One year operating time is used as a conservative maximum specification.
- 3. This test data was obtained from a test performed by Duke Power Corporation on Stanwick terminal blocks (Reference ROC-35A). This test report is not available as a reference document.
- 4. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

Pacility: Davis-Besse Unit 1 Docket: 50-346 COMPONENT MATERIALO EVALUATION SHEET



Prepared by: Nleurs Date: 11/1/83 Checked by: Markand Date: 11/1/83

| Plant I.D. No<br>Manufacturer: | .:Stanwick   | Component:<br>Model No.:   | Termi:<br>Typ    | nal Block  |                  |
|--------------------------------|--|--|------------------|--|------------------|
| 1                              |  | I THERMAL AGIN   | G I              | RADIATION  |                  |
| Parts List                     | Materials List   | Qualification  | Reference i      | Qualification  | Reference        |
| Perminal Block Links           | Brass<br>Metallic<br>Silicone Bronze<br>Brass<br>Durez #791 Phenolic<br>Glass - Melamine | Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>40 Years @ 230°F<br>Greater than<br>40 Years @ 122°F | CAL-79<br>CAL-79 | Not Affected<br>Not Affected<br>Not Affected<br>Not Affected<br>3.0 x 10 <sup>8</sup> RADS<br>1.6 x 10 <sup>8</sup> RADS | CAL-79<br>CAL-79 |

Docket: 50-346

Facility: Davis-Besse Unit 1 SYSTEM COMPONENT EVALUATION WORKSHEET



Prepared by: Nheins Date: 11/1/23 Checked by: Standard Date: 11/2/13

|   |   | ENVIRONMENT                |                                  | DOCUMENTAT      | ION REF.   | Qualification        | Outstanding      |
|---|---|----------------------------|----------------------------------|-----------------|--|----------------------|------------------|
|   | Parameter                               | Specification              | Qualification                    | Specification   | ION REF.     Qualificati       Qualification     Method       Note 1     Simultaneou       Note 3     Test       Note 3     Simultaneou       Test     Image: Simultaneou       Note 3     Simultaneou       Note 3     Simultaneou       Image: Simultaneou     Test       Note 3     Simultaneou       Image: Simultaneou     Test       Image: Simultaneou     Test       Image: Simultaneou     Test       Image: Simultaneou     Image: Simultaneou       Image: Simultaneou     Image: Sim | Method               | Items            |
| <br> System: Generic 1E Elec-  <br>  trical Components                  | Operating  <br> Time                    | l Year                     | <br>  1.1 Years<br>              | Note 2          | Note 1 Note 3  | Simultaneous<br>Test | <br>  None<br>   |
| Plant ID No.: EV1469  | <br> Temperature <br>  (°P)             | 155.0                      | 345.0                            | C-113           | Note 3   | Simultaneous<br>Test | <br>  None<br>   |
| Manufacturer: Stanwick  <br> <br> Model Number: Type G                  |   | 16.06                      | 1 74.7                           | c-113           | Note 3   | Simultaneous<br>Test | <br>  None<br>   |
| Function: Electrical<br>Circuit<br>Termination                          | <br> Relative  <br> Humidity  <br>  (%) | 100.0                      | 1 100.0                          | А<br>           | Note 3   | Simultaneous<br>Test | <br>  None<br>   |
| Accuracy: Spec: N/A  <br>Demon: N/A  <br>Service: Electrical<br>Control | <br> Chemical  <br> Spray               | N/A                        | <br> <br>  N/A<br>               | <br>  N/A  <br> | N/A  | N/A                  | I None           |
| Location: Auxiliary Bldg.<br>Rm. 113                                    | Radiation                               | 7.1 x 10 <sup>6</sup> RADS | 1<br>11.6 x 10 <sup>8</sup> RADS | I T             | CAL-79<br>Note 4   | Analysis             | <br>  None       |
| Flood Level Elev: N/A   |   | 40 Years                   | <br>  40 Years<br>               | I               | CAL-79<br>Note 4   | Analysis             | <br>  None<br>   |
| Bot Shutdown   X  | Submergence                             | N/A                        | <br>  N/A<br>                    | N/A             | N/A  | N/A                  | I None<br>I None |

Pacility: Davis-Besse Unit 1 SYSTEM COMPONENT EVALUATION WORKSHEET 2218-098A Index No. )ocket: 50-346 Rev. NOTES repared by: NLauis Date: thecked by: Arice and Date:

1. The test subjected the terminal block to a peak temperature of 345°F. At 30 minutes after the start of the test, the temperature was 320°F, at 1 hour the temperature was 300°F, at 1-1/2 hours the temperature was 290°F, at 2 hours the temperature was 280°F, at 3 hours the temperature was 260°F, at 4 hours the temperature was 255°F, at 8 hours the temperature was 235°F, at 12 hours the temperature was 225°F, and at 18 hours the temperature was 220°F which was maintained for the duration of the 96-hour test. The test pressure peak was 74.7 psia and at 35 minutes the test pressure was down to 19.7 psia which was maintained for the duration of the duration of the duration of the 96 hours. The temperature in Room 113 peaks at 155°F in 19 seconds. The pressure in Room 113 peaks at 16.06 psia in 1.75 seconds. The temperature and pressure in Room 113 return to ambient conditions in 6.7 minutes (Reference C-113).

Based on this information, it can be concluded that the laboratory test subjected the terminal block to an overall more severe environment than that which would result from a postulated HELB. Since the terminal block remained operable throughout the test and functional after the test, it can be concluded that the terminal block will remain functional during and after exposure to the accident environment which would result from the postulated HELB.

In addition, the terminal blocks were tested for temperature and humidity by the Stanwick Electrical Products Company. The high temperature test of 150°F for 8 hours was passed successfully with a test voltage of 600 volts D.C. (References V-35A, and V-35B). Maximum continuous use temperatures for the terminal block base and barrier materials (only non-metallic parts) are 302°F and (75°F), respectively (References W-2, AA). Stanwick also conducted a humidity test on the terminal blocks with 90%  $\pm$  10% relative humidity at 68°F using a test voltage of 500 volts D.C. No shorting or arcing occurred during the test (References V-35A, V-35B).

- One year operating time is used as a conservative maximum specification.
- This test data was obtained from a test performed by Duke Power Corporation on Stanwick terminal blocks (Reference ROC-35A). This test report is not available as a reference document.
- 4. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

Facility: Devis-Besse Unit 1 COMPONENT MATERIA Docket: 50-346

EVALUATION SHEET

221H-098B Index No. Rev. 2

Prepared by: NLewis Date: 11/1/17 Checked by: Spracht Date: 11/2/17

| Plant I.D. No.: EV1469<br>Manufacturer: Stanwick   |   | Component:<br>Model No.:   | Termi<br>Ty      | Terminal Block<br>Type G   |                  |  |
|--|---|--|------------------|--|------------------|--|
|  |   | THERMAL AGIN   | IG               | RADIATION  |                  |  |
| Parts List   | Materials List  | Qualification  | Reference        | Qualification  | Reference        |  |
| Terminal Block Lin<br>Mounting Rods<br>Bolts<br>Insert<br>Nuts<br>Terminal Block Bas<br>Terminal Block Bar | aks   Brass<br>  Metallic<br>  Silicone Bronze<br>  Brass<br>  Brass<br>  Brass<br>  Durez \$791 Phenolic<br>rrier   Glass - Melamine | Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>A0 Years @ 230°F<br>Greater than<br>40 Years @ 122°F | CAL-79<br>CAL-79 | Not Affected<br>Not Affected<br>Not Affected<br>Not Affected<br>3.0 x 10 <sup>8</sup> RADS<br>1.6 x 10 <sup>8</sup> RADS | CAL-79<br>CAL-79 |  |



Facility: Davis-Besse Unit 1 Docket: 50-346

SYSTEM COMPONENT EVALUATION WORKSHEET



Prepared by: N Lewis Date: 11/1/93 Checked by: Date: 11/2/85

| EQUIPMENT DESCRIPTION   |   | ENVIRONMENT                 |                            | DOCUMENTAT | TION REF.          | Qualification        | Outstanding |
|---|---|-----------------------------|----------------------------|------------|--------------------|----------------------|-------------|
|   | ENVIRONMENT       DOCUMENTATION REF.         Parameter       Specification       Qualification       Specification       Qualification         IOperating       1 Year       1.1 Years       Note 2       Note 1         ITime       1       1.1 Years       Note 2       Note 3         ITime       1       1.1 Years       Note 2       Note 3         ITemperature       198.0       345.0       C-236       Note 3         (°F)       1       1       1       1         IPressure       15.51       74.7       C-236       Note 3         (PSIA)       1       1       1       1         IRelative       100.0       100.0       A       Note 3         IChemical       N/A       N/A       N/A       N/A | Method                      | Items                      |            |                    |                      |             |
| System: Generic 1E Elec-<br>trical Components                             | <br>  Operating   <br>  Time  | l Year                      | 1.1 Years                  | Note 2     | Note 1  <br>Note 3 | Simultaneous<br>Test | None        |
| Plant ID No.: EV15170<br>Component: Terminal Block                        | Temperature <br>  Temperature <br>   (°F)   | 198.0                       | 345.0                      | C-236      | Note 3             | Simultaneous<br>Test | None        |
| Manufacturer: Stanwick  <br>Model Number: Type G                          | <br>  Pressure   <br>  (PSIA)   | 15.51                       | 74.7                       | c-236      | Note 3             | Simultaneous<br>Test | None        |
| Function: Electrical<br>Circuit<br>Termination                            | <br>  Relative  <br>  Humidity  <br>   (%)  | 100.0                       | 100.0                      | A          | Note 3             | Simultaneous<br>Test | None        |
| Accuracy: Spec: N/A  <br>Demon: N/A  <br>Service: Electrical  <br>Control | <br>  Chemical  <br>  Spray  <br>   | N/A                         | N/A                        | N/A        | N/A                | N/A                  | None        |
| Location: Auxiliary Bldg.<br>Rm. 236                                      | Radiation   | 1.97 x 10 <sup>6</sup> RADS | 1.6 x 10 <sup>8</sup> RADS | Т          | CAL-79<br>Note 4   | Analysis             | None        |
| Flood Level Elev: N/A<br>Above Flood Level: N/A<br>Needed for:            | Aging   | 40 Years                    | 40 Years                   | I          | CAL-79  <br>Note 4 | Analysis             | None        |
| Hot Shutdown   <u>X</u>  <br>Cold Shutdown   <u>X</u>                     | <br>  Submergence <br>  | N/A                         | N/A                        | N/A        | N/A                | N/A                  | None        |

| Facility: Decket: 5506              | SYSTEM COMPONENT UATION WORKSHEET | Index 21H-099A<br>Rev.: 2 |
|-------------------------------------|-----------------------------------|---------------------------|
| Prepared by: Nheur's<br>Checked by: | Date: 11/1/22<br>Date: 11/2/23    |                           |

1. The test subjected the terminal block to a peak temperature of 345°F. At 30 minutes after the start of the test, the temperature was 320°F, at 1 hour the temperature was 300°F, at 1-1/2 hours the temperature was 290°F, at 2 hours the temperature was 280°F, at 3 hours the temperature was 260°F, at 4 hours the temperature was 255°F, at 8 hours the temperature was 235°F, at 12 hours the temperature was 225°F, and at 18 hours the temperature was 220°F which was maintained for the duration of the 96-hour test. The test pressure peak was 74.7 psia and at 35 minutes the test pressure was down to 19.7 psia which was maintained for the duration of the 96 hours. The temperature in Room 236 peaks at 198°F in 19 seconds. The pressure in Room 236 peaks at 15.5 psia in 1.6 seconds. The temperature and pressure in Room 236 return to ambient conditions in 6.7 minutes (Reference C-236).

Based on this information, it can be concluded that the laboratory test subjected the terminal block to an overall more severe environment than that which would result from a postulated HELB. Since the terminal block remained operable throughout the test and functional after the test, it can be concluded that the terminal block will remain functional during and after exposure to the accident environment which would result from the postulated HELB.

In addition, the terminal blocks were tested for temperature and humidity by the Stanwick Electrical Products Company. The high temperature test of 150°F for 8 hours was passed successfully with a test voltage of 600 volts D.C. (References V-35A, and V-35B). Maximum continuous use temperatures for the terminal block base and barrier materials (only non-metallic parts) are 302°F and 275°F, respectively (References W-2, AA). Stanwick also conducted a humidity test on the terminal blocks with 90% + 10% relative humidity at 68°F using a test voltage of 500 volts D.C. No shorting or arcing occurred during the test (References V-35A, V-35B).

- 2. One year operating time is used as a conservative maximum specification.
- 3. This test data was obtained from a test performed by Duke Power Corporation on Stanwick terminal blocks (Reference ROC-35A). This test report is not available as a reference document.
- 4. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

| Plant I.D. No.: EV15170   |  | Component:   | Termi            | nal Block  |                  |
|---|--|--|------------------|--|------------------|
| Manufacturer: Stanwick  |  | Model No.:   | Ту               | Туре G   |                  |
|   |  | I THERMAL AGING  |                  | RADIATION  | 19 N 19 N        |
| Parts List  | Materials List   | Qualification  | Reference        | Qualification  | Reference        |
| Terminal Block Links<br>Mounting Rods<br>Bolts<br>Insert<br>Nuts<br>Terminal Block Base<br>Terminal Block Barrier | Brass<br>Metallic<br>Silicone Bronze<br>Brass<br>Durez #791 Phenolic<br>Glass - Melamine | Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>40 Years @ 230°F<br>Greater than<br>40 Years @ 122°F | CAL-79<br>CAL-79 | Not Affected<br>Not Affected<br>Not Affected<br>Not Affected<br>3.0 x 10 <sup>8</sup> RADS<br>1.6 x 10 <sup>8</sup> RADS | CAL-79<br>CAL-79 |



Docket: 50-346

Facility: Davis-Besse Unit 1

SYSTEM COMPONENT EVALUATION WORKSHEET



Prepared by: N Leuis Date: 11/1/87 Checked by: Since Any Date: 11/1/87

| EQUIPMENT DESCRIPTION   | II ENVIRONMENT I                    |                             |                            | DOCUMENTATION REF. |                      | Qualification        | Outstanding |
|---|-------------------------------------|-----------------------------|----------------------------|--------------------|----------------------|----------------------|-------------|
|   | Parameter                           | Specification               | Qualification              | Specification      | [Qualification]      | Method               | Items       |
| <br>System: Generic 1E Elec-  <br>trical Components                     | <br> Operating  <br> Time           | l Year                      | 1.1 Years                  | <br>  Note 2       | Note 1               | Simultaneous<br>Test | None        |
| Plant ID No.: EV15180<br>Component: Terminal Block                      | <br> Temperature <br>  (°F)         | 198.0                       | 345.0                      | <br>  C-236<br>    | Note 3               | Simultaneous<br>Test | None        |
| Manufacturer: Stanwick  <br>Model Number: Type G                        | <br> Pressure<br> (PSIA)            | 15.51                       | 74.7                       | C-236              | Note 3               | Simultaneous<br>Test | None        |
| Function: Electrical<br>Circuit<br>Termination                          | <br> Relative<br> Humidity<br>  (%) | 100.0                       | 100.0                      | і<br>І А<br>І      | Note 3               | Simultaneous<br>Test | None        |
| Accuracy: Spec: N/A  <br>Demon: N/A  <br>Service: Electrical<br>Control | <br> <br> Chemical<br> Spray<br>    | N/A                         | N/A                        |                    | N/A                  | N/A                  | None        |
| Location: Auxiliary Bldg. <br>Rm. 236                                   | Radiation                           | 1.97 x 10 <sup>6</sup> RADS | 1.6 x 10 <sup>8</sup> RADS | і<br>і т           | CAL-79               | Analysis             | None        |
| Flood Level Elev: N/A Above Flood Level: N/A                            | <br> Aging<br>                      | 40 Years                    | 40 Years                   | III                | CAL-79  <br>  Note 4 | Analysis             | None        |
| Hot Shutdown   X    <br>Cold Shutdown   X                               | <br> Submergence <br>               | N/A                         | N/A                        | <br>  N/A<br>      | N/A                  | N/A                  | None        |

| Facility:<br>Docket:      | Desse Unit 1 | SYSTEM COMPONENT UATION WORKSHEET   | Index 1 21H-100A<br>Rev.: |
|---------------------------|--------------|-------------------------------------|---------------------------|
| Prepared by<br>Checked by | Y: N Leurs   | Date: $\frac{11^{1}1/8.3}{11/2/23}$ |                           |

1. The test subjected the terminal block to a peak temperature of 345°F. At 30 minutes after the start of the test, the temperature was 320°F, at 1 hour the temperature was 300°F, at 1-1/2 hours the temperature was 290°F, at 2 hours the temperature was 280°F, at 3 hours the temperature was 260°F, at 4 hours the temperature was 255°F, at 8 hours the temperature was 235°F, at 12 hours the temperature was 225°F, and at 18 hours the temperature was 220°F which was maintained for the duration of the 96-hour test. The test pressure peak was 74.7 psia and at 35 minutes the test pressure was down to 19.7 psia which was maintained for the duration of the 96 hours. The temperature in Room 236 peaks at 198°F in 19 seconds. The pressure in Room 236 peaks at 15.5 psia in 1.6 seconds. The temperature and pressure in Room 236 return to ambient conditions in 6.7 minutes (Reference C-236).

Based on this information, it can be concluded that the laboratory test subjected the terminal block to an overall more severe environment than that which would result from a postulated HELB. Since the terminal block remained operable throughout the test and functional after the test, it can be concluded that the terminal block will remain functional during and after exposure to the accident environment which would result from the postulated HELB.

In addition, the terminal blocks were tested for temperature and humidity by the Stanwick Electrical Products Company. The high temperature test of 150°F for 8 hours was passed successfully with a test voltage of 600 volts D.C. (References V-35A, and V-35B). Maximum continuous use temperatures for the terminal block base and barrier materials (only non-metallic parts) are 302°F and 275°F, respectively (References W-2, AA). Stanwick also conducted a humidity test on the terminal blocks with 90% + 10% relative humidity at 68°F using a test voltage of 500 volts D.C. No shorting or arcing occurred during the test (References V-35A, V-35B).

- 2. One year operating time is used as a conservative maximum specification.
- 3. This test data was obtained from a test performed by Duke Power Corporation on Stanwick terminal blocks (Reference ROC-35A). This test report is not available as a reference document.

4. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

| Plant I.D. N  | 0.: EV15180   | Component:   | Termi            | nal Block  |                  |
|---|---|--|------------------|--|------------------|
| Manuf acturer   | : Stanwick  | Model No.:   | Ту               | pe G   |                  |
|   |   | I THERMAL AGIN   | ig l_            | RADIATION  |                  |
| Parts List  | Materials List  | 9 Qualification  | Reference        | Qualification  | Reference        |
| Terminal Block Links<br>Mounting Rods<br>Bolts<br>Insert<br>Nuts<br>Terminal Block Base<br>Terminal Block Barrier | Brass<br>  Metallic<br>  Silicone Bronze<br>  Brass<br>  Brass<br>  Durez #791 Phenolic<br>  Glass - Melamine<br> <br> <br> <br> <br> | Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>40 Years @ 230°F<br>Greater than<br>40 Years @ 122°F | CAL-79<br>CAL-79 | Not Affected<br>Not Affected<br>Not Affected<br>Not Affected<br>3.0 x 10 <sup>8</sup> RADS<br>1.6 x 10 <sup>8</sup> RADS | CAL-79<br>CAL-79 |



Pacility: Davis-Besse Unit 1 Docket: 50-346

SYSTEM COMPONENT EVALUATION WORKSHEET



Prepared by: Nhenis Date: 11/1/83 Checked by: Date: 11/2/83

|   | II ENVIRONMENT                    |                             |                            | DOCUMENTATION REF.          |                    | Qualification        | Outstanding |
|---|-----------------------------------|-----------------------------|----------------------------|-----------------------------|--------------------|----------------------|-------------|
| II  | Parameter                         | Specification               | Qualification              | Specification Qualification |                    | Method               | Items       |
| <br> System: Generic 1E Elec-  <br>  trical Components <br>               | <br> Operating  <br> Time  <br>   | l Year                      | 1.1 Years                  | <br>  Note 2<br>            | Note 1  <br>Note 3 | Simultaneous<br>Test | None        |
| Plant ID No.: EV15300  <br> <br> Component: Terminal Block                | Temperature                       | 218.0                       | 345.0                      | C~303                       | Note 3             | Simultaneous<br>Test | None        |
| Manufacturer: Stanwick  <br> <br> Model Number: Type G                    | Pressure  <br> (PSIA)             | 17.16                       | 74.7                       | C-303                       | Note 3             | Simultaneous<br>Test | None        |
| Function: Electrical  <br>Circuit  <br>Termination                        | Relative  <br> Humidity  <br> (%) | 100.0                       | 100.0                      | A                           | Note 3             | Simultaneous<br>Test | None        |
| Accuracy: Spec: N/A  <br>Demon: N/A  <br>Service: Electrical  <br>Control | <br> Chemical  <br> Spray  <br>   | N/A                         | N/A                        | <br>  N/A<br>               | N/A                | N/A                  | None        |
| Location: Auxiliary Bldg. <br>Rm. 303                                     | Radiation                         | 1.16 x 10 <sup>6</sup> RADS | 1.6 x 10 <sup>8</sup> RADS | т                           | CAL-79  <br>Note 4 | Analysis             | None        |
| Flood Level Elev: N/A  <br> Above Flood Level: N/A  <br>                  | Aging                             | 40 Years                    | 40 Years                   | I                           | CAL-79             | Analysis             | None        |
| Hot Shutdown   X    <br>  Cold Shutdown   X                               | <br> Submergence <br>             | N/A                         | N/A                        | N/A                         | N/**               | N/A                  | None        |

| Facility: Decket: 5556              | SYSTEM COMPONENT JUATION WORKSHEET           | Index<br>Rev.: 21H-101A |
|-------------------------------------|--|-------------------------|
| Prepared by: N Leine<br>Checked by: | Date: <u>II/I/P:</u><br>Date: <u>II/I/P:</u> |                         |

1. The test subjected the terminal block to a peak temperature of 345°F. At 30 minutes after the start of the test, the temperature was 320°F, at 1 hour the temperature was 300°F, at 1-1/2 hours the temperature was 290°F, at 2 hours the temperature was 280°F, at 3 hours the temperature was 260°F, at 4 hours the temperature was 255°F, at 8 hours the temperature was 235°F, at 12 hours the temperature was 225°F, and at 18 hours the temperature was 220°F which was maintained for the duration of the 96-hour test. The test pressure peak was 74.7 psia and at 35 minutes the test pressure was down to 19.7 psia which was maintained for the duration of the 96 hours. The temperature in Room 303 peaks at 218°F in 1.5 seconds. The pressure in Room 303 peaks at 17.16 psia in .04 seconds. The temperature and pressure in Room 303 return to ambient conditions in 19 minutes (Reference C-303).

Based on this information, it can be concluded that the laboratory test subjected the terminal block to an overall more severe environment than that which would result from a postulated HELB. Since the terminal block remained operable throughout the test and functional after the test, it can be concluded that the terminal block will remain functional during and after exposure to the accident environment which would result from the postulated HELB.

In addition, the terminal blocks were tested for temperature and humidity by the Stanwick Electrical Products Company. The high temperature test of  $150^{\circ}F$  for 8 hours was passed successfully with a test voltage of 600 volts D.C. (References V-35A, and V-35B). Maximum continuous use temperatures for the terminal block base and barrier materials (only non-metallic parts) are  $302^{\circ}F$  and  $275^{\circ}F$ , respectively (References W-2, AA). Stanwick also conducted a humidity test on the terminal blocks with  $90^{\circ} + 10^{\circ}$  relative humidity at  $68^{\circ}F$  using a test voltage of 500 volts D.C. No shorting or arcing occurred during the test (References V-35A, V-35B).

- 2. One year operating time is used as a conservative maximum specification.
- 3. This test data was obtained from a test performed by Duke Power Corporation on Stanwick terminal blocks (Reference ROC-35A). This test report is not available as a reference document.
- 4. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

| Plant I.D. N  | 0.: EV15330  | Component:   | Termi            | nal Block  |                  |
|---|--|--|------------------|--|------------------|
| Manufacturer  | :Stanwick  | Model No.:   |                  | Type G   |                  |
|   | I  | THERMAL AGIN   | ig I             | RADIATION  | 1                |
| Parts List  | Materials List   | Qualification  | Reference        | Qualification  | Referenc         |
| Terminal Block Links<br>Mounting Rods<br>Bolts<br>Insert<br>Nuts<br>Terminal Block Base<br>Terminal Block Barrier | Brass<br>Metallic<br>Silicone Bronze<br>Brass<br>Durez #791 Phenolic<br>Glass - Melamine | Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>40 Years @ 230°F<br>Greater than<br>40 Years @ 122°F | CAL-79<br>CAL-79 | Not Affected<br>Not Affected<br>Not Affected<br>Not Affected<br>3.0 x 10 <sup>8</sup> RADS<br>1.6 x 10 <sup>8</sup> RADS | CAL-79<br>CAL-79 |



Facility: Davis-Besse Unit 1 Docket: 50-346 SYSTEM COMPONENT EVALUATION WORKSHEET



Prepared by: N Lewis Date: 11/1/83 Checked by: And Date: 11/2/83

|   | II ENVIRONMENT                          |  |                                 | DOCUMENTATION REF. |                    | Qualification        | Outstanding |
|---|---|--|---------------------------------|--------------------|--------------------|----------------------|-------------|
| II  | Parameter                               | Parameter   Specification   Qualification   Specification   Qualificatio |                                 | Qualification      | Method             | Items                |             |
| <br> System: Generic 1E Elec-  <br>  trical Components <br>               | Operating  <br> Time                    | l Year   | <br>  l.l Years<br> <br>        | Note 2             | Note 1  <br>Note 3 | Simultaneous<br>Test | None<br>I   |
| Plant ID No.: EV15310  <br> <br> Component: Terminal Block                | <br> Temperature <br>  (°F)             | 221.0  | <br>  345.0<br>                 | C-314              | Note 3             | Simultaneous<br>Test | None        |
| Manufacturer: Stanwick  <br> <br> Model Number: Type G  <br>              |   | 19.76  | 74.7                            | C-314              | Note 3             | Simultaneous<br>Test | None        |
| Function: Electrical  <br>  Circuit  <br>  Termination                    | <br> Relative  <br> Humidity  <br>  (%) | 100.0  | 1 100.0                         | A                  | Note 3             | Simultaneous<br>Test | None        |
| Accuracy: Spec: N/A  <br>Demon: N/A  <br>Service: Electrical  <br>Control | <br> Chemical  <br> Spray  <br>         | N/A  | <br>  N/A<br>                   | N/A                | N/A                | N/A                  | None        |
| Location: Auxiliary Bldg.<br>Rm. 314                                      | <br> Radiation                          | 1.0 x 10 <sup>6</sup> RADS   | <br> 1.6 x 10 <sup>8</sup> RADS | т                  | CAL-79  <br>Note 4 | Analysis             | None        |
| Flood Level Elev: N/A  <br> Above Flood Level: N/A  <br> <br> Needed for: | Aging  <br>  Aging                      | 40 Years   | <br>  40 Years<br>              | I                  | CAL-79<br>Note 4   | Analysis             | None        |
| Hot Shutdown   <u>X</u>  <br> <br>  Cold Shutdown   <u>X</u>              | <br>  Submergence <br>                  | N/A  | <br>  N/A<br>                   | N/A                | N/A                | N/A                  | None        |

| Facility: Davis-Besse Unit 1<br>Docket: 50-346 | SYSTEM COMPONENT EVALUATION WORKSHEET | Index No. |
|--|---------------------------------------|-----------|
| Prepared by: A Leuis<br>Checked by: Louis      | Date: 11/112<br>Date: 11/2/201        |           |

1. The test subjected the terminal block to a peak temperature of 345°F. At 30 minutes after the start of the test, the temperature was 320°F, at 1 hour the temperature was 300°F, at 1-1/2 hours the temperature was 290°F, at 2 hours the temperature was 280°F, at 3 hours the temperature was 260°F, at 4 hours the temperature was 255°F, at 8 hours the temperature was 235°F, at 12 hours the temperature was 225°F, and at 18 hours the temperature was 220°F which was maintained for the duration of the 96-hour test. The test pressure peak was 74.7 psia and at 35 minutes the test pressure was down to 19.7 psia which was maintained for the duration of the 96 hours. The temperature in Room 314 peaks at 221°F in 1.55 seconds. The pressure in Room 314 peaks at 19.76 psia in .09 seconds. The temperature and pressure in Room 314 return to ambient conditions in 8 minutes (Reference C-314).

Based on this information, it can be concluded that the laboratory test subjected the terminal block to an overall more severe environment than that which would result from a postulated HELB. Since the terminal block remained operable throughout the test and functional after the test, it can be concluded that the terminal block will remain functional during and after exposure to the accident environment which would result from the postulated HELB.

In addition, the terminal blocks were tested for temperature and humidity by the Stanwick Electrical Products Company. The high temperature test of 150°F for 8 hours was passed successfully with a test voltage of 600 volts D.C. (References V-35A, and V-35B). Maximum continuous use temperatures for the terminal block base and barrier materials (only non-metallic parts) are 302°F and 275°F, respectively (References W-2, AA). Stanwick also conducted a humidity test on the terminal blocks with 90% + 10% relative humidity at 68°F using a test voltage of 500 volts D.C. No shorting or arcing occurred during the test (References V-35A, V-35B).

- 2. One year operating time is used as a conservative maximum specification.
- 3. This test data was obtained from a test performed by Duke Power Corporation on Stanwick terminal blocks (Reference ROC-35A). This test report is not available as a reference document.
- 4. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

| Plant I.D. No   | EV153'0  | Component:   | Termi            | nal Block  |                  |
|---|--|--|------------------|--|------------------|
| Manuf acturer:  | Stanwick   | Model No.:   | Ту               | pe G   |                  |
|   |  | I THERMAL AGIN   | G I              | RADIATION  |                  |
| Parts List  | Materials List   | Qualification  | Reference        | Qualification  | Reference        |
| Terminal Block Links<br>Mounting Rods<br>Bolts<br>Insert<br>Nuts<br>Terminal Block Base<br>Terminal Block Barrier | Brass<br>Metallic<br>Silicone Bronze<br>Brass<br>Durez #791 Phenolic<br>Glass - Melamine | Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>40 Years @ 230°S<br>Greater than<br>40 Years @ 122°F | CAL-79<br>CAL-79 | Not Affected<br>Not Affected<br>Not Affected<br>Not Affected<br>3.0 x 10 <sup>8</sup> RADS<br>1.6 x 10 <sup>8</sup> RADS | CAL-79<br>CAL-79 |



Docket: 50-346

Facility: Davis-Besse Unit 1 SYSTEM COMPONENT EVALUATION WORKSHEET



Prepared by: N heuris Date: 11/2/83 Checked by: Arcadand Date: 11/2/83

| I EQUIPMENT DESCRIPTION   | II ENVIRONMENT                          |                             |                                 | DOCUMENTATION REF. |                            | Qualification        | Outstanding |
|---|---|-----------------------------|---------------------------------|--------------------|----------------------------|----------------------|-------------|
| II  | Parameter                               | Specification               | Qualification                   | Specification      | [Qualification]            | Method               | Items       |
| <br> System: Generic lE Elec-  <br>  trical Components <br>               | Operating  <br> Time                    | l Year                      | 1.1 Years                       | <br>  Note 2<br>   | Note 1  <br>Note 3         | Simultaneous<br>Test | None        |
| Plant ID No.: EV1544  <br> <br> Component: Terminal Block                 | <br> Temperature <br>  (°F)             | 218.0                       | 345.0                           | <br>  C-303<br>    | Note 3                     | Simultaneous<br>Test | None        |
| Manufacturer: Stanwick  <br> <br> Model Number: Type G                    |   | 17,16                       | 74.7                            | C-303              | Note 3                     | Simultaneous<br>Test | None        |
| Function: Electrical<br>Circuit<br>Termination                            | <br> Relative  <br> Humidity  <br>  (%) | 100.0                       | 100.0                           | A                  | Note 3                     | Simultaneous<br>Test | None        |
| Accuracy: Spec: N/A  <br>Demon: N/A  <br>Service: Electrical  <br>Control | <br> Chemical  <br> Spray               | N/A                         | N/A                             | <br>  N/A<br>      | N/A                        | N/A                  | None        |
| Location: Auxiliary Bldg.<br>Rm. 303                                      | Radiation                               | 1.16 x 10 <sup>6</sup> RADS | <br> 1.6 x 10 <sup>8</sup> RADS | I<br>I T           | CAL-79  <br>  Note 4       | Analysis             | None        |
| Flood Level Elev: N/A  <br> Above Flood Level: N/A  <br> <br> Needed for: | Aging                                   | 40 Years                    | <br>  40 Years<br>              | I                  | <br>  CAL-79  <br>  Note 4 | Analysis             | None        |
| Hot Shutdown   <u>X</u>  <br> <br>  Cold Shutdown   <u>X</u>              | Submergence                             | N/A                         | N/A                             | <br>  N/A<br>      | N/A                        | N/A                  | None        |

| Facility: Davis-Besse Unit 1                                      | SYSTEM COMPONENT EVALUATION WORKSHEET | Index No. 221H-103A<br>Bev.: 2 |
|---|---------------------------------------|--------------------------------|
| Prepared by: N Lewis Date: 11/11<br>Checked by: Spille Date: 11/2 | NOTES                                 |                                |

1. The test subjected the terminal block to a peak temperature of 345°F. At 30 minutes after the start of the test, the temperature was 320°F, at 1 hour the temperature was 300°F, at 1-1/2 hours the temperature was 290°F, at 2 hours the temperature was 280°F, at 3 hours the temperature was 260°F, at 4 hours the temperature was 255°F, at 8 hours the temperature was 235°F, at 12 hours the temperature was 225°F, and at 18 hours the temperature was 220°F which was maintained for the duration of the 96-hour test. The test pressure peak was 74.7 psia and at 35 minutes the test pressure was down to 19.7 psia which was maintained for the duration of the 96 hours. The temperature in Room 303 peaks at 218°F in 1.5 seconds. The pressure in Room 303 peaks at 17.16 psia in .04 seconds. The temperature and pressure in Room 303 return to ambient conditions in 19 minutes (Reference C-303).

Based on this information, it can be concluded that the laboratory test subjected the terminal block to an overall more severe environment than that which would result from a postulated HELB. Since the terminal block remained operable throughout the test and functional after the test, it can be concluded that the terminal block will remain functional during and after exposure to the accident environment which would result from the postulated HELB.

In addition, the terminal blocks were tested for temperature and humidity by the Stanwick Electrical Products Company. The high temperature test of 150°F for 8 hours was passed successfully with a test voltage of 600 volts D.C. (References V-35A, and V-35B). Maximum continuous use temperatures for the terminal block base and barrier materials (only non-metallic parts) are 302°F and 275°F, respectively (References W-2, AA). Stanwick also conducted a humidity test on the terminal blocks with 90% + 10% relative humidity at 68°F using a test voltage of 500 volts D.C. No shorting or arcing occurred during the test (References V-35A, V-35B).

- 2. One year operating time is used as a conservative maximum specification.
- 3. This test data was obtained from a test performed by Duke Power Corporation on Stanwick terminal blocks (Reference ROC-35A). This test report is not available as a reference document.
- 4. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

| Plant I.D. No   | D.: EV1544   | Component:   | Termin           | nal Block  |                  |
|---|--|--|------------------|--|------------------|
| Manufacturer  | :Stanwick  | Model No.:   |                  | Туре G   |                  |
|   |  | I THERMAL AGIN   | ig I             | RADIATION  | I                |
| Parts List  | Materials List   | Qualification  | Reference        | Qualification  | Reference        |
| Terminal Block Links<br>Mounting Rods<br>Bolts<br>Insert<br>Nuts<br>Terminal Block Base<br>Terminal Block Barrier | Brass<br>Metallic<br>Silicone Bronze<br>Brass<br>Durez #791 Phenolic<br>Glass - Melamine | Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>40 Years @ 230°F<br>Greater than<br>40 Years @ 122°F | CAL-79<br>CAL-79 | Not Affected<br>Not Affected<br>Not Affected<br>Not Affected<br>3.0 x 10 <sup>8</sup> RADS<br>1.6 x 10 <sup>8</sup> RADS | CAL-79<br>CAL-79 |



Docket: 50-346

Facility: Davis-Besse Unit 1 SYSTEM COMPONENT EVALUATION WORKSHEET



Checked by: Nhew Date: 11/1 Date: 0/2

| EQUIPMENT DESCRIPTION   | 1                                  | ENVIRONMENT                |                                  | DOCUMENTATION REF. |                      | Qualification        | Outstanding  |
|---|------------------------------------|----------------------------|----------------------------------|--------------------|----------------------|----------------------|--------------|
| اا  | Parameter                          | Specification              | Qualification                    | Specification      | [Qualification]      | Method               | Items        |
| <br> System: Generic 1E Elec-  <br>  trical Components                    | <br> Operating  <br> Time          | l Year                     | <br>  1.1 Years                  | Note 2             | Note 1               | Simultaneous<br>Test | None<br>None |
| Plant ID No.: EV1545<br>Component: Terminal Block                         | Temperature<br>(°F)                | 221.0                      | 1<br>1 345.0<br>1                | 1<br>1 C-314       | Note 3               | Simultaneous<br>Test | None         |
| Manufacturer: Stanwick  <br> <br> Model Number: Type G                    | Pressure  <br> (PSIA)              | 19.76                      | 74.7                             | C-314              | Note 3               | Simultaneous<br>Test | None         |
| Function: Electrical  <br>  Circuit  <br>  Termination                    | Relative  <br> Humidity  <br>  (%) | 100.0                      | <br>  100.0<br>                  | <br>  A<br>        | Note 3               | Simultaneous<br>Test | None         |
| Accuracy: Spec: N/A  <br>Demon: N/A  <br>Service: Electrical  <br>Control | <br> Chemical<br> Spray<br>        | N/A                        | <br>  N/A<br>                    | N/A                | N/A                  | N/A                  | None         |
| Location: Auxiliary Bldg.<br>Rm. 314                                      | <br> Radiation                     | 1.0 x 10 <sup>6</sup> RADS | 1<br>11.6 x 10 <sup>8</sup> RADS | <br>  T            | CAL-79               | Analysis             | None         |
| Flood Level Elev: N/A  <br> Above Flood Level: N/A                        | <br> Aging  <br>                   | 40 Years                   | <br>  40 Years<br>               | II                 | CAL-79  <br>  Note 4 | Analysis             | None         |
| Needed for:   | <br> Submergence <br>              | N/A                        | <br>  N/A<br>                    | <br>  N/A<br>      |                      | N/A                  | None         |

| Facility: Darks-Besse Unit 1                        | SYSTEM COMPONENT CLUATION WORKSHEET | Index NO 221H-104A<br>Rev.: 2 |
|---|-------------------------------------|-------------------------------|
| Prepared by: Nhew's<br>Checked by: <u>Since and</u> | Date: $11/1/15$<br>Date: $11/2/53$  |                               |

1. The test subjected the terminal block to a peak temperature of 345°F. At 30 minutes after the start of the test, the temperature was 320°F, at 1 hour the temperature was 300°F, at 1-1/2 hours the temperature was 290°F, at 2 hours the temperature was 280°F, at 3 hours the temperature was 260°F, at 4 hours the temperature was 255°F, at 8 hours the temperature was 235°F, at 12 hours the temperature was 225°F, and at 18 hours the temperature was 220°F which was maintained for the duration of the 96-hour test. The test pressure peak was 74.7 psia and at 35 minutes the test pressure was down to 19.7 psia which was maintained for the duration of the 96 hours. The temperature in Room 314 peaks at 221°F in 1.55 seconds. The pressure in Room 314 peaks at 19.76 psia in .09 seconds. The temperature and pressure in Room 314 return to ambient conditions in 8 minutes (Reference C-314).

Based on this information, it can be concluded that the laboratory test subjected the terminal block to an overall more severe environment than that which would result from a postulated HELB. Since the terminal block remained operable throughout the test and functional after the test, it can be concluded that the terminal block will remain functional during and after exposure to the accident environment which would result from the postulated HELB.

In addition, the terminal blocks were tested for temperature and humidity by the Stanwick Electrical Products Company. The high temperature test of 150°F for 8 hours was passed successfully with a test voltage of 600 volts D.C. (References V-35A, and V-35B). Maximum continuous use temperatures for the terminal block base and barrier materials (only non-metallic parts) are 302°F and 275°F, respectively (References W-2, AA). Stanwick also conducted a humidity test on the terminal blocks with 90% + 10% relative humidity at 68°F using a test voltage of 500 volts D.C. No shorting or arcing occurred during the test (References V-35A, V-35B).

- 2. One year operating time is used as a conservative maximum specification.
- 3. This test data was obtained from a test performed by Duke Power Corporation on Stanwick terminal blocks (Reference ROC-35A). This test report is not available as a reference document.
- 4. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

| Plant I.D. No   | EV1545   | Component:   | Termin           | nal Block  |                  |
|---|--|--|------------------|--|------------------|
| Manuf acturer:  | Stanwick   | Model No.:   | Тут              | pe G   |                  |
|   |  | I THERMAL AGIN   | ig l             | RADIATION  |                  |
| Parts List  | Materials List   | Qualification  | Reference        | Qualification  | Referenc         |
| Terminal Block Links<br>Mounting Rods<br>Bolts<br>Insert<br>Nuts<br>Terminal Block Base<br>Terminal Block Barrier | Brass<br>Metallic<br>Silicone Bronze<br>Brass<br>Durez #791 Phenolic<br>Glass - Melamine | Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>40 Years @ 230°F<br>Greater than<br>40 Years @ 122°F | CAL-79<br>CAL-79 | Not Affected<br>Not Affected<br>Not Affected<br>Not Affected<br>3.0 x 10 <sup>8</sup> RADS<br>1.6 x 10 <sup>8</sup> RADS | CAL-79<br>CAL-79 |



Facility: Davis-Besse Unit 1 SYSTEM COMPONENT EVALUATION WORKSHEET



Facility: Davis-Besse Unit 1 Docket: 50-346

Date: 11/1/83 Date: 11/2/33 Prepared by: N Checked by: Anta

| EQUIPMENT DESCRIPTION   | i                               | ENVIRONMENT                |                                 | DOCUMENTATION REF. |                      | Qualification        | Outstanding         |
|---|---------------------------------|----------------------------|---------------------------------|--------------------|----------------------|----------------------|---------------------|
| II  | Parameter                       | Specification              | Qualification                   | Specification      | Qualification        | Method               | Items               |
| System: Generic 1E Elec-  <br>  trical Components                         | Operating    <br> Time          | l Year                     | <br>  1.1 Years<br>             | Note 2             | Note 1 1<br>Note 3 1 | Simultaneous<br>Test | None                |
| Plant ID No.: EV1567B<br> <br> Component: Terminal Block                  | <br> Temperature <br>  (°F)     | 221.0                      | 1 345+0                         | <br>  C-314        | Note 3               | Simultaneous<br>Test | <br>  None<br>      |
| Manufacturer: Stanwick  <br> <br> Model Number: Type G                    | <br> Pressure  <br> (PSIA)      | 19.76                      | 1<br>1 74.7<br>1                | C-314              | Note 3               | Simultaneous<br>Test | <br>  None<br>      |
| Function: Electrical<br>  Circuit<br>  Termination                        | Relative                        | 100.0                      | <br>  100.0<br>                 | A                  | Note 3               | Simultaneous<br>Test | <br>  None<br>      |
| Accuracy: Spec: N/A  <br>Demon: N/A  <br>Service: Electrical  <br>Control | <br> Chemical  <br> Spray  <br> | N/A                        | <br>  N/A<br>                   | N/A                | N/A                  | N/A                  | <br>  None<br> <br> |
| Location: Auxiliary Bldg.<br>Rm. 314                                      | Radiation                       | 1.0 x 10 <sup>6</sup> RADS | <br> 1.6 x 10 <sup>8</sup> RADS | Т                  | CAL-79  <br>  Note 4 | Analysis             | <br>  None<br>      |
| Flood Level Elev: N/A<br> Above Flood Level: N/A<br>                      | <br> Aging  <br>                | 40 Years                   | <br>  40 Years                  | I                  | CAL-79<br>Note 4     | Analysis             | I None              |
| Hot Shutdown   X  <br>  Cold Shutdown   X                                 | <br> Submergence <br>           | N/A                        | <br>  N/A<br>                   | <br>  N/A<br>      | N/A                  | N/A                  | <br>  None<br>      |

| Facility: Davis-Besse Unit 1 | SYSTEM COMPONENT CLUATION WORKSHEET | Index No 221H-105A |
|------------------------------|-------------------------------------|--------------------|
| Docket: 50-346               | NOTES                               | Rev.:              |
| Checked by:                  | Date: 11/ 2/12                      |                    |

1. The test subjected the terminal block to a peak temperature of 345°F. At 30 minutes after the start of the fest, the temperature was 320°F, at 1 hour the temperature was 300°F, at 1-1/2 hours the temperature was 290°F, at 2 hours the temperature was 280°F, at 3 hours the temperature was 260°F, at 4 hours the temperature was 255°F, at 8 hours the temperature was 235°F, at 12 hours the temperature was 225°F, and at 18 hours the temperature was 220°F which was maintained for the duration of the 96-hour test. The test pressure peak was 74.7 psia and at 35 minutes the test pressure was down to 19.7 psia which was maintained for the duration of the 96 hours. The temperature in Room 314 peaks at 221°F in 1.55 seconds. The pressure in Room 314 peaks at 19.76 psia in .09 seconds. The temperature and pressure in Room 314 return to ambient conditions in 8 minutes (Reference C-314).

Based on this information, it can be concluded that the laboratory test subjected the terminal block to an overall more severe environment than that which would result from a postulated HELB. Since the terminal block remained operable throughout the test and functional after the test, it can be concluded that the terminal block will remain functional during and after exposure to the accident environment which would result from the postulated HELB.

In addition, the terminal blocks were tested for temperature and humidity by the Stanwick Electrical Products Company. The high temperature test of 150°F for 8 hours was passed successfully with a test voltage of 600 volts D.C. (References V-35A, and V-35B). Maximum continuous use temperatures for the terminal block base and barrier materials (only non-metallic parts) are 302°F and 275°F, respectively (References W-2, AA). Stanwick also conducted a humidity test on the terminal blocks with 90% + 10% relative humidity at 68°F using a test voltage of 500 volts D.C. No shorting or arcing occurred during the test (References V-35A, V-35B).

- 2. One year operating time is used as a conservative maximum specification.
- 3. This test data was obtained from a test performed by Duke Power Corporation on Stanwick terminal blocks (Reference ROC-35A). This test report is not available as a reference document.
- 4. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

| Plant I.D. No   | D.: EV1537B   | Component:   | Termin           | nal Block  |                  |
|---|---|--|------------------|--|------------------|
| Manufacturer  | : Stanwick  | Model No.:   |                  | Туре G   |                  |
|   |   | I THERMAL AGIN   | IG I             | RADIATION  |                  |
| Parts List  | Materials List  | Qualification  | Reference        | Qualification  | Reference        |
| Termi al Block Links<br>Mounting Rods<br>Bolts<br>Insert<br>Nuts<br>Terminal Block Base<br>Terminal Block Barrier | Brass<br>Metallic<br>Silicone Bronze<br>Brass<br>Brass<br>Durez #791 Phenolic<br>Glass - Melamine | Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>40 Years @ 230°F<br>Greater than<br>40 Years @ 122°F | CAL-79<br>CAL-79 | Not Affected<br>Not Affected<br>Not Affected<br>Not Affected<br>3.0 x 10 <sup>8</sup> RADS<br>1.6 x 10 <sup>8</sup> RADS | CAL-79<br>CAL-79 |



'acility: Davis-Besse Unit 1 'ocket: 50-346 SYSTEM COMPONENT EVALUATION WORKSHEET



repared by: Nheins Date: 11/1/83 Thecked by: Arian Date: 11/1/13

| EQUIPMENT DESCRIPTION   | ENVIRONMENT                 |                             |                            | DOCUMENTATION REF. |                      | Qualification        | Outstanding |
|---|-----------------------------|-----------------------------|----------------------------|--------------------|----------------------|----------------------|-------------|
| - Contraction   | Parameter                   | Specification               | Qualification              | Specification      | Qualification        | Method               | Items       |
| System: Generic 1E Elec-  <br>trical Components                           | Operating                   | l Year                      | l.l Years                  | Note 2             | Note 1               | Simultaneous<br>Test | None        |
| Plant ID No.: EV1719B<br>Component: Terminal Block                        | Temperature<br>(°F)         | 198.0                       | 345.0                      | C-236              | Note 3               | Simultaneous<br>Test | None        |
| Manufacturer: Stanwick<br>Model Number: Type G                            | Pressure<br>(PSIA)          | 15.51                       | 74.7                       | C-236              | Note 3               | Simultaneous<br>Test | None        |
| Function: Electrical  <br>Circuit  <br>Termination                        | Relative<br>Humidity<br>(%) | 100.0                       | 100.0                      | A<br>  A<br>       | Note 3               | Simultaneous<br>Test | None        |
| Accuracy: Spec: N/A  <br>Demon: N/A  <br>Service: Electrical  <br>Control | <br> Chemical<br> Spray     | N/A                         | N/A                        | <br>  N/A<br>      | N/A                  | N/A                  | None        |
| Location: Auxiliary Bldg. <br>Rm. 236                                     | Radiation                   | 1.97 x 10 <sup>6</sup> RADS | 1.6 x 10 <sup>8</sup> RADS | T                  | CAL-79  <br>  Note 4 | Analysis             | None        |
| Flood Level Elev: N/A  <br>Above Flood Level: N/A                         | Aging                       | 40 Years                    | <br>  40 Years<br>         | I                  | CAL-79  <br>  Note 4 | Analysis             | None        |
| Needed for:<br>Hot Shutdown   X    <br>Cold Shutdown   X                  | <br> Submergence            | N/A                         | N/A                        | <br>  N/A<br>      | N/A                  | N/A                  | None        |

| 'acility: Davis-Besse Unit 1      | SYSTEM COMPONENT EVALUATION WORKSHEET | Index No. 221H-106A<br>Rev.: 2 |
|-----------------------------------|---------------------------------------|--------------------------------|
| repared by: Nheuis<br>Thecked by: | Date: $\frac{  / /82}{  / /12}$ NOTES |                                |

.. The test subjected the terminal block to a peak temperature of 345°F. At 30 minutes after the start of the test, the temperature was 320°F, at 1 hour the temperature was 300°F, at 1-1/2 hours the temperature was 290°F, at 2 hours the temperature was 280°F, at 3 hours the temperature was 260°F, at 4 hours the temperature was 255°F, at 8 hours the temperature was 235°F, at 12 hours the temperature was 225°F, and at 18 hours the temperature was 220°F which was maintained for the duration of the 96-hour test. The test pressure peak was 74.7 psia and at 35 minutes the test pressure was down to 19.7 psia which was maintained for the duration of the 96 hours. The temperature in Room 236 peaks at 198°F in 19 seconds. The pressure in Room 236 peaks at 15.5 psia in 1.6 seconds. The temperature and pressure in Room 236 return to ambient conditions in 6.7 minutes (Reference C-236).

Based on this information, it can be concluded that the laboratory test subjected the terminal block to an overall more severe environment than that which would result from a postulated HELB. Since the terminal block remained operable throughout the test and functional after the test, it can be concluded that the terminal block will remain functional during and after exposure to the accident environment which would result from the postulated HELB.

In addition, the terminal blocks were tested for temperature and humidity by the Stanwick Electrical Products Company. The high temperature test of  $150^{\circ}$ F for 8 hours was passed successfully with a test voltage of 600 volts D.C. (References V-35A, and V-35B). Maximum continuous use temperatures for the terminal block base and barrier materials (only non-metallic parts) are  $302^{\circ}$ F and  $275^{\circ}$ F, respectively (References W-2, AA). Stanwick also conducted a humidity test on the terminal blocks with 90% ± 10% relative humidity at 68°F using a test voltage of 500 volts D.C. No shorting or arcing occurred during the test (References V-35A, V-35B).

- 2. One year operating time is used as a conservative maximum specification.
- 3. This test data was obtained from a test performed by Duke Power Corporation on Stanwick terminal blocks (Reference ROC-35A). This test report is not available as a reference document.
- 1. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.
Facility: Davis-Besse Unit 1 Docket: 50-346

Prepared by: NLeuro Date: 11/183 Checked by: Attendance Date: 11/2/13





| Plant I.D. No   | D.: EV1719B   | Component:  | Termin           | nal Block  |                                    |
|---|---|---|------------------|--|------------------------------------|
| Manufacturer  | Stanwick  | Model No.:  | Тут              | Type G   |                                    |
|   |   | THERMAL AGI   | NG I             | RADIATIO   | 9                                  |
| Parts List  | Materials List  | Qualification   | Reference        | Qualification  | Reference                          |
| Terminal Block Links<br>Mounting Rods<br>Bolts<br>Insert<br>Nuts<br>Terminal Block Base<br>Terminal Block Barrier | Brass<br>Metallic<br>Silicone Bronze<br>Brass<br>Brass<br>Durez #791 Phenolic<br>Glass - Melamine | Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>40 Years @ 230°F<br>Greater than<br>40 Years @ 122°F | CAL-79<br>CAL-79 | Not Affected<br>Not Affected<br>Not Affected<br>Not Affected<br>Not Affected<br>$3.0 \times 10^8$ RADS<br>$1.6 \times 10^8$ RADS | <br> <br> <br>  CAL-79<br>  CAL-79 |



'acility: Davis-Besse Unit 1 )ocket: 50-346

SYSTEM COMPONENT EVALUATION WORKSHEET



Prepared by: A. Feis Date: 1/1/13 Checked by: Ancient Date: 11/1/13

| EQUIPMENT DESCRIPTION  | ENVIRONMENT                        |                             |                            | DOCUMENTATION REF. |                  | Qualification        | Outstanding |
|--|------------------------------------|-----------------------------|----------------------------|--------------------|------------------|----------------------|-------------|
| lago an inner second se | Parameter                          | Specification               | Qualification              | Specification      | Qualification    | Method               | Items       |
| System: Generic 1E Elec-  <br>trical Components  | Operating  <br> Time               | l Year                      | 1.1 Years                  | <br>  Note 2<br>   | Note 1           | Simultaneous<br>Test | None        |
| Plant ID No.: EV20000<br>Component: Terminal Block   | Temperature                        | 218.0                       | 345.0                      | <br>  C-303<br>    | Note 3           | Simultaneous<br>Test | None        |
| Manufacturer: Stanwick<br>Model Number: Type G   | Pressure (PSIA)                    | 17.16                       | 74.7                       | C-303              | Note 3           | Simultaneous<br>Test | None        |
| Function: Electrical<br>Circuit<br>Termination   | Relative  <br> Humidity  <br>  (%) | 100.0                       | 100.0                      | <br>  A<br>        | Note 3           | Simultaneous<br>Test | None        |
| Accuracy: Spec: N/A<br>Demon: N/A<br>Service: Electrical<br>Control  | Chemical<br>Spray                  | N/A                         | N/A                        | <br>  N/A<br>      | N/A              | N/A                  | None        |
| Location: Auxiliary Bldg.<br>Rm. 303   | Radiation                          | 1.16 x 10 <sup>6</sup> RADS | 1.6 x 10 <sup>8</sup> RADS | T T                | CAL-79           | Analysis             | None        |
| Flood Level Elev: N/A  <br> Above Flood Level: N/A   | Aging                              | 40 Years                    | 40 Years                   | I                  | CAL-79<br>Note 4 | Analysis             | None        |
| Needed for:<br>  Hot Shutdown   X    <br>  Cold Shutdown   X   | Submergence                        | N/A                         | N/A                        | <br>  N/A<br>      | N/A              | N/A                  | None        |

| Facility: Davis-Besse Unit 1                           | SYSTEM COMPONENT EVALUATION WORK SHEET | Index No.: 221H-107A<br>Rev.: 2 |
|--|--|---------------------------------|
| Prepared by: <u>N. few</u><br>Checked by: <u>Inner</u> | Date: 11/1/13 NOTES                    |                                 |

1. The test subjected the terminal block to a peak temperature of 345°F. At 30 minutes after the start of the test, the temperature was 320°F, at 1 hour the temperature was 300°F, at 1-1/2 hours the temperature was 290°F, at 2 hours the temperature was 280°F, at 3 hours the temperature was 260°F, at 4 hours the temperature was 255°F, at 8 hours the temperature was 235°F, at 12 hours the temperature was 225°F, and at 18 hours the temperature was 220°F which was maintained for the duration of the 96-hour test. The test pressure peak was 74.7 psia and at 35 minutes the test pressure was down to 19.7 psia which was maintained for the duration of the 96 hours. The temperature in Room 303 peaks at 218°F in 1.5 seconds. The pressure in Room 303 peaks at 17.16 psia in .04 seconds. The temperature and pressure in Room 303 return to ambient conditions in 19 minutes (Reference C-303).

Based on this information, it can be concluded that the laboratory test subjected the terminal block to an overall more severe environment than that which would result from a postulated HELB. Since the terminal block remained operable throughout the test and functional after the test, it can be concluded that the terminal block will remain functional during and after exposure to the accident environment which would result from the postulated HELB.

In addition, the terminal blocks were tested for temperature and humidity by the Stanwick Electrical Products Company. The high temperature test of  $150^{\circ}F$  for 8 hours was passed successfully with a test voltage of 600 volts D.C. (References V-35A, and V-35B). Maximum continuous use temperatures for the terminal block base and barrier materials (only non-metallic parts) are  $302^{\circ}F$  and  $275^{\circ}F$ , respectively (References W-2, AA). Stanwick also conducted a humidity test on the terminal blocks with  $90^{\circ} + 10^{\circ}$  relative humidity at  $68^{\circ}F$  using a test voltage of 500 volts D.C. No shorting or arcing occurred during the test (References V-35A, V-35B).

- 2. One year operating time is used as a conservative maximum specification.
- This test data was obtained from a test performed by Duke Power Corporation on Stanwick terminal blocks (Reference ROC-35A). This test report is not available as a reference document.
- 4. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

Facility: Davis-Besse Unit 1

Docket: 50-346

Prepared by: n. 7 Checked by:

COMPONENT MATERIALS EVALUATION SHEET



.

Date: 11

| Plant I.D. No        | EV20000   | Component:  | Termi     | nal Block  |                  |
|----------------------|---|---|-----------|--|------------------|
| Manufacturer:        | Stanwick  | Model No.:  | Ту        | Туре G   |                  |
|                      |   | I THERMAL AGIN  | NG Í      | RADIATION  | 4                |
| Parts List           | Materials List  | Qualification   | Reference | Qualification  | Reference        |
| Terminal Block Links | Brass<br>Metallic<br>Silicone Bronze<br>Brass<br>Brass<br>Durez #791 Phenolic<br>Glass - Melamine | Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>40 Years @ 230°F<br>Greater than<br>40 Years @ 122°F |           | Not Affected<br>Not Affected<br>Not Affected<br>Not Affected<br>Not Affected<br>3.0 x $10^8$ RADS<br>1.6 x $10^8$ RADS | CAL-79<br>CAL-79 |

Facility: Davis-Besse Unit 1 )ocket: 50-346

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No. 221H-108 Rev.: 2

Prepared by: N. Janis Date: 1/1/13 Checked by: January Date: 1/2/13

| EQUIPMENT DESCRIPTION   | II ENVIRONMENT                     |                             |                            | DOCUMENTATION REF.          |                      | Qualification | Outstanding |
|---|------------------------------------|-----------------------------|----------------------------|-----------------------------|----------------------|---------------|-------------|
|   | Parameter   Specification   Qual   |                             | Qualification              | Specification Qualification |                      | Method        | Items       |
| System: Generic 1E Elec-<br>trical Components                             | Operating                          | l Year                      | 40 Years                   | Note 1                      | Note 2               | Analysis      | None        |
| Plant ID No.: EV20010<br>Component: Terminal Block                        | Temperature<br>(°F)                | N/A                         | N/A                        | Note 3                      | N/A                  | N/A           | None        |
| Manufacturer: Stanwick<br>Model Number: Type G                            | Pressure<br>(PSIA)                 | N/A                         | N/A                        | <br>  Note 3                | N/A                  | N/A           | None        |
| Function: Electrical<br>Circuit<br>Termination                            | Relative  <br> Humidity  <br>  (%) | N/A                         | N/A                        | <br>  Note 3<br>            | N/A  <br>  N/A  <br> | N/A           | None        |
| Accuracy: Spec: N/A  <br>Demon: N/A  <br>Service: Electrical  <br>Control | <br> Chemical<br> Spray            | N/A                         | N/A                        | Note 3                      | N/A                  | N/A           | None        |
| Location: Auxiliary Bldg.<br>Rm. 427                                      | Radiation                          | 3.12 x 10 <sup>5</sup> RADS | 1.6 x 10 <sup>8</sup> RADS | T                           | CAL-79  <br>  Note 2 | Analysis      | None        |
| Flood Level Elev: N/A  <br>Above Flood Level: N/A                         | Aging                              | 40 Years                    | 40 Years                   | I                           | CAL-79               | Analysis      | None        |
| Needed for:<br>Hot Shutdown X   | <br> Submergence                   | N/A                         | N/A                        | <br>  N/A                   | N/A  <br>  N/A  <br> | N/A           | None        |

| ility: Davis-Besse Unit 1 | SYSTEM COMPONENT EVALUATION WORKSHEET | Index No.: 221H-108H |
|---------------------------|---------------------------------------|----------------------|
| ket: 50-346               |                                       | Re v. : 2            |
| A                         | NOTES                                 |                      |
| pared by: N. Feins        | Date: 11/1/3                          |                      |
| cked by:                  | Date: 11/2/13                         |                      |

. One year operating time is used as a conservative maximum specification.

2. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

3. The only harsh environment seen is increased radiation due to recirculated fluids.

| Plant 1.D. No  | D.: <u>EV20010</u>   | Component:   | Termin           | nal Block  |                  |  |
|--|--|--|------------------|--|------------------|--|
| Manufacturer   | :Stanwick  | Model No.:   | Ty               | be G   |                  |  |
|  | L  | THERMAL AGIN   | G I              | RADIATION  |                  |  |
| Parts List   | Materials List   | Qualification  | Reference        | Qualification  | Reference        |  |
| erminal Block Links<br>lounting Rods<br>lolts<br>insert<br>luts<br>Perminal Block Base<br>Perminal Block Barrier | Brass<br>Metallic<br>Silicone Bronze<br>Brass<br>Durez #791 Phenolic<br>Glass - Melamine | Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>40 Years @ 230°F<br>Greater than<br>40 Years @ 122°F | CAL-79<br>CAL-79 | Not Affected<br>Not Affected<br>Not Affected<br>3.0 x 10 <sup>8</sup> RADS<br>1.6 x 10 <sup>8</sup> RADS | CAL-79<br>CAL-79 |  |

'acility: Davis-Besse Unit 1 ocket: 50-346

repared by: n. Lewis Date: 11/1/83 Thecked by: Anter Date: 11/1/83

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No. 221H-109 Rev.: 2

| FOUIPMENT DESCRIPTION   | ENVIRONMENT                 |                            |                                 | DOCUMENTATION REF. |                    | Qualification        | Outstanding |
|---|-----------------------------|----------------------------|---------------------------------|--------------------|--------------------|----------------------|-------------|
|   | Parameter                   | Specification              | Qualification                   | Specification      | Qualification      | Method               | Items       |
| System: Generic 1E Elec-  <br>trical Components                           | Operating                   | l Year                     | <br>  1.1 Years<br>             | Note 2             | Note 1  <br>Note 3 | Simultaneous<br>Test | None        |
| Plant ID No.: EV20030<br>Component: Terminal Block                        | Temperature<br>(°F)         | 221.0                      | 345.0                           | C-314              | Note 3             | Simultaneous<br>Test | None        |
| Manufacturer: Stanwick  <br>Model Number: Type G                          | Pressure<br>(PSIA)          | 19.76                      | 74.7                            | C-314              | Note 3             | Simultaneous<br>Test | None        |
| Function: Electrical<br>Circuit<br>Termination                            | Relative<br>Humidity<br>(%) | 100.0                      | 100.0                           | A                  | Note 3             | Simultaneous<br>Test | None        |
| Accuracy: Spec: N/A  <br>Demon: N/A  <br>Service: Electrical  <br>Control | <br> Chemical<br> Spray     | N/A                        | N/A                             | N/A                | N/A                | N/A                  | None        |
| Location: Auxiliary Bldg.<br>Rm. 314                                      | Radiation                   | 1.0 x 10 <sup>6</sup> RADS | 1<br>1.6 x 10 <sup>8</sup> RADS | T                  | CAL-79<br>Note 4   | Analysis             | None        |
| Flood Level Elev: N/A  <br>Above Flood Level: N/A                         | Aging                       | 40 Years                   | <br>  40 Years<br>              | I                  | CAL-79<br>Note 4   | Analysis             | None        |
| Needed for:<br>Hot Shutdown   X    <br>Cold Shutdown   X                  | <br> Submergence            | N/A                        | N/A                             | <br>  N/A          | N/A                | N/A                  | None        |

| Facility: Davis-Besse Unit 1                            | SYSTEM COMPONENT EVALUATION WORKSHEET | Index No.: 221H-109A<br>Rev.: 2 |
|---|---------------------------------------|---------------------------------|
| Prepared by: <u>N. Kim</u><br>Checked by: <u>Limani</u> | Date: $\frac{u/u/s}{u/s/rs}$ NOTES    |                                 |

1. The test subjected the terminal block to a peak temperature of 345°F. At 30 minutes after the start of the test, the temperature was 320°F, at 1 hour the temperature was 300°F, at 1-1/2 hours the temperature was 290°F, at 2 hours the temperature was 280°F, at 3 hours the temperature was 260°F, at 4 hours the temperature was 255°F, at 8 hours the temperature was 235°F, at 12 hours the temperature was 225°F, and at 18 hours the temperature was 220°F which was maintained for the duration of the 96-hour test. The test pressure peak was 74.7 psia and at 35 minutes the test pressure was down to 19.7 psia which was maintained for the duration of the 96 hours. The temperature in Room 314 peaks at 221°F in 1.55 seconds. The pressure in Room 314 peaks at 19.76 psia in .09 seconds. The temperature and pressure in Room 314 return to ambient conditions in 8 minutes (Reference C-314).

Based on this information, it can be concluded that the laboratory test subjected the terminal block to an overall more severe environment than that which would result from a postulated HELB. Since the terminal block remained operable throughout the test and functional after the test, it can be concluded that the terminal block will remain functional during and after exposure to the accident environment which would result from the postulated HELB.

In addition, the terminal blocks were tested for temperature and humidity by the Stanwick Electrical Products Company. The high temperature test of  $150^{\circ}$ F for 8 hours was passed successfully with a test voltage of 600 volts D.C. (References V-35A, and V-35B). Maximum continuous use temperatures for the terminal block base and barrier materials (only non-metallic parts) are  $302^{\circ}$ F and  $275^{\circ}$ F, respectively (References W-2, AA). Stanwick also conducted a humidity test on the terminal blocks with 90% + 10% relative humidity at  $68^{\circ}$ F using a test voltage of 500 volts D.C. No shorting or arcing occurred during the test (References V-35A, V-35B).

- 2. One year operating time is used as a conservative maximum specification.
- 3. This test data was obtained from a test performed by Duke Power Corporation on Stanwick terminal blocks (Reference ROC-35A). This test report is not available as a reference document.
- 4. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

Facility: Davis-Besse Unit 1 Docket: 50-346

COMPONENT MATERIALS EVALUATION SHEET

Index Nor 221H-109B Rev.: 2

Prepared by: n. kin Date: 1/1/15 Checked by: transf Date: 11/2/15

| Plant J.D. N<br>Manufacturer  | o.: EV20030<br>: Stanwick   | Component:<br>Model No.:   | TermiTy          | nal Block  |                  |
|---|---|--|------------------|--|------------------|
|   | 1   | I THERMAL AGIN   | NG I             | RADIATION  |                  |
| Parts List  | Materials List  | Qualification  | Reference        | Qualification  | Reference        |
| Terminal Block Links<br>Mounting Rods<br>Bolts<br>Insert<br>Nuts<br>Terminal Block Base<br>Terminal Block Barrier | Brass<br>  Metallic<br>  Silicone Bronze<br>  Brass<br>  Brass<br>  Durez #791 Phenolic<br>  Glass - Melamine | Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>40 Years @ 230°F<br>Greater than<br>40 Years @ 122°F | CAL-79<br>CAL-79 | Not Affected<br>Not Affected<br>Not Affected<br>Not Affected<br>3.0 x 10 <sup>8</sup> RADS<br>1.6 x 10 <sup>8</sup> RADS | CAL-79<br>CAL-79 |

Pacility: Davis-Besse Unit 1

SYSTEM COMPONENT EVALUATION WORK SHEET



)ocket: 50-346

Prepared by: 17. Lens Date: 11/1/13 Checked by: 27. Como Date: 11/2/13

| FOULTPMENT DESCRIPTION  | ENVIRONMENT                 |                            |                                 | DOCUMENTATION REF. |                    | Qualification        | Outstanding |
|---|-----------------------------|----------------------------|---------------------------------|--------------------|--------------------|----------------------|-------------|
|   | Parameter                   | Specification              | Qualification                   | Specification      | Qualification      | Method               | Items       |
| System: Generic 1E Elec-  <br>trical Components                           | Operating<br>Time           | l Year                     | 1.1 Years                       | Note 2             | Note 1<br>Note 3   | Simultaneous<br>Test | None        |
| Plant ID No.: EV2010<br>Component: Terminal Block                         | Temperature<br>(°F)         | 221.0                      | 345.0                           | C-314              | Note 3             | Simultaneous<br>Test | None        |
| Manufacturer: Stanwick  <br> <br>Model Number: Type G                     | Pressure<br>(PSIA)          | 19.76                      | 74.7                            | C-314              | Note 3             | Simultaneous<br>Test | None        |
| Function: Electrical  <br>Circuit  <br>Termination                        | Relative<br>Humidity<br>(%) | 100.0                      | <br>  100.0<br>                 | A<br>I A           | Note 3             | Simultaneous<br>Test | None        |
| Accuracy: Spec: N/A  <br>Demon: N/A  <br>Service: Electrical  <br>Control | <br> Chemical<br> Spray     | N/A                        | <br>  N/A                       | N/A                | N/A                | N/A                  | None        |
| Location: Auxiliary Bldg. <br>Rm. 314                                     | Radiation                   | 1.0 x 10 <sup>6</sup> RADS | <br> 1.6 x 10 <sup>8</sup> RADS | Т                  | CAL-79  <br>Note 4 | Analysis             | None        |
| Flood Level Elev: N/A  <br>Above Flood Level: N/A                         | Aging                       | 40 Years                   | <br>  40 Years<br>              | I                  | CAL-79<br>Note 4   | Analysis             | None        |
| Needed for:   | <br> Submergence            | N/A                        | <br>  N/A<br>                   | <br>  N/Ä<br>      | N/A                | N/A                  | None        |

|  | CHOTEN CONDONENT DILITION WORK SHEET  | Index NO 221H-110A |
|--|---------------------------------------|--------------------|
| Facility: Davis-Besse Unit 1<br>Docket: 50-346 | SISTEM COMPONENT EVALUATION WORKSHEET | Rev.: 2            |
| mark the therein                               | Date: ulin NOTES                      |                    |
| Checked by: Dry One                            | Date: $\frac{1}{1/3/12}$              |                    |

1. The test subjected the terminal block to a peak temperature of 345°F. At 30 minutes after the start of the test, the temperature was 320°F, at 1 hour the temperature was 300°F, at 1-1/2 hours the temperature was 290°F, at 2 hours the temperature was 280°F, at 3 hours the temperature was 260°F, at 4 hours the temperature was 255°F, at 8 hours the temperature was 235°F, at 12 hours the temperature was 225°F, and at 18 hours the temperature was 220°F which was maintained for the duration of the 96-hour test. The test pressure peak was 74.7 psia and at 35 minutes the test pressure was down to 19.7 psia which was maintained for the duration of the 96 hours. The temperature in Room 314 peaks at 221°F in 1.55 seconds. The pressure in Room 314 peaks at 19.76 psia in .09 seconds. The temperature and pressure in Room 314 return to ambient conditions in 8 minutes (Reference C-314).

Based on this information, it can be concluded that the laboratory test subjected the terminal block to an overall more severe environment than that which would result from a postulated HELB. Since the terminal block remained operable throughout the test and functional after the test, it can be concluded that the terminal block will remain functional during and after exposure to the accident environment which would result from the postulated HELB.

In addition, the terminal blocks were tested for temperature and humidity by the Stanwick Electrical Products Company. The high temperature test of 150°F for 8 hours was passed successfully with a test voltage of 600 volts D.C. (References V-35A, and V-35B). Maximum continuous use temperatures for the terminal block base and barrier materials (only non-metallic parts) are  $302^{\circ}$ F and  $275^{\circ}$ F, respectively (References W-2, AA). Stanwick also conducted a humidity test on the terminal blocks with 90% ± 10% relative humidity at 68°F using a test voltage of 500 volts D.C. No shorting or arcing occurred during the test (References V-35A, V-35B).

- 2. One year operating time is used as a conservative maximum specification.
- This test data was obtained from a test performed by Duke Power Corporation on Stanwick terminal blocks (Reference ROC-35A). This test report is not available as a reference document.
- 4. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

Facility: Davis-Besse Unit 1

50-346

Docket:

Prepared by: <u>1.</u> Checked by:

COMPONENT MATERIALS EVALUATION SHEET



Date: 11/18 Date: 10/18

| Plant I.D. No.: EV2010<br>Manufacturer: Stanwick  |   | Component:   | Termi            | nal Block  |                  |
|---|---|--|------------------|--|------------------|
|   |   | Model No.:   | Ту               | pe G   |                  |
|   |   | THERMAL AGIN   | ig l             | RADIATION  |                  |
| Parts List  | Materials List  | Qualification  | Reference        | Qualification  | Reference        |
| Yerminal Block Links<br>Nounting Rods<br>Nolts<br>Insert<br>Nuts<br>Yerminal Block Base<br>Yerminal Block Barrier | Brass<br>Metallic<br>Silicone Bronze<br>Brass<br>Brass<br>Durez #791 Phenolic<br>Glass - Melamine | Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>40 Years @ 230°F<br>Greater than<br>40 Years @ 122°F | CAL-79<br>CAL-79 | Not Affected<br>Not Affected<br>Not Affected<br>Not Affected<br>3.0 x 10 <sup>8</sup> RADS<br>1.6 x 10 <sup>8</sup> RADS | CAL-79<br>CAL-79 |

'acility: Davis-Besse Unit 1
pocket: 50-346

'repared by: 1. Ken thecked by:

SYSTEM COMPONENT EVALUATION WORKSHEET



Date: 11:183

| POUTDMENT DESCRIPTION  | I ENVIRONMENT               |                             |                            | DOCUMENTATION REF. |                    | Qualification        | Outstanding |  |
|--|-----------------------------|-----------------------------|----------------------------|--------------------|--------------------|----------------------|-------------|--|
| EQUIPMEN DESCRIPTION   | Parameter                   | Specification               | Qualification              | Specification      | Qualification      | Method               | Items       |  |
| System: Generic 1E Elec-<br>trical Components                              | Operating<br>Time           | l Year                      | l.l Years                  | Note 2             | Note 1<br>Note 3   | Simultaneous<br>Test | Nore        |  |
| Plant ID No.: EV2012B  | Temperature<br>(°F)         | 198.0                       | 345.0                      | C-236              | Note 3             | Simultaneous<br>Test | None        |  |
| Manufacturer: Stanwick  <br> <br>Model Number: Type G                      | Pressure<br>(PSIA)          | 15.51                       | 74.7                       | C-236              | Note 3             | Simultaneous<br>Test | None        |  |
| Function: Electrical  <br>Circuit  <br>Termination                         | Relative<br>Humidity<br>(%) | 100.0                       | 100.0                      | A                  | Note 3             | Simultaneous<br>Test | None        |  |
| Accessacy: Spec: N/A  <br>Demon: N/A  <br>Service: Electrical  <br>Control | <br> Chemical<br> Spray     | N/A                         | N/A                        | <br>  N/A<br>      | N/A                | N/A                  | None        |  |
| Location: Auxiliary Bidg. <br>Rm. 236                                      | Radiation                   | 1.97 x 10 <sup>6</sup> RADS | 1.6 x 10 <sup>8</sup> RADS | т                  | CAL-79  <br>Note 4 | Analysis             | None        |  |
| Flood Level Elev: N/A  <br>Above Flood Level: N/A                          | <br> Aging<br>              | 40 Years                    | <br>  40 Years<br>         | I                  | CAL-79<br>Note 4   | Analysis             | None        |  |
| Needed for:<br>Hot Shutdown   X    <br>Cold Shutdown   X                   | Submergence                 | N/A                         | N/A                        | N/A                | N/A                | N/A                  | None        |  |

221H-111A SYSTEM COMPONENT EVALUATION WORKSHEET Index No. 'acility: Davis-Besse Unit 1 Rev. : 50-346 locket: NOTES Date: repared by: h Date: hecked y:

The test subjected the terminal block to a peak temperature of 345°F. At 30 minutes after the start of the test, the temperature was 320°F, at 1 hour the temperature was 300°F, at 1-1/2 hours the temperature was 290°F, at 2 hours the temperature was 280°F, at 3 hours the temperature was 260°F, at 4 hours the temperature was 255°F, at 8 hours the temperature was 235°F, at 12 hours the temperature was 225°F, and at 18 hours the temperature was 220°F which was maintained for the duration of the 96-hour test. The test pressure peak was 74.7 psia and at 35 minutes the test pressure was down to 19.7 psia which was maintained for the duration of the 96 hours. The test pressure peak was 74.7 psia and at 35 minutes the test pressure was down to 19.7 psia which was maintained for the duration of the 96 hours. The temperature in Room 236 peaks at 198°F in 19 seconds. The pressure in Room 236 peaks at 15.5 psia in 1.6 seconds. The temperature and pressure in Room 236 return to ambient conditions in 6.7 minutes (Reference C-236).

Based on this information, it can be concluded that the laboratory test subjected the terminal block to an overall more severe environment than that which would result from a postulated HELB. Since the terminal block remained operable throughout the test and functional after the test, it can be concluded that the terminal block will remain functional during and after exposure to the accident environment which would result from the postulated HELB.

In addition, the terminal blocks were tested for temperature and humidity by the Stanwick Electrical Products Company. The high temperature test of  $150^{\circ}F$  for 8 hours was passed successfully with a test voltage of 600 volts D.C. (References V-35A, and V-35B). Maximum continuous use temperatures for the terminal block base and barrier materials (only non-metallic parts) are  $302^{\circ}F$  and  $275^{\circ}F$ , respectively (References W-2, AA). Stanwick also conducted a humidity test on the terminal blocks with 90% ± 10% relative humidity at  $68^{\circ}F$  using a test voltage of 500 volts D.C. No shorting or arcing occurred during the test (References V-35A, V-35B).

One year operating time is used as a conservative maximum specification.

2.

 This test data was obtained from a test performed by Duke Power Corporation on Stanwick terminal blocks (Reference ROC-35A). This test report is not available as a reference document.

1. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.



Facility: Davis-Besse Unit 1 Docket: 50-346





Checked by: Shield

Prepared by: <u>N. Fern</u> Date: <u>11/1/1</u>. Checked by: <u>Spreadout</u> Date: <u>11/2/13</u>

| Plant I.D. No.: EV2010B<br>Manufacturer: Stanwick   |  | Component:   | Termin           | nal Block  |                  |
|---|--|--|------------------|--|------------------|
|   |  | Model No.:   | Ту               | pe G   |                  |
|   |  | I THERMAL AGIN   | IG I             | RADIATION  |                  |
| Parts List  | Materials List   | Qualification  | Reference        | Qualification  | Reference        |
| Yerminal Block Links<br>Mounting Rods<br>Bolts<br>Insert<br>Nuts<br>Yerminal Block Base<br>Yerminal Block Barrier | Brass<br>  Metallic<br>  Silicone Bronze<br>  Brass<br>  Brass<br>  Durez #791 Phenolic<br>  Glass - Melamine<br> <br> <br> <br> <br> <br> | Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>40 Years @ 230°F<br>Greater than<br>40 Years @ 122°F | CAL-79<br>CAL-79 | Not Affected<br>Not Affected<br>Not Affected<br>Not Affected<br>3.0 x 10 <sup>8</sup> RADS<br>1.6 x 10 <sup>8</sup> RADS | CAL-79<br>CAL-79 |

Pacility: Davis-Besse Unit 1 )ocket: 50-346

SYSTEM COMPONENT EVALUATION WORKSHEET



Prepared by: h. Jewis Date: 11/13 Checked by: Date: 4/2/03

| FOULTPMENT DESCRIPTION  | ENVIRONMENT                         |                            |                                 | DOCUMENTATION REF. |                  | Qualification        | Outstanding |
|---|-------------------------------------|----------------------------|---------------------------------|--------------------|------------------|----------------------|-------------|
|   | Parameter                           | Specification              | Qualification                   | Specification      | Qualification    | Method               | Items       |
| <br>System: Generic 1E Elec-  <br>trical Components                       | <br> Operating<br> Time             | l Year                     | 1.1 Years                       | Note 2  <br>       | Note 1<br>Note 3 | Simultaneous<br>Test | None        |
| Plant ID No.: EV27330  <br>Component: Terminal Block                      | Temperature<br>(°F)                 | 130.0                      | 345.0                           | C-105              | Note 3           | Simultaneous<br>Test | None        |
| Manufacturer: Stanwick  <br> <br>Model Number: Type G                     | Pressure<br>(PSIA)                  | 16.06                      | 1 74.7                          | C-105              | Note 3           | Simultaneous<br>Test | None        |
| Function: Electrical<br>Circuit<br>Termination                            | <br> Relative<br> Humidity<br>  (%) | 100.0                      | 100.0                           | A                  | Note 3           | Simultaneous<br>Test | None        |
| Accuracy: Spec: N/A  <br>Demon: N/A  <br>Service: Electrical  <br>Control | <br> Chemical<br> Spray             | N/A                        | <br>  N/A<br>                   | <br>  N/A<br>      | N/A              | N/A                  | None        |
| Location: Auxiliary Bldg.<br>Rm. 105                                      | <br> Radiation                      | 1.9 x 10 <sup>6</sup> RADS | <br> 1.6 x 10 <sup>8</sup> RADS | Т                  | CAL-79<br>Note 4 | Analysis             | None        |
| Flood Level Elev: N/A Above Flood Level: N/A                              | Aging                               | 40 Years                   | <br>  40 Years                  | I I                | CAL-79<br>Note 4 | Analysis             | None        |
| Needed for:<br>Hot Shutdown   X    <br>Cold Shutdown   X                  | <br> Submergence                    | N/A                        | I N/A                           | <br>  N/A<br>      | N/A              | N/A                  | None        |

| Facility: Davis-Besse Unit 1    | SYSTEM COMPONENT EVALUATION WORKSHEET | Index No. 221H-112A<br>Rev.: 2 |
|---------------------------------|---------------------------------------|--------------------------------|
| Prepared by: <u>n. Kurs</u> Dat | e: ulilos NOTES                       |                                |
| Checked by: Antaland Dat        |                                       |                                |

1. The test subjected the terminal block to a peak temperature of 345°F. At 30 minutes after the start of the test, the temperature was 320°F, at 1 hour the temperature was 300°F, at 1-1/2 hours the temperature was 290°F, at 2 hours the temperature was 280°F, at 3 hours the temperature was 260°F, at 4 hours the temperature was 255°F, at 8 hours the temperature was 235°F, at 12 hours the temperature was 225°F, and at 18 hours the temperature was 220°F which was maintained for the duration of the 96-hour test. The test pressure peak was 74.7 psia and at 35 minutes the test pressure was down to 19.7 psia which was maintained for the duration of the 96 hours. The temperature in Room 105 peaks at 130°F in 19 seconds. The pressure in Room 105 peaks at 16.06 psia in 1.75 seconds. The temperature and pressure in Room 105 return to ambient conditions in 24 minutes (Reference C-105).

Based on this information, it can be concluded that the laboratory test subjected the terminal block to an overall more severe environment than that which would result from a postulated HELB. Since the terminal block remained operable throughout the test and functional after the test, it can be concluded that the terminal block will remain functional during and after exposure to the accident environment which would result from the postulated HELB.

In addition, the terminal blocks were tested for temperature and humidity by the Stanwick Electrical Products Company. The high temperature test of 150°F for 8 hours was passed successfully with a test voltage of 600 volts D.C. (References V-35A, and V-35B). Maximum continuous use temperatures for the terminal block base and barrier materials (only non-metallic parts) are  $302^{\circ}$ F and  $275^{\circ}$ F, respectively (References W-2, AA). Stanwick also conducted a humidity test on the terminal blocks with 90%  $\pm$  10% relative humidity at 68°F using a test voltage of 500 volts D.C. No shorting or arcing occurred during the test (References V-35A, V-35B).

- 2. One year operating time is used as a conservative maximum specification.
- This test data was obtained from a test performed by Duke Power Corporation on Stanwick terminal blocks (Reference ROC-35A). This test report is not available as a reference document.

4. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

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Facility: Davis-Besse Unit 1

COMPONENT MATERIALS EVALUATION SHEET

.



Docket: 50-346

Prepared by: **N.** Checked by:

Date: 11/1/93 Date: 11/1/83

| Plant I.D. No.: | EV27330                                       | Component:  | Termi  | Terminal Block  |   |
|-----------------|---|---|--|---|---|
| Manufacturer:   | Stanwick                                      | Model No.:  |  | pe G  |   |
|                 |   | I THERMAL AG  |  | RADIATIO  | N   |
| List            | Materials List                                | Qualification   | Reference  | Qualification   | Reference   |
|                 | Plant I.D. No.:<br>Manufacturer:<br> <br>List | Plant I.D. No.: EV27330<br>Manufacturer: Stanwick<br>I<br>List   Materials List | Plant I.D. No.:       EV27330       Component:         Manufacturer:       Stanwick       Model No.:         I       I       THERMAL AGI         List       I       Materials List       Qualification | Plant I.D. No.:     EV27330     Component:     Terminity       Manufacturer:     Stanwick     Model No.:     Ty       I     I     THERMAL AGING     I       List     I     Materials List     Qualification     Reference | Plant I.D. No.:     EV27330     Component:     Terminal Block       Manufacturer:     Stanwick     Model No.:     Type G       I     I     THERMAL AGING     I     RADIATIO       List     I     Materials List     Qualification     Reference     Qualification |

| Terminal Block Links<br>Mounting Rods<br>Bolts<br>Insert | lock Links   Brass<br>ods   Metallic<br>  Silicone Bronze<br>  Brass<br>  Brass | Not Sensitive     I       Not Sensitive     I       Not Sensitive     I       Not Sensitive     I       Not Sensitive     I | Not AffectedINot AffectedINot AffectedINot AffectedINot AffectedI            |
|--|---|---|--|
| Nuts<br>Terminal Block Base<br>Terminal Block Barrier    | Brass<br>  Durez #791 Phenolic<br>  Glass - Melamine                            | Not Sensitive     I       40 Years @ 230°F     CAL-79       Greater than     CAL-79       40 Years @ 122°F                  | 3.0 x 10 <sup>8</sup> RADS   CAL-79  <br>1.6 x 10 <sup>8</sup> RADS   CAL-79 |

Material and Parts Reference List: V-35A, V-35B, ROC-35B

4 m

'acility: Davis-Besse Unit 1 locket: 50-346

repared by: N. Ku thecked by:

Date: 11/2/83

11



2218-113 Index No. Rev.: 2

| EQUIPMENT DESCRIPTION   | ENVIRONMENT             |                            |                            | DOCUMENTATION REF. |                  | Qualification        | Outstanding |
|---|-------------------------|----------------------------|----------------------------|--------------------|------------------|----------------------|-------------|
| 1   | Parameter               | Specification              | Qualification              | Specification      | Qualification    | Method               | Items       |
| System: Generic 1E Elec-  <br>trical Components                           | Operating<br>Time       | l Year                     | <br>  1.1 Years<br>        | Note 2             | Note 1<br>Note 3 | Simultaneous<br>Test | None        |
| Plant ID No.: EV27340<br>Component: Terminal Block                        | Temperature<br>(°F)     | 155.0                      | <br>  345.0                | C-113              | Note 3           | Simultaneous<br>Test | None        |
| Manufacturer: Stanwick  <br>Model Number: Type G                          | Pressure<br>(PSIA)      | 16.06                      | 74.7                       | C-113              | Note 3           | Simultaneous<br>Test | None        |
| Function: Electrical  <br>Circuit  <br>Termination                        | Relative<br>Humidity    | 100.0                      | <br>  100.0<br>            | A                  | Note 3           | Simultaneous<br>Test | None        |
| Accuracy: Spec: N/A  <br>Demon: N/A  <br>Service: Electrical  <br>Control | <br> Chemical<br> Spray | N/A                        | N/A                        | N/A                | N/A              | N/A                  | None        |
| Location: Auxiliary Bldg.<br>Rm. 113                                      | Radiation               | 7.1 x 10 <sup>6</sup> RADS | 1.6 x 10 <sup>8</sup> RADS | T                  | CAL-79<br>Note 4 | Analysis             | None        |
| Flood Level Elev: N/A<br>Above Flood Level: N/A                           | Aging                   | 40 Years                   | 40 Years                   | I                  | CAL-79<br>Note 4 | Analysis             | None        |
| Needed for:<br>Hot Shutdown   X    <br>Cold Shutdown   X                  | Submergence             | N/A                        | N/A                        | <br>  N/A          | N/A              | N/A                  | None        |

| Pacility: Davis-Besse Unit 1                              | SYSTEM COMPONENT EVALUATION WORKSHEET | Index No. 1 221H-113A |
|---|---------------------------------------|-----------------------|
| Prepared by: <b>N. Lewi</b><br>Checked by: <b>M. Lewi</b> | Date: 11/0/83<br>Date: 11/0/83        | Ke v. :               |

1. The test subjected the terminal block to a peak temperature of 345°F. At 30 minutes after the start of the test, the temperature was 320°F, at 1 hour the temperature was 300°F, at 1-1/2 hours the temperature was 290°F, at 2 hours the temperature was 280°F, at 3 hours the temperature was 260°F, at 4 hours the temperature was 255°F, at 8 hours the temperature was 235°F, at 12 hours the temperature was 225°F, and at 18 hours the temperature was 220°F which was maintained for the duration of the 96-hour test. The test pressure peak was 74.7 psia and at 35 minutes the test pressure was down to 19.7 psia which was maintained for the duration of the duration of the duration of the 96 hours. The temperature in Room 113 peaks at 155°F in 19 seconds. The pressure in Room 113 peaks at 16.06 psia in 1.75 seconds. The temperature and pressure in Room 113 return to ambient conditions in 6.7 minutes (Reference C-113).

Based on this information, it can be concluded that the laboratory test subjected the terminal block to an overall more severe environment than that which would result from a postulated HELB. Since the terminal block remained operable throughout the test and functional after the test, it can be concluded that the terminal block will remain functional during and after exposure to the accident environment which would result from the postulated HELB.

In addition, the terminal blocks were tested for temperature and humidity by the Stanwick Electrical Products Company. The high temperature test of  $150^{\circ}F$  for 8 hours was passed successfully with a test voltage of 600 volts D.C. (References V-35A, and V-35B). Maximum continuous use temperatures for the terminal block base and barrier materials (only non-metallic parts) are  $302^{\circ}F$  and  $275^{\circ}F$ , respectively (References W-2, AA). Stanwick also conducted a humidity test on the terminal blocks with  $906 \pm 106$  relative humidity at  $68^{\circ}F$  using a test voltage of 500 volts D.C. No shorting or arcing occurred during the test (References V-35A, V-35B).

- 2. One year operating time is used as a conservative maximum specification.
- This test data was obtained from a test performed by Duke Power Corporation on Stanwick terminal blocks (Reference ROC-35A). This test report is not available as a reference document.
- 4. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

Facility: Davis-Besse Unit 1 50-346 Docket:

COMPONENT MATERIALS EVALUATION SHEET



Prepared by: n. Jens Date: 11/18: Checked by: State Date: 11/2/13

| Plant I.D. N  | o.: EV27340   | Component:   | Termi            | nal Block  |                  |
|---|---|--|------------------|--|------------------|
| Manufacturer: Stanwick  |   | Model No.: Type G  |                  | pe G   |                  |
|   | 1   | THERMAL AGI  | NG I             | RADIATIO   |                  |
| Parts List  | Materials List  | Qualification  | Reference        | Qualification  | Reference        |
| Terminal Block Links<br>Mounting Rods<br>Bolts<br>Insert<br>Nuts<br>Terminal Block Base<br>Terminal Block Barrier | Brass<br>  Metallic<br>  Silicone Bronze<br>  Brass<br>  Brass<br>  Durez #791 Phenolic<br>  Glass - Melamine<br> | Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>40 Years @ 230°F<br>Greater than<br>40 Years @ 122°F | CAL-79<br>CAL-79 | Not Affected<br>Not Affected<br>Not Affected<br>Not Affected<br>3.0 x 10 <sup>8</sup> RADS<br>1.6 x 10 <sup>8</sup> RADS | CAL-79<br>CAL-79 |

'acility: Davis-Besse Unit 1 locket: 50-346

SYSTEM COMPONENT EVALUATION WORKSHEET



inecked by: n. June Date: 11/1/13 Date: 11/1/13

| EQUIPMENT DESCRIPTION   | ENVIRONMENT                 |                            |                                 | DOCUMENTATION REF. |                  | Qualification        | Outstanding |  |
|---|-----------------------------|----------------------------|---------------------------------|--------------------|------------------|----------------------|-------------|--|
|   | Parameter                   | Specification              | Qualification                   | Specification      | Qualification    | Method               | Items       |  |
| <br>System: Generic 1E Elec-  <br>trical Components                       | <br> Operating<br> Time     | l Year                     | l.l Years                       | Note 2             | Note 1<br>Note 3 | Simultaneous<br>Test | None        |  |
| Plant ID No.: EV27360<br>Component: Terminal Block                        | Temperature<br>(°F)         | 221.0                      | 345.0                           | C-314              | Note 3           | Simultaneous<br>Tort | None        |  |
| Manufacturer: Stanwick  <br> <br>Model Number: Type G                     | Pressure<br>(PSIA)          | 19.76                      | 1 74.7                          | C-314              | Note 3           | Simultaneous<br>Test | None        |  |
| Function: Electrical  <br>Circuit  <br>Termination                        | Relative<br>Humidity        | 100.0                      | 100.0                           | <br>  A<br>        | Note 3           | Simultaneous<br>Test | None        |  |
| Accuracy: Spec: N/A  <br>Demon: N/A  <br>Service: Electrical  <br>Control | <br> Chemical<br> Spray<br> | N/A                        | <br>  N/A                       | N/A                | N/A              | N/A                  | None        |  |
| Location: Auxiliary Bldg. <br>Rm. 314                                     | <br> Radiation              | 1.0 x 10 <sup>6</sup> RADS | <br> 1.6 x 10 <sup>8</sup> RADS | Т                  | CAL-79<br>Note 4 | Analysis             | None        |  |
| Flood Level Elev: N/A  <br>Above Flood Level: N/A                         | <br> Aging<br>              | 40 Years                   | 40 Years                        | I                  | CAL-79           | Analysis             | None        |  |
| Hot Shutdown   X    <br>Cold Shutdown   X                                 | <br> Submergence            | N/A                        | N/A                             | N/A                | N/A              | N/A                  | None        |  |

| ?acility:   | Davis-Besse Unit 1 | SYSTEM COMPONENT EVALUATION WORKSHEET | Index No. 221H-114A |
|-------------|--------------------|---------------------------------------|---------------------|
| Prepared by | 1: h. Jems         | Date: $\frac{n/1/n}{n/2/83}$ NOTES    |                     |

1. The test subjected the terminal block to a peak temperature of 345°F. At 30 minutes after the start of the test, the temperature was 320°F, at 1 hour the temperature was 300°F, at 1-1/2 hours the temperature was 290°F, at 2 hours the temperature was 280°F, at 3 hours the temperature was 260°F, at 4 hours the temperature was 255°F, at 8 hours the temperature was 235°F, at 12 hours the temperature was 225°F, and at 18 hours the temperature was 220°F which was maintained for the duration of the 96-hour test. The test pressure peak was 74.7 psia and at 35 minutes the test pressure was down to 19.7 psia which was maintained for the duration of the 96 hours. The temperature in Room 314 peaks at 221°F in 1.55 seconds. The pressure in Room 314 peaks at 19.76 psia in .09 seconds. The temperature and pressure in Room 314 return to ambient conditions in 8 minutes (Reference C-314).

Based on this information, it can be concluded that the laboratory test subjected the terminal block to an overall more severe environment than that which would result from a postulated HELB. Since the terminal block remained operable throughout the test and functional after the test, it can be concluded that the terminal block will remain functional during and after exposure to the accident environment which would result from the postulated HELB.

In addition, the terminal blocks were tested for temperature and humidity by the Stanwick Electrical Products Company. The high temperature test of  $150^{\circ}$ F for 8 hours was passed successfully with a test voltage of 600 volts D.C. (References V-35A, and V-35B). Maximum continuous use temperatures for the terminal block base and barrier materials (only non-metallic parts) are  $302^{\circ}$ F and  $275^{\circ}$ F, respectively (References W-2, AA). Stanwick also conducted a humidity test on the terminal blocks with 90% + 10% relative humidity at 68°F using a test voltage of 500 volts D.C. No shorting or arcing occurred during the test (References V-35A, V-35B).

- 2. One year operating time is used as a conservative maximum specification.
- 3. This test data was obtained from a test performed by Duke Power Corporation on Stanwick terminal blocks (Reference ROC-35A). This test report is not available as a reference document.
- 4. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

Facility: Davis-Besse Unit 1 Docket: 50-346 COMPONENT MATERIALS EVALUATION SHEET



Prepared by: n. terin Date: 11/13 Checked by: Amalmet Date: 11/13

| Plant I.D. N  | o.: EV27360  | Component:   | Termi            | nal Block  |                  |
|---|--|--|------------------|--|------------------|
| Manufacturer: Stanwick  |  | Model No.:   | Ту               | pe G   |                  |
|   |  | THERMAL AGIN   | 1G               | RADIATION  |                  |
| Parts List  | Materials List   | Qualification  | Reference        | Qualification  | Reference        |
| Terminal Block Links<br>Mounting Rods<br>Bolts<br>Insert<br>Nuts<br>Terminal Block Base<br>Terminal Block Barrier | Brass<br>Metallic<br>Silicone Bronze<br>Brass<br>Durez #791 Phenolic<br>Glass - Melamine | Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>40 Years @ 230°F<br>Greater than<br>40 Years @ 122°F | CAL-79<br>CAL-79 | Not Affected<br>Not Affected<br>Not Affected<br>Not Affected<br>3.0 x 10 <sup>8</sup> RADS<br>1.6 x 10 <sup>8</sup> RADS | CAL-79<br>CAL-79 |

Facility: Davis-Besse Unit 1 50-346 Docket:

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SYSTEM COMPONENT EVALUATION WORKSHEET



Prepared by: Checked by:

Date: 11/83 Date: 11/3/13

| LEQUIPMENT DESCRIPTION  | ENVIRONMENT                       |                             |                            | DOCUMENTATION REF. |                  | Qualification        | Outstanding |
|---|-----------------------------------|-----------------------------|----------------------------|--------------------|------------------|----------------------|-------------|
| I   | Parameter                         | Specification               | Qualification              | Specification      | Qualification    | Method               | Items       |
| <br> System: Generic 1E Elec-  <br>  trical Components                    | <br> Operating  <br> Time         | l Year                      | 1.1 Years                  | Note 2<br>         | Note 1<br>Note 3 | Simultaneous<br>Test | None        |
| Plant ID No.: EV5005<br>Component: Terminal Block                         | Temperature                       | 282.0                       | 345.0                      | C-601              | Note 3           | Simultaneous<br>Test | None        |
| Manufacturer: Stanwick  | Pressure<br>(PSIA)                | 17.0                        | 74.7                       | C-601              | Note 3           | Simultaneous<br>Test | None        |
| Function: Electrical  <br>Circuit  <br>Termination                        | Relative  <br> Humidity  <br> (%) | 100.0                       | 100.0                      | A                  | Note 3           | Simultaneous<br>Test | None        |
| Accuracy: Spec: N/A  <br>Demon: N/A  <br>Service: Electrical  <br>Control | Chemical  <br> Spray              | N/A                         | N/A                        | <br>  N/A<br>      | N/A              | N/A                  | None        |
| Location: Auxiliary Bldg.   | Radiation                         | 1.86 x 10 <sup>4</sup> RADS | 1.6 x 10 <sup>8</sup> RADS | <br>  T            | CAL-79<br>Note 4 | Analysis             | None        |
| Flood Level Elev: N/A  <br>Above Flood Level: N/A                         | Aging                             | 40 Years                    | 40 Years                   | I I                | CAL-79<br>Note 4 | Analysis             | None        |
| Needed for:   | <br> Submergence <br>             | N/A                         | N/A                        | <br>  N/A<br>      | N/A              | N/A                  | None        |

| Facility: Davis-Besse Unit 1  | SYSTEM COMPONENT EVALUATION WORKSHEET | Index No.: 221H-115A<br>Rev.: 2 |
|---|---------------------------------------|---------------------------------|
| Docket: 50-346<br>Prepared by: <b>h. feinio</b> Date<br>Checked by: <b>Introduct</b> Date | NOTES                                 |                                 |

1. The test subjected the terminal block to a peak temperature of 345°F. At 30 minutes after the start of the test, the temperature was 320°F, at 1 hour the temperature was 300°F, at 1-1/2 hours the temperature was 290°F, at 2 hours the temperature was 280°F, at 3 hours the temperature was 260°F, at 4 hours the temperature was 255°F, at 8 hours the temperature was 235°F, at 12 hours the temperature was 225°F, and at 18 hours the temperature was 220°F which was maintained for the duration of the 96-hour test. The test pressure peak was 74.7 psia and at 35 minutes the test pressure was down to 19.7 psia which was maintained for the duration of the 96 hours. The temperature in Room 601 peaks at 282°F in 0.45 seconds. The pressure in Room 601 peaks at 17.0 psia in 2.05 seconds. The temperature and pressure in Room 601 return to ambient conditions in 2 hours and 18 minutes. (Reference C-601)

Based on this information, it can be concluded that the laboratory test .ubjected the terminal block to an overall more severe environment than that which would result from a postulated HELB. Since the terminal block remained operable throughout the test and functional after the test, it can be concluded that the terminal block will remain functional during and after exposure to the accident environment which would result from the postulated HELB.

In addition, the terminal blocks were tested for temperature and humidity by the Stanwick Electrical Products Company. The high temperature test of 150°F for 8 hours was passed successfully with a test voltage of 600 volts D.C. (References V-35A, and V-35B). Maximum continuous use temperatures for the terminal block base and barrier materials (only non-metallic parts) are 302°F and 275°F, respectively (References W-2, AA). Stanwick also conducted a humidity test on the terminal blocks with  $90\% \pm 10\%$  relative humidity at 68°F using a test voltage of 500 volts D.C. No shorting or arcing occurred during the test (References V-35A, V-35B).

- 2. One year operating time is used as a conservative maximum specification.
- This test data was obtained from a test performed by Duke Power Corporation on Stanwick terminal blocks (Reference ROC-35A). This test report is not available as a reference document.
- 4. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

Facility: Davis-Besse Unit 1 Docket: 50-346 COMPONENT MATERIALS EVALUATION SHEET



h. Prepared by: Checked by: Artalan

Date: 11/1/83

| Plant I.D. No.: EV5005<br>Manufacturer: Stanwick  |  | Component:   | Termi            | nal Block  |                  |
|---|--|--|------------------|--|------------------|
|   |  | Model No.:   | Ту               | pe G   |                  |
|   |  | THERMAL AGIN   | IG I             | RADIATION  | 1                |
| Parts List  | Materials List   | Qualification  | Reference        | Qualification  | Reference        |
| Yerminal Block Links<br>Hounting Rods<br>Bolts<br>Insert<br>Nuts<br>Yerminal Block Base<br>Yerminal Block Barrier | Brass<br>Metallic<br>Silicone Bronze<br>Brass<br>Durez #791 Phenolic<br>Glass - Melamine | Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>40 Years @ 230°F<br>Greater than<br>40 Years @ 122°F | CAL-79<br>CAL-79 | Not Affected<br>Not Affected<br>Not Affected<br>Not Affected<br>3.0 x 10 <sup>8</sup> RADS<br>1.6 x 10 <sup>8</sup> RADS | CAL-79<br>CAL-79 |

Facility: Davis-Besse Unit 1 Docket: 50-346

SYSTEM COMPONENT EVALUATION WORKSHEET



Prepared by: h. front Date: 11/1/13 Checked by: 2000 Date: 4/3

| EQUIFMENT DESCRIPTION   | ENVIRONMENT                         |                             |                             | DOCUMENTATION REF.  |                 | Qualification | <br>  Outstanding |
|---|-------------------------------------|-----------------------------|-----------------------------|---------------------|-----------------|---------------|-------------------|
|   | Parameter                           | Specification               | Qualification               | Specification       | [Qualification] | Method        | Items             |
| System: Generic 1E Elec-  <br>trical Components                           | <br> Operating<br> Time             | l Year                      | <br>  40 Years<br>          | <br>  Note 1<br>    | Note 2          | Analysis      | None              |
| Plant ID No.: EV5008<br>Component: Terminal Block                         | <br> Temperature<br>  (°F)          | N/A                         | N/A                         | <br>  Note 3        | N/A             | N/A           | None              |
| Manufacturer: Stanwick  <br>Model Number: Type G                          | <br> Pressure<br> (PSIA)            | N/A                         | N/A                         | <br>  Note 3<br>    | N/A             | N/A           | None              |
| Function: Electrical  <br>Circuit  <br>Termination                        | <br> Relative<br> Humidity<br>  (%) | N/A                         | N/A                         | <br>  Note 3<br>  . | N/A             | N/A           | None              |
| Accuracy: Spec: N/A  <br>Demon: N/A  <br>Service: Electrical  <br>Control | <br> Chemical<br> Spray<br>         | N/A                         | N/A                         | <br>  Note 3<br>    | N/A             | N/A           | None              |
| Location: Auxiliary Bldg. <br>Rm. 427                                     | <br> Radiation                      | 3.12 x 10 <sup>5</sup> RADS | 11.6 x 10 <sup>8</sup> RADS | 1<br>1 T            | CAL-79          | Analysis      | None              |
| Flood Level Elev: N/A  <br>Above Flood Level: N/A  <br>Needed for:        | <br> Aging<br>                      | 40 Years                    | 40 Years                    | I                   | CAL-79          | Analysis      | None              |
| Hot Shutdown   X    <br>Cold Shutdown   X                                 | <br> Submergence <br>               | N/A                         | <br>  N/A                   | <br>  N/A           | N/A             | N/A           | None              |

| SYSTEM COMPONENT EVALUATION WORKSHEET | Index No.: 221H-116A                           |
|---------------------------------------|--|
| uliles NOTES                          | Rev2   |
|                                       | SYSTEM COMPONENT EVALUATION WORKSHEET<br>NOTES |

1. One year operating time is used as a conservative maximum specification.

- 2. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.
- 3. The only harsh environment seen is increased radiation due to recirculated fluids.

Facility: Davis-Besse Unit 1 Docket: 50-346 COMPONENT MATERIALS EVALUATION SHEET



Prepared by: n. Kin Date: 11/1/83 Checked by: Date: 11/2/13

| Plant I.D. 1  | No.: EV5008  | Component:   | Termi            | nal Block  |                  |
|---|--|--|------------------|--|------------------|
| Manufacturer: Stanwick  |  | Model No.:   | Ту               | pe G   |                  |
|   | 1  | I THERMAL AGIN   | IG I             | RADIATION  |                  |
| Parts List  | Materials List   | Qualification  | Reference        | Qualification  | Reference        |
| Terminal Block Links<br>Mounting Rods<br>Bolts<br>Insert<br>Nuts<br>Terminal Block Base<br>Terminal Block Barrier | Brass<br>Metallic<br>Silicone Bronze<br>Brass<br>Durez #791 Phenolic<br>Glass - Melamine | Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>40 Years @ 230°F<br>Greater than<br>40 Years @ 122°F | CAL-79<br>CAL-79 | Noi Affected<br>Not Affected<br>Not Affected<br>Not Affected<br>3.0 x 10 <sup>8</sup> RADS<br>1.6 x 10 <sup>8</sup> RADS | CAL-79<br>CAL-79 |

Docket: 50-346





Prepared by: N. Juni Date: 11/1/83 Checked by: Low Date: 4/2/13

| EQUIPMENT DESCRIPTION   | ENVIRONMENT                           |                            |                                  | DOCUMENTATION REF. |                    | Qualification        | Outstanding |
|---|---------------------------------------|----------------------------|----------------------------------|--------------------|--------------------|----------------------|-------------|
| II  | Parameter                             | Specification              | Qualification                    | Specification      | Qualification      | Method               | Items       |
| <br> System: Generic 1E Elec-   <br>  trical Components                   | <br> Operating  <br> Time             | l Year                     | l l.l Years                      | Note 2             | Note 1  <br>Note 3 | Simultaneous<br>Test | None        |
| Plant ID No.: EV5010B   | <br> Temperature <br>  (°F)           | 221.0                      | <br>  345.0<br>                  | C-314              | Note 3             | Simultaneous<br>Test | None        |
| Manufacturer: Stanwick  <br> <br> Model Number: Type G                    |                                       | 19.76                      | 1<br>1 74.7<br>1                 | C-314              | Note 3             | Simultaneous<br>Test | None        |
| Function: Electrical<br>Circuit<br>Termination                            | Rclative   <br> Humidity   <br>   (%) | 100.0                      | <br>  100.0<br>                  | A                  | Note 3             | Simultaneous<br>Test | None        |
| Accuracy: Spec: N/A  <br>Demon: N/A  <br>Service: Electrical  <br>Control | <br> Chemical  <br> Spray  <br>       | N/A                        | <br>  N/A<br> <br>               | N/A                | N/A                | N/A                  | None        |
| Location: Auxiliary Bldg.<br>Rm. 314                                      | <br> Radiation                        | 1.0 x 10 <sup>6</sup> RADS | 1<br>11.6 x 10 <sup>8</sup> RADS | T                  | CAL-79  <br>Note 4 | Analysis             | None        |
| Flood Level Elev: N/A  <br> Above Flood Level: N/A  <br>                  | Aging                                 | 40 Years                   | <br>  40 Years<br>               | I                  | CAL-79  <br>Note 4 | Analysis             | None        |
| Hot Shutdown   X    <br>  Cold Shutdown   X                               | Submergence                           | N/A                        | <br>  N/A<br>                    | N/A                | N/A                | N/A                  | None        |

| <pre>?acility:<br/>Docket:</pre> | Davis-Besse Unit 1<br>50-346 | SYSTEM COM    | PONENT ELUATION WORKSHEET | Index No. 221H-117A<br>Rev. 2 |
|----------------------------------|------------------------------|---------------|---------------------------|-------------------------------|
| Prepared by<br>Checked by        | m. fenis                     | Date: 11/1/83 | NOTES                     |                               |

1. The test subjected the terminal block to a peak temperature of 345°F. At 30 minutes after the start of the test, the temperature was 320°F, at 1 hour the temperature was 300°F, at 1-1/2 hours the temperature was 290°F, at 2 hours the temperature was 280°F, at 3 hours the temperature was 260°F, at 4 hours the temperature was 255°F, at 8 hours the temperature was 235°F, at 12 hours the temperature was 225°F, and at 18 hours the temperature was 220°F which was maintained for the duration of the 96-hour test. The test pressure peak was 74.7 psia and at 35 minutes the test pressure was down to 19.7 psia which was maintained for the duration of the duration of the duration of the 96 hours. The temperature in Room 314 peaks at 221°F in 1.55 seconds. The pressure in Room 314 peaks at 19.76 psia in .09 seconds. The temperature and pressure in Room 314 return to ambient conditions in 8 minutes (Reference C-314).

Based on this information, it can be concluded that the laboratory test subjected the terminal block to an overall more severe environment than that which would result from a postulated HELB. Since the terminal block remained operable throughout the test and functional after the test, it can be concluded that the terminal block will remain functional during and after exposure to the accident environment which would result from the postulated HELB.

In addition, the terminal blocks were tested for temperature and humidity by the Stanwick Electrical Products Company. The high temperature test of 150°F for 8 hours was passed successfully with a test voltage of 600 volts D.C. (References V-35A, and V-35B). Maximum continuous use temperatures for the terminal block base and barrier materials (only non-metallic parts) are 302°F and 275°F, respectively (References W-2, AA). Stanwick also conducted a humidity test on the terminal blocks with 90% ± 10% relative humidity at 68°F using a test voltage of 500 volts D.C. No shorting or arcing occurred during the test (References V-35A, V-35B).

- 2. One year operating time is used as a conservative maximum specification.
- 3. This test data was obtained from a test performed by Duke Power Corporation on Stanwick terminal blocks (Reference ROC-35A). This test report is not available as a reference document.
- 4. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

Facility: Davis-Besse Unit 1 Docket: 50-346

Prepared by: N. huns Date: 11/183 Checked by: Analy Date: 11/2/83

Plant I.D. No.: EV5010B Component: Terminal Block Model No.: Type G Manufacturer: Stanwick THERMAL AGING RADIATION Parts List Materials List Qualification | Reference | Qualification Reference Not Sensitive Not Affected Terminal Block Links Brass Not Affected Metallic Not Sensitive Mounting Rods Not Affected Silicone Bronze Not Sensitive Bolts Not Affected Insert Brass Not Sensitive Nuts Brass Not Sensitive Not Affected 3.0 x 10<sup>8</sup> RADS 1.6 x 10<sup>8</sup> RADS Durez #791 Phenolic 40 Years @ 230°F CAL-79 CAL-79 Terminal Block Base Glass - Melamine CAL-79 CAL-79 Terminal Block Barrier Greater than 40 Years @ 122°F

Material and Parts Reference List: V-35A, V-35B, ROC-35B

COMPONENT MATERI EVALUATION SHEET

221H-117B Index No-Rev.

Pacility: Davis-Besse Unit 1 SYSTEM COMPONENT SCALUATION WORKSHEET Docket: 50-346

4



Date: 11/1/23 Prepared by: h. Jan Date: 11/1/8 Checked by: Dury and Date: 11/2/83

| FOULPMENT DESCRIPTION  | II ENVIRONMENT                        |                            |                                      | DOCUMENTATION REF. |                  | Qualification        | Outstanding    |
|--|---------------------------------------|----------------------------|--------------------------------------|--------------------|------------------|----------------------|----------------|
|  | Parameter                             | Specification              | Qualification                        | [Specification]    | Qualification    | Method               | Items          |
| System: Generic 1E Elec-   | <br> Operating  <br> Time             | 1 Year                     | <br>  1.1 Years<br>                  | Note 2             | Note 1<br>Note 3 | Simultaneous<br>Test | None<br>I      |
| Plant ID No.: EV5010D<br>Component: Terminal Block                         | Temperature <br>  (°F)                | 221.0                      | 1<br>1 345.0                         | c-314              | Note 3           | Simultaneous<br>Test | None<br>       |
| Manufacturer: Stanwick  <br>Model Number: Type G                           | Pressure   <br> (PSIA)                | 19.76                      | 74.7                                 | C-314              | Note 3           | Simultaneous<br>Test | <br>  None<br> |
| Function: Electrical<br>Circuit<br>Termination                             | Relative   <br> Humidity   <br>   (%) | 100.0                      | <br>  100.0<br>                      |                    | Note 3           | Simultaneous<br>Test | None           |
| Accuracy: Spec: N/A Demon: N/A Service: Electrical Control                 | <br>  Chemical   <br>  Spray   <br>   | N/A                        | N/A                                  | N/A                | N/A              | N/A                  | None<br>I      |
| Location: Auxiliary Bldg.<br>Rm. 314                                       | <br>  Radiation                       | 1.0 x 10 <sup>6</sup> RADS | <br> <br> 1.6 x 10 <sup>8</sup> RADS | T                  | CAL-79<br>Note 4 | Analysis             | l<br>None      |
| Plood Level Elev: N/A  <br>Above Flood Level: N/A                          |                                       | 40 Years                   | 1<br>  40 Years<br>                  | I                  | CAL-79<br>Note 4 | Analysis             | None           |
| Needed for:<br>  Hot Shutdown   <u>X</u>    <br>  Cold Shutdown   <u>X</u> | <br>  Submergence                     | N/A                        | <br>  N/A<br>                        | <br>  N/A    <br>  | N/A              | N/A                  | None           |

| Pacility: Davis-Besse Unit 1   | SYSTEM COMPONENT EVALUATION WORKSHEET | Index No. 221H-118A<br>Rev. 2 |
|--|---------------------------------------|-------------------------------|
| Prepared by: <u>M. Kui</u> Date:<br>Checked by: <u>Hunder</u> Date:<br>Date: | NOTES<br>11/1/83                      |                               |

1. The test subjected the terminal block to a peak temperature of 345°F. At 30 minutes after the start of the test, the temperature was 320°F, at 1 hour the temperature was 300°F, at 1-1/2 hours the temperature was 290°F, at 2 hours the temperature was 280°F, at 3 hours the temperature was 260°F, at 4 hours the temperature was 255°F, at 8 hours the temperature was 235°F, at 12 hours the temperature was 225°F, and at 18 hours the temperature was 220°F which was maintained for the duration of the 96-hour test. The test pressure peak was 74.7 psia and at 35 minutes the test pressure was down to 19.7 psia which was maintained for the duration of the 96 hours. The temperature in Room 314 peaks at 221°F in 1.55 seconds. The pressure in Room 314 peaks at 19.76 psia in .09 seconds. The temperature and pressure in Room 314 return to ambient conditions in 8 minutes (Reference C-314).

Based on this information, it can be concluded that the laboratory test subjected the terminal block to an overall more severe environment than that which would result from a postulated HELB. Since the terminal block remained operable throughout the test and functional after the test, it can be concluded that the terminal block will remain functional during and after exposure to the accident environment which would result from the postulated HELB.

In addition, the terminal blocks were tested for temperature and humidity by the Stanwick Electrical Products Company. The high temperature test of 150°F for 8 hours was passed successfully with a test voltage of 600 volts D.C. (References V-35A, and V-35B). Maximum continuous use temperatures for the terminal block base and barrier materials (only non-metallic parts) are 302°F and 275°F, respectively (References W-2, AA). Stanwick also conducted a humidity test on the terminal blocks with  $90\% \pm 10\%$  relative humidity at 68°F using a test voltage of 500 volts D.C. No shorting or arcing occurred during the test (References V-35A, V-35B).

- 2. One year operating time is used as a conservative maximum specification.
- This test data was obtained from a test performed by Duke Power Corporation on Stanwick terminal blocks (Reference ROC-35A). This test report is not available as a reference document.
- 4. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.
Pacility: Davis-Besse Unit 1 COMPONENT MATERIA Docket: 50-346

COMPONENT MATERIALS EVALUATION SHEET



Prepared by: 4. Ferri Date: 11/1/83 Checked by: Analander Date: 11/2/13

| Plant I.D. No   | .: EV5010D   | Component:   | Termin           | nal Block  |                  |
|---|--|--|------------------|--|------------------|
| Manufacturer:   | Stanwick   | Model No.:   | Тур              | pe G   |                  |
|   |  | I THERMAL AGIN   | NG I             | RADIATION  |                  |
| Parts List  | Materials List   | Qualification  | Reference        | Qualification  | Reference        |
| Terminal Block Links<br>Mounting Rods<br>Bolts<br>Insert<br>Nuts<br>Terminal Block Base<br>Terminal Block Barrier | Brass<br>Metallic<br>Silicone Bronze<br>Brass<br>Durez #791 Phenolic<br>Glass - Melamine | Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>40 Years @ 230°F<br>Greater than<br>40 Years @ 122°F | CAL-79<br>CAL-79 | Not Affected<br>Not Affected<br>Not Affected<br>Not Affected<br>3.0 x 10 <sup>8</sup> RADS<br>1.6 x 10 <sup>8</sup> RADS | CAL-79<br>CAL-79 |

Pacility: Davis-Besse Unit 1 SYSTEM COMPONENT EVALUATION WORKSHEET Docket: 50-346



Prepared by: <u>h. Henn</u> Date: <u>11/183</u> Checked by: <u>Areany</u> Date: <u>11/183</u>

| EQUIPMENT DESCRIPTION   | II ENVIRONMENT                           |               |               | DOCUMENTATION REF. |                      | Qualification        | Outstanding         |
|---|--|---------------|---------------|--------------------|----------------------|----------------------|---------------------|
|   | Parameter                                | Specification | Qualification | Specification      | Qualification        | Method               | Items               |
| <br> System: Generic 1E Elec-  <br>  trical Components                    | Operating  <br> Time                     | l Year        | 1.1 Years     | Note 2             | Note 1               | Simultaneous<br>Test | None                |
| Plant ID No.: EV50240<br>Component: Terminal Block                        | <br> Temperature <br>  (°F)              | 203.0         | 345.0         | C-515              | Note 3               | Simultaneous<br>Test | <br>  None<br>      |
| Manufacturer: Stanwick  <br>Model Number: Type G                          |  | 15.60         | 74.7          | c-515              | Note 3               | Simultaneous<br>Test | <br>  None<br>      |
| Function: Electrical<br>Circuit<br>Termination                            | Relative   <br>  Humidity   <br>   (%) ; | 100.0         | 100.0         | <br>  A<br>        | Note 3               | Simultaneous<br>Test | <br>  None<br>      |
| Accuracy: Spec: N/A  <br>Demon: N/A  <br>Service: Electrical  <br>Control | <br> Chemical  <br> Spray  <br>          | N/A           | N/A           | <br>  N/A<br>      | N/A                  | N/A                  | <br>  None<br> <br> |
| Location: Auxiliary Bldg. <br>  Rm. 515  <br>                             | Radiation                                | N/A           | N/A           | <br>  N/A          | N/A                  | N/A                  | None                |
| Flood Level Elev: N/A  <br> Above Flood Level: N/A  <br>                  | Aging I                                  | 40 Years      | 40 Years      | I                  | CAL-79  <br>  Note 4 | Analysis             | <br>  None<br>      |
| Hot Shutdown   X    <br>Cold Shutdown   X                                 | Submergence                              | N/A           | N/A           | <br>  N/A<br>      | N/A                  | N/A                  | None<br>            |

| Pacility: Days-Besse Unit 1                 | SYSTEM COMPONENT CALUATION WORKSHEET | Index No. 221H-119A<br>Rev. 2 |
|---|--------------------------------------|-------------------------------|
| Prepared by: 4. Perio<br>Checked by: Survey | Date: U/J/P3 NOTES                   |                               |

1. The test subjected the terminal block to a peak temperature of 345°F. At 30 minutes after the start of the test, the temperature was 320°F, at 1 hour the temperature was 300°F, at 1-1/2 hours the temperature was 290°F, at 2 hours the temperature was 280°F, at 3 hours the temperature was 260°F, at 4 hours the temperature was 255°F, at 8 hours the temperature was 235°F, at 12 hours the temperature was 225°F, and at 18 hours the temperature was 220°F which was maintained for the duration of the 96-hour test. The test pressure peak was 74.7 psia and at 35 minutes the test pressure was down to 19.7 psia which was maintained for the duration of the duration of the duration of the 96 hours. The temperature in Room 515 peaks at 203°F in 35.2 seconds. The pressure in Room 515 peaks at 15.6 psia in 9.4 seconds. The temperature and pressure in Room 515 return to ambient conditions in 19 minutes. (Reference C-515)

Based on this information, it can be concluded that the laboratory test subjected the terminal block to an overall more severe environment than that which would result from a postulated HELB. Since the terminal block remained operable throughout the test and functional after the test, it can be concluded that the terminal block will remain functional during and after exposure to the accident environment which would result from the postulated HELB.

In addition, the terminal blocks were tested for temperature and humidity by the Stanwick Electrical Products Company. The high temperature test of 150°F for 8 hours was passed successfully with a test voltage of 600 volts D.C. (References V-35A, and V-35B). Maximum continuous use temperatures for the terminal block base and barrier materials (only non-metallic parts) are 302°F and 275°F, respectively (References W-2, AA). Stanwick also conducted a humidity test on the terminal blocks with 90%  $\pm$  10% relative humidity at 68°F using a test voltage of 500 volts D.C. No shorting or arcing occurred during the test (References V-35A, V-35B).

- 2. One year operating time is used as a conservative maximum specification.
- 3. This test data was obtained from a test performed by Duke Power Corporation on Stanwick terminal blocks (Reference ROC-35A). This test report is not available as a reference document.
- 4. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

Docket: 50-346

Facility: Davis-Besse Unit 1 COMPONENT MATERIALS EVALUATION SHEET



Prepared by: 1. Kut Date: 11/1/83 Checked by: Archande Date: 11/3/83

| Plant I.D. No.: <u>EV50240</u><br>Manufacturer: <u>Stanwick</u>   |   | Component:<br>Model No.:   | Termin           | nal Block<br>pe G  |                  |
|---|---|--|------------------|--|------------------|
|   |   | I THERMAL AGIN   | IG I             | RADIATIO   | N                |
| Parts List  | Materials List  | Qualification  | Reference        | Qualification  | Reference        |
| Terminal Block Links<br>Mounting Rods<br>Bolts<br>Insert<br>Nuts<br>Terminal Block Base<br>Terminal Block Barrier | Brass<br>Metallic<br>Silicone Bronze<br>Brass<br>Brass<br>Durez #791 Phenolic<br>Glass - Melamine | Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>40 Years @ 230°F<br>Greater than<br>40 Years @ 122°F | CAL-79<br>CAL-79 | Not Affected<br>Not Affected<br>Not Affected<br>Not Affected<br>3.0 x 10 <sup>8</sup> RADS<br>1.6 x 10 <sup>8</sup> RADS | CAL-79<br>CAL-79 |

Pacifity: Davis-Besse Unit 1 SYSTEM COMPONENT EVALUATION WORKSHEET Docket: 50-346



Prepared by: n. Ferris Date: 11/183 Thecked by: Intercound Date: 11/2/83

| EQUIPMENT DESCRIPTION  | ENVIRONMENT                        |               |               | DOCUMENTATION REF.          |                      | Qualification        | Outstanding |
|--|------------------------------------|---------------|---------------|-----------------------------|----------------------|----------------------|-------------|
| -  | Parameter                          | Specification | Qualification | Specification Qualification |                      | Method               | Items       |
| System: Generic 1E Elec-  <br>trical Components                            | <br> Operating  <br> Time          | l Year        | 1.1 Years     | Note 2                      | Note 1  <br>Note 3   | Simultaneous<br>Test | None        |
| Plant ID No.: EV50250  | <br> Temperature <br>  (°F)        | 203.0         | 345.0         | C-515                       | Note 3               | Simultaneous<br>Test | None        |
| Manufacturer: Stanwick  <br> <br> Model Number: Type G  <br>               | <br> Pressure  <br> (PSIA)         | 15.60         | 74.7          | <br>  C-515<br>             | Note 3               | Simultaneous<br>Test | None        |
| Function: Electrical  <br>  Circuit  <br>  Termination  <br>               | Relative  <br> Humidity  <br>  (%) | 100.0         | 100.0         | <br>  A<br>                 | <br>  Note 3  <br>   | Simultaneous<br>Test | None        |
| Accuracy: Spec: N/A  <br>Demon: N/A  <br>Service: Electrician  <br>Control | <br> Chemical  <br> Spray  <br>    | N/A           | N/A           | <br>  N/A<br> <br>          | <br>  N/A  <br>      | N/A                  | None        |
| Location: Auxili.  | Radiation                          | N/A           | N/A           | <br>  N/A                   | <br>  N/A            | N/A                  | None        |
| Flood Level Elev: N/A  <br> Above Flood Level: N/A  <br>                   | Aging                              | 40 Years      | 40 Years      | II                          | CAL-79  <br>  Note 4 | Analysis             | None        |
| Hot Shutdown   X    <br>  Cold Shutdown   X                                | Submergence                        | N/A           | N/A           | <br>  N/A<br>               | N/A                  | N/A                  | None        |

| Pacility: Davis-Besse Unit 1<br>Docket: 50-346        | SYSTEM COMPONENT EVALUATION WORKSHEET | Index No. 221H-120A<br>Rev. 2 |
|---|---------------------------------------|-------------------------------|
| Prepared by: h. Kini Date:<br>Checked by: Date: Date: | 11/1/83 NOTES                         |                               |

1. The test subjected the terminal block to a peak temperature of 345°F. At 30 minutes after the start of the test, the temperature was 320°F, at 1 hour the temperature was 300°F, at 1-1/2 hours the temperature was 290°F, at 2 hours the temperature was 280°F, at 3 hours the temperature was 260°F, at 4 hours the temperature was 255°F, at 8 hours the temperature was 235°F, at 12 hours the temperature was 225°F, and at 18 hours the temperature was 220°F which was maintained for the duration of the 96-hour test. The test pressure peak was 74.7 psia and at 35 minutes the test pressure was down to 19.7 psia which was maintained for the duration of the duration of the duration of the 96 hours. The temperature in Room 515 peaks at 203°F in 35.2 seconds. The pressure in Room 515 peaks at 15.6 psia in 9.4 seconds. The temperature and pressure in Room 515 return to ambient conditions in 19 minutes. (Reference C-515)

Based on this information, it can be concluded that the laboratory test subjected the terminal block to an overall more severe environment than that which would result from a postulated HELB. Since the terminal block remained operable throughout the test and functional after the test, it can be concluded that the terminal block will remain functional during and after exposure to the accident environment which would result from the postulated HELB.

In addition, the terminal blocks were tested for temperature and humidity by the Stanwick Electrical Products Company. The high temperature test of 150°F for 8 hours was passed successfully with a test voltage of 600 volts D.C. (References V-35A, and V-35B). Maximum continuous use temperatures for the terminal block base and barrier materials (only non-metallic parts) are 302°F and 275°F, respectively (References W-2, AA). Stanwick also conducted a humidity test on the terminal blocks with 90%  $\pm$  10% relative humidity at 68°F using a test voltage of 500 volts D.C. No shorting or arcing occurred during the test (References V-35A, V-35B).

- 2. One year operating time is used as a conservative maximum specification.
- This test data was obtained from a test performed by Duke Power Corporation on Stanwick terminal blocks (Reference ROC-35A). This test report is not available as a reference document.
- 4. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

Facility: Davis-Besse Unit 1 COMPONENT MATERIAND EVALUATION SHEET Docket: 50-346



Prepared by: 1 Checked by: Atte

Date: 11/1 Date: 11/1/13

Component: Terminal Block Plant I.D. No.: EV50250 Model No.: Type G Manufacturer: Stanwick

|   |  | 1  | I THERMAL AG  | ING                        | RADIATIO   | N                          |
|---|--|--|---|----------------------------|--|----------------------------|
| 1 | Parts List   Materials List                                      |  | Qualification   | Reference                  | Qualification  | Reference                  |
|   | Terminal Block Links<br>Mounting Rods<br>Bolts<br>Insert<br>Nuts | <br>  Brass<br>  Metallic<br>  Silicone Bronze<br>  Brass<br>  Brass | <br>  Not Sensitive<br>  Not Sensitive<br>  Not Sensitive<br>  Not Sensitive<br>  Not Sensitive |                            | Not Affected<br>Not Affected<br>Not Affected<br>Not Affected<br>Not Affected |                            |
|   | Terminal Block Base<br>Terminal Block Barrier                    | Durez #791 Phenolic<br>  Glass - Melamine                            | <ul> <li>40 Years € 230°F</li> <li>Greater than</li> <li>40 Years € 122°F</li> </ul>            | CAL-79  <br>  CAL-79  <br> | 3.0 x 10 <sup>8</sup> RADS<br>1.6 x 10 <sup>8</sup> RADS                     | CAL-79  <br>  CAL-79  <br> |

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Pacility: Davis-Besse Unit 1 SYSTEM COMPONENT EVALUATION WORKSHEET Docket: 50-346

Prepared by: A. fund Date: 11/1/83 Checked by: Manufandy Date: 11/2/13

25

| LEQUIPMENT DESCRIPTION   | II ENVIRONMENT                          |                             |                            | DOCUMENTATION REF. |                  | Qualification        | Outstanding         |
|--|---|-----------------------------|----------------------------|--------------------|------------------|----------------------|---------------------|
|  | Parameter                               | Specification               | Qualification              | Specification      | Qualification    | Method               | Items               |
| System: Generic 1E Elec-   | Operating  <br> Time                    | l Year                      | 1.1 Years                  | Note 2             | Note 1<br>Note 3 | Simultaneous<br>Test | None '              |
| Plant ID No.: EV50370<br> <br> Component: Terminal Block                   | <br> Temperature <br>  (°F)             | 198.0                       | 345.0                      | C-236  <br>        | Note 3           | Simultaneous<br>Test | <br>  None<br>      |
| Manufacturer: Stanwick  <br> <br> Model Number: Type G                     |   | 15.51                       | 74.7                       | C-236  <br>        | Note 3           | Simultaneous<br>Test | <br>  None<br>      |
| Function: Electrical<br>Circuit<br>Termination                             | <br> Relative  <br> Humidity  <br>  (%) | 100.0                       | 100.0                      |                    | Note 3           | Simultaneous<br>Test | <br>  None<br>      |
| Accuracy: Spec: N/A<br>Demon: N/A<br>Service: Electrical<br>Control        | <br> Chemical  <br> Spray  <br>         | N/A                         | N/A                        | N/A                | N/A              | N/A                  | <br>  None<br> <br> |
| Location: Auxiliary Bldg.<br>Rm. 236                                       |   | 1.97 x 10 <sup>6</sup> RADS | 1.6 x 10 <sup>8</sup> RADS | T                  | CAL-79<br>Note 4 | Analysis             | None                |
| Flood Level Elev: N/A  <br> Above Flood Level: N/A  <br>                   | Aging I                                 | 40 Years                    | 40 Years                   | I                  | CAL-79<br>Note 4 | Analysis             | <br>  None<br>      |
| Needed for:<br>  Hot Shutdown   <u>X</u>    <br>  Cold Shutdown   <u>X</u> | <br> Submergence <br>                   | N/A                         | N/A                        | N/A                | N/A              | N/A                  | <br>  None<br>      |

Index No. 221H-121 Rev. 2

| Pacility:                | Davis-Besse Unit 1 | SYSTEM COMPONENT CALUATION WORKSHEET | Index No. 221H-121A |
|--------------------------|--------------------|--------------------------------------|---------------------|
| Docket:                  | 50-346             |                                      | Rev. 2              |
| Prepared b<br>Checked by | 1: n. Kins         | Date: 11/2/13 NOTES                  |                     |

1. The test subjected the terminal block to a peak temperature of 345°F. At 30 minutes after the start of the test, the temperature war 320°F, at 1 hour the temperature was 300°F, at 1-1/2 hours the temperature was 290°F, at 2 hours the temperature was 280°F, at 3 hours the temperature was 260°F, at 4 hours the temperature was 255°F, at 8 hours the temperature was 235°F, at 12 hours the temperature was 225°F, and at 18 hours the temperature was 220°F which was maintained for the duration of the 96-hour test. The test pressure peak was 74.7 psia and at 35 minutes the test pressure was down to 19.7 psia which was maintained for the duration of the 96 hours. The temperature in Room 236 peaks at 198°F in 19 seconds. The pressure in Room 236 peaks at 15.5 psia in 1.6 seconds. The temperature and pressure in Room 236 return to ambient conditions in 6.7 minutes (Reference C-236).

Based on this information, it can be concluded that the laboratory test subjected the terminal block to an overall more severe environment than that which would result from a postulated HELB. Since the terminal block remained operable throughout the test and functional after the test, it can be concluded that the terminal block will remain functional during and after exposure to the accident environment which would result from the postulated HELB.

In addition, the terminal blocks were tested for temperature and humidity by the Stanwick Electrical Products Company. The high temperature test of 150°F for 8 hours was passed successfully with a test voltage of 600 volts D.C. (References V-35A, and V-35B). Maximum continuous use temperatures for the terminal block base and barrier materials (only non-metallic parts) are 302°F and 275°F, respectively (References W-2, AA). Stanwick also conducted a humidity test on the terminal blocks with  $90\% \pm 10\%$  relative humidity at 68°F using a test voltage of 500 volts D.C. No shorting or arcing occurred during the test (References V-35A, V-35B).

- 2. One year operating time is used as a conservative maximum specification.
- This test data was obtained from a test performed by Duke Power Corporation on Stanwick terminal blocks (Reference ROC-35A). This test report is not available as a reference document.
- 4. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

Facility: Davis-Besse Unit 1 Docket: 50-346

COMPONENT MATERIADS EVALUATION SHEET



Prepared by: n. fend Date: 11/1/83 Checked by: Stora and Date: 11/1/83

| Plant I.D. No.: <u>EV50370</u><br>Manufacturer: <u>Stanwick</u>   |   | Component:Ter  |           | nal Block<br>pe G  |                  |
|---|---|--|-----------|--|------------------|
| 1   |   | I THERMAL AGI  | NG I      | RADIATIO   | N                |
| Parts List  | Materials List  | Qualification  | Reference | Qualification  | Reference        |
| Terminal Block Links<br>Mounting Rods<br>Bolts<br>Insert<br>Nuts<br>Terminal Block Base<br>Terminal Block Barrier | Brass<br>Metallic<br>Silicone Bronze<br>Brass<br>Brass<br>Durez #791 Phenolic<br>Glass - Melamine | Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>40 Years @ 230°F<br>Greater than<br>40 Years @ 122°F | CAL-79    | Not Affected<br>Not Affected<br>Not Affected<br>Not Affected<br>3.0 x 10 <sup>8</sup> RADS<br>1.6 x 10 <sup>8</sup> RADS | CAL-79<br>CAL-79 |



 Pacility:
 Davis-Besse Unit 1
 SYSTEM COMPONENT EVALUATION WORKSHEET

 Docket:
 50-346

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Prepared by: h. Jen Date: 11/1/83 Checked by: 2000 M Date: 11/1/13

| EQUIPMENT DESCRIPTION   | ENVIRONMENT                        |                             |                            | DOCUMENTATION REF.          |                      | Qualification        | Outstanding    |
|---|------------------------------------|-----------------------------|----------------------------|-----------------------------|----------------------|----------------------|----------------|
|   | Parameter                          | Specification               | Qualification              | Specification Qualification |                      | Method               | Items          |
| System: Generic 1E Elec-  <br>trical Components                           | <br> Operating  <br> Time          | l Year                      | 1.1 Years                  | <br>  Note 2<br>            | Note 1  <br>Note 3   | Simultaneous<br>Test | None           |
| Plant ID No.: EV50380  <br>Component: Terminal Block                      | Temperature                        | 198.0                       | 345.0                      | C-236                       | Note 3               | Simultaneous<br>Test | <br>  None<br> |
| Manufacturer: Stanwick  <br> <br>Model Number: Type G                     | Pressure  <br>(PSIA)               | 15.51                       | 74.7                       | l<br>  C-236                | Note 3  <br>  Note 3 | Simultaneous<br>Test | <br>  None<br> |
| Function: Electrical  <br>Circuit  <br>Termination                        | Relative  <br> Humidity  <br>  (%) | 100.0                       | 100.0                      | ι<br>ι λ<br>ι               | Note 3               | Simultaneous<br>Test | <br>  None<br> |
| Accuracy: Spec: N/A  <br>Demon: N/A  <br>Service: Electrical  <br>Control | <br> Chemical  <br> Spray  <br>    | N/A                         | N/A                        | <br>  N/A<br>               | N/A                  | N/A                  | <br>  None<br> |
| Location: Auxiliary Bldg.  <br>Rm. 236                                    | <br> Radiation                     | 1.97 x 10 <sup>6</sup> RADS | 1.6 x 10 <sup>8</sup> RADS | і<br>і Т                    | CAL-79  <br>  Note 4 | Analysis             | None           |
| Flood Level Elev: N/A  <br>Above Flood Level: N/A                         | <br> Aging  <br>                   | 40 Years                    | 40 Years                   | I                           | CAL-79               | Analysis             | None           |
| Needed for:   | <br> Submergence <br>              | N/A                         | N/A                        | <br>  N/A<br>               | N/A                  | N/A                  | <br>  None     |

| Facility:                | Dans-Besse Unit 1 |                | SYSTEM C | COMPONENT ALUATION WORKSHEET | Index NO 221H-122A |
|--------------------------|-------------------|----------------|----------|------------------------------|--------------------|
| Docket:                  | 50-346            |                |          |                              | Rev. 2             |
| Prepared b<br>Checked by | : n. Ferris       | Date:<br>Date: | 11/1/33  | NOTES                        |                    |

1. The test subjected the terminal block to a peak temperature of 345°F. At 30 minutes after the start of the test, the temperature was 320°F, at 1 hour the temperature was 300°F, at 1-1/2 hours the temperature was 290°F, at 2 hours the temperature was 280°F, at 3 hours the temperature was 260°F, at 4 hours the temperature was 255°F, at 8 hours the temperature was 235°F, at 12 hours the temperature was 225°F, and at 18 hours the temperature was 220°F which was maintained for the duration of the 96-hour test. The test pressure peak was 74.7 psia and at 35 minutes the test pressure was down to 19.7 psia which was maintained for the duration of the duration of the 96 hours. The temperature in Room 236 peaks at 198°F in 19 seconds. The pressure in Room 236 peaks at 15.5 psia in 1.6 seconds. The temperature and pressure in Room 236 return to ambient conditions in 6.7 minutes (Reference C-236).

Based on this information, it can be concluded that the laboratory test subjected the terminal block to an overall more severe environment than that which would result from a postulated HELB. Since the terminal block remained operable throughout the test and functional after the test, it can be concluded that the terminal block will remain functional during and after exposure to the accident environment which would result from the postulated HELB.

In addition, the terminal blocks were tested for temperature and humidity by the Stanwick Electrical Products Company. The high temperature test of 150°F for 8 hours was passed successfully with a test voltage of 600 volts D.C. (References V-35A, and V-35B). Maximum continuous use temperatures for the terminal block base and barrier materials (only non-metallic parts) are 302°F and 275°F, respectively (References W-2, AA). Stanwick also conducted a humidity test on the terminal blocks with  $90\% \pm 10\%$  relative humidity at 68°F using a test voltage of 500 volts D.C. No shorting or arcing occurred during the test (References V-35A, V-35B).

- 2. One year operating time is used as a conservative maximum specification.
- 3. This test data was obtained from a test performed by Duke Power Corporation on Stanwick terminal blocks (Reference ROC-35A). This test report is not available as a reference document.
- 4. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

Facility: Davis-Besse Unit 1 Docket: 50-346 COMPONENT MATERIALS EVALUATION SHEET



\_\_\_\_\_ Date: 11/1/83 Prepared by: 7. Jen Checked by: Druga

| Plant I.D. No<br>Manufacturer:  | 5.:EV50380<br>Stanwick   | Component:<br>Model No.:   | Termin<br>Typ    | nal Block  |                  |
|---|--|--|------------------|--|------------------|
|   |  | THERMAL AGIN   | ig l             | RADIATION  |                  |
| Parts List  | Materials List   | Qualification  | Reference        | Qualification  | Reference        |
| Perminal Block Links<br>Hounting Rods<br>Holts<br>Insert<br>Nuts<br>Perminal Block Base<br>Perminal Block Jarrier | Brass<br>Metallic<br>Silicone Bronze<br>Brass<br>Durez #791 Phenolic<br>Glass - Melamine | Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>40 Years @ 230°F<br>Greater than<br>40 Years @ 122°P | CAL-79<br>CAL-79 | Not Affected<br>Not Affected<br>Not Affected<br>Not Affected<br>3.0 x 10 <sup>8</sup> RADS<br>1.6 x 10 <sup>8</sup> RADS | CAL-79<br>CAL-79 |

Facility: Davis-Besse Unit 1 Docket: 50-346

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Prepared by: M. Jewis Date: 11/1/83 Checked by: Emailand Date: 11/1/83

| FOULPMENT DESCRIPTION   |  | ENVIRONMENT                 |                             | DOCUMENTATION REF. |                    | Qualification        | Outstanding           |  |
|---|--|-----------------------------|-----------------------------|--------------------|--------------------|----------------------|-----------------------|--|
| l boottimet beottimeters  | Parameter                              | Specification               | Qualification               | Specification      | Qualification      | Method               | Items                 |  |
| System: Generic 1E Elec-<br>trical Components                       |  | l Year                      | 1.1 Years                   | Note 2             | Note 1  <br>Note 3 | Simultaneous<br>Test | <br>  None<br>        |  |
| Plant ID No.: EV50650  <br> <br> Component: Terminal Block          | <br> Temperature <br>  (°F)            | 192.0                       | 345.0                       | C-208              | Note 3             | Simultaneous<br>Test | <br>  None<br>        |  |
| <br> Manufacturer: Stanwick  <br> <br> Model Number: Type G         | Pressure   <br>  (PSIA)                | 16.25                       | 74.7                        | <br>  C-208        | Note 3             | Simultaneous<br>Test | None<br>              |  |
| Function: Electrical<br>Circuit<br>Termination                      | Relative   <br>  Humidity   <br> ! (%) | 100.0                       | 100.0                       | A                  | Note 3             | Simultaneous<br>Test | <br>  None<br>        |  |
| Accuracy: Spec: N/A<br>Demon: N/A<br>Service: Electrical<br>Control | <br>  Chemical  <br>  Spray  <br>      | N/A                         | N/A                         | <br>  N/A<br>      | N/A                | N/A                  | I<br>I None<br>I<br>I |  |
| Location: Auxiliary Bldg.<br>Rm. 208                                | <br>  Radiation                        | 1.97 x 10 <sup>6</sup> RADS | 11.6 x 10 <sup>8</sup> RADS | <br>  T            | CAL-79  <br>Note 4 | Analysis             | <br>  None<br>        |  |
| Flood Level Elev: N/A<br>Above Flood Level: N/A                     | Aging  <br>  Aging                     | 40 Years                    | 40 Years                    | I                  | CAL-79             | Analysis             | None<br>              |  |
| Needed for:<br>  Hot Shutdown   X  <br>  Cold Shutdown   X          | <br>     <br>  Submergence <br>        | N/A                         | N/A                         | <br>  N/A<br>      | N/A                | N/A                  | <br>  None<br>        |  |





| <pre>?acility:<br/>Docket:</pre> | Davis-Besse Unit 1<br>50-346 |               | SYSTEM COMPONENT | VALUATION WORKSHEET | I<br>R | ndex No.: 221H-123A<br>ev. 2 |
|----------------------------------|------------------------------|---------------|------------------|---------------------|--------|------------------------------|
| Prepared b<br>Checked by         | y: n. ferin                  | Date: 11/-/13 | NO               | TES                 |        |                              |

1. The test subjected the terminal block to a peak temperature of 345°F. At 30 minutes after the start of the test, the temperature was 320°F, at 1 hour the temperature was 300°F, at 1-1/2 hours the temperature was 290°F, at 2 hours the temperature was 280°F, at 3 hours the temperature was 260°F, at 4 hours the temperature was 255°F, at 8 hours the temperature was 235°F, at 12 hours the temperature was 225°F, and at 18 hours the temperature was 220°F which was maintained for the duration of the 96-hour test. The test pressure peak was 74.7 psia and at 35 minutes the test pressure was down to 19.7 psia which was maintained for the duration of the duration of the duration of the 96 hours. The temperature in Room 208 peaks at 192°F in 7.1 seconds. The pressure in Room 208 peaks at 16.25 psia in 1.55 seconds. The temperature and pressure in Room 208 return to ambient conditions in 20 minutes (Reference C-208).

Based on this information, it can be concluded that the laboratory test subjected the terminal block to an overall more severe environment than that which would result from a postulated HELB. Since the terminal block remained operable throughout the test and functional after the test, it can be concluded that the terminal block will remain functional during and after exposure to the accident environment which would result from the postulated HELB.

In addition, the terminal blocks were tested for temperature and humidity by the Stanwick Electrical Products Company. The high temperature test of  $150^{\circ}F$  for 8 hours was passed successfully with a test voltage of 600 volts D.C. (References V-35A, and V-35B). Maximum continuous use temperatures for the terminal block base and barrier materials (only non-metallic parts) are 302°F and 275°F, respectively (References W-2, AA). Stanwick also conducted a humidity test on the terminal blocks with 90%  $\pm$  10% relative humidity at 68°F using a test voltage of 500 volts D.C. No shorting or arcing occurred during the test (References V-35A, V-35B).

- 2. One year operating time is used as a conservative maximum specification.
- 3. This test data was obtained from a test performed by Duke Power Corporation on Stanwick terminal blocks (Reference ROC-35A). This test report is not available as a reference document.
- 4. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

Pacility: Davis-Besse Unit 1 Docket: 50-346

Prepared by: Checked by: Date: 11

COMPONENT MATERIA EVALUATION SHEET



| Plant I.D. No.:EV50650  |  | Component:  | Termin           | Terminal Block   |                  |  |
|---|--|---|------------------|--|------------------|--|
| Manufacturer  | : Stanwick   | Model No.:  | Туј              | pe G   |                  |  |
|   | 1  | I THERMAL AGIN  | IG I             | RADIATION  |                  |  |
| Parts List  | Materials List   | Qualification   | Reference        | Qualification  | Reference        |  |
| Ferminal Block Links<br>Mounting Rods<br>Bolts<br>Insert<br>Nuts<br>Ferminal Block Base<br>Ferminal Block Barrier | Brass<br>  Metallic<br>  Silicone Bronze<br>  Brass<br>  Brass<br>  Durez \$791 Phenolic<br>  Glass - Melamine | Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>40 Years @ 230°F<br>Greater than<br>40 Years @ 122°F | CAL-79<br>CAL-79 | Not Affected<br>Not Affected<br>Not Affected<br>Not Affected<br>3.0 x 10 <sup>8</sup> RADS<br>1.6 x 10 <sup>8</sup> RADS | CAL-79<br>CAL-79 |  |

Pacility: Davis-Besse Unit 1 Docket: 50-346

Prepared by: n. fewin Date: 11/183 Checked by: Surgeond Date: 11/183

SYSTEM COMPONENT E LUATION WORKSHEET



| LEOUIPMENT DESCRIPTION  |  | ENVIRONMENT                |                                 | DOCUMENTATION REF. |                      | Qualification        | Outstanding |
|---|--|----------------------------|---------------------------------|--------------------|----------------------|----------------------|-------------|
|   | Parameter  | Specification              | Qualification                   | Specification      | Qualification        | Method               | Items       |
| <br> System: Generic 1E Elec-  <br>  trical Components                          | Operating  <br> Time                                 | l Year                     | <br>  l.l Years<br> <br>        | <br>  Note 2<br>   | Note 1 1<br>Note 3 1 | Simultaneous<br>Test | None<br>I   |
| Plant ID No.: EV50670<br>Component: Terminal Block                              | <br> Temperature <br>  (°F)                          | 221.0                      | 1<br>  345.0<br>                | C-314              | Note 3               | Simultaneous<br>Test | None        |
| Manufacturer: Stanwick  <br> <br> Model Number: Type G                          | Pressure   <br> (PSIA)                               | 19.76                      | 1 74.7                          | <br>  C-314        | Note 3               | Simultaneous<br>Test | None        |
| Punction: Electrical<br>  Circuit<br>  Termination                              | Relative  <br>  Relative  <br>  Humidity  <br>   (%) | 100.0                      | <br>  100.0<br>                 | А                  | <br>  Note 3    <br> | Simultaneous<br>Test | None        |
| Accuracy: Spec: N/A<br>Demon: N/A<br>Service: Electrical<br>Control             | <br>  Chemical  <br>  Spray  <br>                    | N/A                        | <br>  N/A<br>                   | N/A                | N/A                  | N/A                  | None        |
| Location: Auxiliary Bldg.<br>Rm. 314  | Radiation  | 1.0 x 10 <sup>6</sup> RADS | <br> 1.6 x 10 <sup>8</sup> RADS | T                  | CAL-79  <br>  Note 4 | Analysis             | None ·      |
| Flood Level Elev: N/A<br> Above Flood Level: N/A                                | <br>  Aging  | 40 Years                   | <br>  40 Years<br>              | I                  | CAL-79<br>Note 4     | Analysis             | None        |
| Needed for:<br>  Hot Shutdown ( <u>X</u> )<br> <br>  Cold Shutdown ( <u>X</u> ) | <br>  Submergence <br>                               | N/A                        | <br>  N/A<br>                   | <br>  N/A<br>      | N/A                  | N/A                  | None        |

Facility: s-Besse Unit 1 SYSTEM COMPONENT LUATION WORKSHEET Da Index No 221H-124A Docket: 50-346 Rev. NOTES Prepared by: Date: Date: Checked by:

1. The test subjected the terminal block to a peak temperature of 345°F. At 30 minutes after the start of the test, the temperature was 320°F, at 1 hour the temperature was 300°F, at 1-1/2 hours the temperature was 290°F, at 2 hours the temperature was 280°F, at 3 hours the temperature was 260°F, at 4 hours the temperature was 255°F, at 8 hours the temperature was 235°F, at 12 hours the temperature was 225°F, and at 18 hours the temperature was 220°F which was maintained for the duration of the 96-hour test. The test pressure peak was 74.7 psia and at 35 minutes the test pressure was down to 19.7 psia which was maintained for the duration of the duration of the 96 hours. The temperature in Room 314 peaks at 221°F in 1.55 seconds. The pressure in Room 314 peaks at 19.76 psia in .09 seconds. The temperature and pressure in Room 314 return to ambient conditions in 8 minutes (Reference C-314).

Based on this information, it can be concluded that the laboratory test subjected the terminal block to an overall more severe environment than that which would result from a postulated HELB. Since the terminal block remained operable throughout the test and functional after the test, it can be concluded that the terminal block will remain functional during and after exposure to the accident environment which would result from the postulated HELB.

In addition, the terminal blocks were tested for temperature and humidity by the Stanwick Electrical Products Company. The high temperature test of 150°F for 8 hours was passed successfully with a test voltage of 600 volts D.C. (References V-35A, and V-35B). Maximum continuous use temperatures for the terminal block base and barrier materials (only non-metallic parts) are 302°F and 275°F, respectively (References W-2, AA). Stanwick also conducted a humidity test on the terminal blocks with 90%  $\pm$  10% relative humidity at 68°F using a test voltage of 500 volts D.C. No shorting or arcing occurred during the test (References V-35A, V-35B).

- 2. One year operating time is used as a conservative maximum specification.
- 3. This test data was obtained from a test performed by Duke Power Corporation on Stanwick terminal blocks (Reference ROC-35A). This test report is not available as a reference document.
- 4. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

Facility: Davis-Besse Unit 1 Docket: 50-346

Prepared by: n. ke

Checked by: And

Date: 11/183 Date: 11/4/03

Component: Terminal Block Plant I.D. No.: EV50670 Model No.: Type G Manufacturer: Stanwick

|   | 1   | I THERMAL AG   | ING       | RADIATION  |           |  |
|---|---|--|-----------|--|-----------|--|
| Parts List  | Materials List  | Qualification  | Reference | Qualification  | Reference |  |
| Terminal Block Links<br>Mounting Rods<br>Bolts<br>Insert<br>Nuts<br>Terminal Block Base<br>Terminal Block Barrier | <br>  Brass<br>  Metallic<br>  Silicone Bronze<br>  Brass<br>  Brass<br>  Durez #791 Phenolic<br>  Glass - Melamine | <pre>I Not Sensitive I 40 Years @ 230°F I Greater than</pre> | CAL-79    | Not Affected<br>Not Affected<br>Not Affected<br>Not Affected<br>Not Affected<br>$3.0 \times 10^8$ RADS<br>$1.6 \times 10^8$ RADS | CAL-79    |  |

Material and Parts Reference List: V-35A, V-35B, ROC-35B

COMPONENT MATERIALS EVALUATION SHEET



Pacility: Dates-Besse Unit 1 Docket: 50-346

Prepared by: n. k.

Date: 11/183 Date: 11/183

| FOUTPMENT DESCRIPTION   |  | ENVIRONMENT   |                     | DOCUMENTA       | TION REF.                  | Qualification        | Outstanding         |  |
|---|--|---------------|---------------------|-----------------|----------------------------|----------------------|---------------------|--|
| I   | Parameter                              | Specification | Qualification       | Specification   | Qualification              | Method               | Items               |  |
| <br> System: Generic 1E Elec-  <br>  trical Components              | Operating  <br>  Time                  | l Year        | <br>  1.1 Years<br> | Note 2          | Note 1                     | Simultaneous<br>Test | None<br>            |  |
| Plant ID No.: EV50700<br>Component: Terminal Block                  | <br> Temperature <br>  (°F)            | 249.0         | 345.0               | <br>  C-500     | Note 3                     | Simultaneous<br>Test | <br>  None<br>      |  |
| Manufacturer: Stanwick  <br> <br> Model Number: Type G              |  | 15.61         | 74.7                | <br>  C-500<br> | Note 3                     | Simultaneous<br>Test | <br>  None<br>      |  |
| Function: Electrical<br>  Circuit<br>  Termination                  | Relative   <br>  Humidity   <br>   (%) | 100.0         | 100.0               | I A             | Note 3  <br>  Note 3  <br> | Simultaneous<br>Test | <br>  None<br>      |  |
| Accuracy: Spec: N/A<br>Demon: N/A<br>Service: Electrical<br>Control | <br> Chemical  <br> Spray              | N/A           | N/A                 | <br>  N/A<br>   | N/A                        | N/A                  | <br>  None<br> <br> |  |
| Location: Auxiliary Bldg.<br>Rm. 500                                | Radiation                              | N/A           | N/A                 | I N/A           | N/A                        | N/A                  | None                |  |
| Flood Level Elev: N/A  <br> Above Flood Level: N/A                  | Aging I                                | 40 Years      | <br>  40 Years<br>  | II              | CAL-79                     | Analysis             | <br>  None<br>      |  |
| Needed for:<br>Hot Shutdown   X    <br>Cold Shutdown   X            | <br>  Submergence                      | N/A           | N/A                 | <br>  N/A<br>   | N/A                        | N/A                  | <br>  None<br>      |  |

SYSTEM COMPONENT EXACUATION WORKSHEET



Facility: Davis-Besse Unit 1 SYSTEM COMPONENT EVALUATION WORKSHEET Index No.: 2218-125A Docket: 50-346 Rev. NOTES Prepared by: h. Kund Date: Checked by: Streek Date:

1. The test subjected the terminal block to a peak temperature of 345°F. At 30 minutes after the start of the test, the temperature was 320°F, at 1 hour the temperature was 300°F, at 1-1/2 hours the temperature was 290°F, at 2 hours the temperature was 280°F, at 3 hours the temperature was 260°F, at 4 hours the temperature was 255°F, at 8 hours the temperature was 235°F, at 12 hours the temperature was 225°F, and at 18 hours the temperature was 220°F which was maintained for the duration of the 96-hour test. The test pressure peak was 74.7 psia and at 35 minutes the test pressure was down to 19.7 psia which was maintained for the duration of the duration of the duration of the 96 hours. The temperature in Room 500 peaks at 249°F in 31 seconds. The pressure in Room 500 peaks at 15.61 psia in 9.6 seconds. The temperature and pressure in Room 500 return to ambient conditions in 19 minutes. (Reference C-500)

Based on this information, it can be concluded that the laboratory test subjected the terminal block to an overall more severe environment than that which would result from a postulated HELB. Since the terminal block remained operable throughout the test and functional after the test, it can be concluded that the terminal block will remain functional during and after exposure to the accident environment which would result from the postulated HELB.

In addition, the terminal blocks were tested for temperature and humidity by the Stanwick Electrical Products Company. The high temperature test of 150°F for 8 hours was passed successfully with a test voltage of 600 volts D.C. (References V-35A, and V-35B). Maximum continuous use temperatures for the terminal block base and barrier materials (only non-metallic parts) are 302°F and 275°F, respectively (References W-2, AA). Stanwick also conducted a humidity test on the terminal blocks with  $90\% \pm 10\%$  relative humidity at 68°F using a test voltage of 500 volts D.C. No shorting or arcing occurred during the test (References V-35A, V-35B).

- 2. One year operating time is used as a conservative maximum specification.
- 3. This test data was obtained from a test performed by Duke Power Corporation on Stanwick terminal blocks (Reference ROC-35A). This test report is not available as a reference document.
- 4. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

| Facility: | Davis-Besse | Unit | 1 |  |
|-----------|-------------|------|---|--|
| Docket:   | 50-346      |      |   |  |

COMPONENT MATERIALS EVALUATION SHEET



Prepared by: N. Ferni Date: 11/11/2 Checked by: Ancall Date: 11/11/2

| Plant I.D. No.:<br>Manufacturer:  |   | EV50700<br>Stanwick   |   | Component:<br>Model No.:  |    | Terminal Block |   |  |   |           |
|---|---|---|---|---|----|----------------|---|--|---|-----------|
|   | 1 |   |   | THERMAL AGI   | NG |                | 1 | RADIATIC   | N |           |
| Parts List  | 1 | Materials List  | 1 | Qualification   | 1  | Reference      | 1 | Qualification  | 1 | Reference |
| Terminal Block Links<br>Mounting Rods<br>Bolts<br>Insert<br>Nuts<br>Terminal Block Base |   | Brass<br>Metallic<br>Silicone Bronze<br>Brass<br>Brass<br>Durez #791 Phenolic |   | Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>40 Years @ 230°F |    | CAL-79         |   | Not Affected<br>Not Affected<br>Not Affected<br>Not Affected<br>Not Affected<br>3.0 x 10 <sup>8</sup> RADS |   | CAL-79    |
| Terminal Block Barrier  | i | Glass - Melamine  | 1 | Greater than  | 1  | CAL-79         | 1 | 1.6 x 10 <sup>8</sup> RADS   | 1 | CAL-79    |

40 Years @ 122°F

'acility: Davis-Besse Unit 1 50-346 locket:

SYSTEM COMPONENT EVALUATION WORKSHEET



repared by: h. fe

Date: 11/1/83 Date: 11/2/83

| EQUIPMENT DESCRIPTION   |                                   | ENVIRONMENT   |               | DOCUMENTATION REF. |                  | Qualification        | Outstanding |  |
|---|-----------------------------------|---------------|---------------|--------------------|------------------|----------------------|-------------|--|
|   | Parameter                         | Specification | Qualification | Specification      | Qualification    | Method               | Items       |  |
| System: Generic 1E Elec-  <br>trical Components                     | Operating  <br> Time              | l Year        | l.l Years     | Note 2             | Note 1<br>Note 3 | Simultaneous<br>Test | None        |  |
| Plant ID No.: EV50730<br>Component: Terminal Block                  | Temperature                       | 249.0         | 345.0         | 1 C-500            | Note 3           | Simultaneous<br>Test | None        |  |
| Manufacturer: Stanwick  <br>Model Number: Type G                    | Pressure (PSIA)                   | 15.61         | 74.7          | <br>  C-500        | Note 3           | Simultaneous<br>Test | None        |  |
| Function: Electrical<br>Circuit<br>Termination                      | Relative  <br> Humidity  <br> (%) | 100.0         | 100.0         |                    | <br>  Note 3     | Simultaneous<br>Test | None        |  |
| Accuracy: Spec: N/A<br>Demon: N/A<br>Service: Electrical<br>Control | <br> Chemical  <br> Spray  <br>   | N/A           | N/A           | N/A                | N/A              | N/A                  | None        |  |
| Location: Auxiliary Bldg.<br>Rm. 500                                | Radiation                         | N/A           | I N/A         | N/A                | N/A              | N/A                  | None        |  |
| Flood Level Elev: N/A  <br>Above Flood Level: N/A                   | Aging                             | 40 Years      | 40 Years      | I                  | CAL-79<br>Note 4 | Analysis             | None        |  |
| Needed for:<br>Hot Shutdown   X  <br>Cold Shutdown   X              | Submergence                       | N/A           | N/A           | N/A                | N/A              | N/A                  | None        |  |

| 'acility: Davis-Besse Unit 1   | SYSTEM COMPONENT EVALUATION WORKSHEET | Index No. 221H-126A |
|--|---------------------------------------|---------------------|
| repared by: <u>N. Fris</u> Date<br>hecked by: <u>Sprin Date</u> Date | 11/1/83 NOTES                         | kev.:               |

The test subjected the terminal block to a peak temperature of 345°F. At 30 minutes after the start of the test, the temperature was 320°F, at 1 hour the temperature was 300°F, at 1-1/2 hours the temperature was 290°F, at 2 hours the temperature was 280°F, at 3 hours the temperature was 260°F, at 4 hours the temperature was 255°F, at 8 hours the temperature was 235°F, at 12 hours the temperature was 225°F, and at 18 hours the temperature was 220°F which was maintained for the duration of the 96-hour test. The test pressure peak was 74.7 psia and at 35 minutes the test pressure was down to 19.7 psia which was maintained for the duration of the 96 hours. The temperature in Room 500 peaks at 249°F in 31 seconds. The pressure in Room 500 peaks at 15.61 psia in 9.6 seconds. The temperature and pressure in Room 500 return to ambient conditions in 19 minutes. (Reference C-500).

Based on this information, it can be concluded that the laboratory test subjected the terminal block to an overall more severe environment than that which would result from a postulated HELB. Since the terminal block remained operable throughout the test and functional after the test, it can be concluded that the terminal block will remain functional during and after exposure to the accident environment which would result from the postulated HELB.

In addition, the terminal blocks were tested for temperature and humidity by the Stanwick Electrical Products Company. The high temperature test of  $150^{\circ}F$  for 8 hours was passed successfully with a test voltage of 600 volts D.C. (References V-35A, and V-35B). Maximum continuous use temperatures for the terminal block base and barrier materials (only non-metallic parts) are  $302^{\circ}F$  and  $275^{\circ}F$ , respectively (References W-2, AA). Stanwick also conducted a humidity test on the terminal blocks with  $90^{\circ} \pm 10^{\circ}$  relative humidity at  $68^{\circ}F$  using a test voltage of 500 volts D.C. No shorting or arcing occurred during the test (References V-35A, V-35B).

- 2. One year operating time is used as a conservative maximum specification.
- 3. This test data was obtained from a test performed by Duke Power Corporation on Stanwick terminal blocks (Reference ROC-35A). This test report is not available as a reference document.
- 1. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

Facility: Davis-Besse Unit 1

COMPONENT MATERIALS EVALUATION SHEET



Docket: 50-346

Prepared by: h. Checked by: An

Date: 11/1/8

| 1                            | Plant I.D. No.:             | EV50730         |          | Component:                     | Termi     | Terminal Block               |           |  |
|------------------------------|-----------------------------|-----------------|----------|--------------------------------|-----------|------------------------------|-----------|--|
| Manufacturer:                |                             | Stanwick        | Stanwick |                                | Ту        | pe G                         |           |  |
| 1                            | 1                           |                 | 1        | THERMAL AGI                    | NG I      | RADIATION                    |           |  |
| l Pa                         | rts List                    | Materials List  | 1        | Qualification                  | Reference | Qualification                | Reference |  |
| <br>  Terminal<br>  Mounting | Block Links   B<br>Rods   M | rass<br>etallic |          | Not Sensitive<br>Not Sensitive |           | Not Affected<br>Not Affected |           |  |

| Parts List  | Materials List  | Qualification   | Reference        | Qualification  | Reference        |
|---|---|---|------------------|--|------------------|
| Terminal Block Links<br>Mounting Rods<br>Bolts<br>Insert<br>Nuts<br>Terminal Block Base<br>Terminal Block Barrier | Brass<br>  Metallic<br>  Silicone Bronze<br>  Brass<br>  Brass<br>  Durez #791 Phenolic<br>  Glass - Melamine | Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>40 Years @ 230°F<br>Greater than<br>40 Years @ 122°F | CAL-79<br>CAL-79 | Not Affected<br>Not Affected<br>Not Affected<br>Not Affected<br>Not Affected<br>$3.0 \times 10^8$ RADS<br>$1.6 \times 10^8$ RADS | CAL-79<br>CAL-79 |

'acility: Davis-Besse Unit 1 )ocket: 50-346

repared by: <u>N. fer</u> thecked by:

Date: 11/1/3 Date: 11/0/63

SYSTEM COMPONENT EVALUATION WORKSHEET

221H-127 Index No. Rev.: 2

| FOUTPMENT DESCRIPTION   | ENVIRONMENT                        |               |                    | DOCUMENTATION REF. |                  | Qualification        | Outstanding |
|---|------------------------------------|---------------|--------------------|--------------------|------------------|----------------------|-------------|
|   | Parameter                          | Specification | Qualification      | Specification      | Qualification    | Method               | Items       |
| System: Generic 1E Elec-<br>trical Components                             | Operating  <br>Time                | l Year        | 1.1 Years          | <br>  Note 2<br>   | Note 1<br>Note 3 | Simultaneous<br>Test | None        |
| Plant ID No.: EV50750<br>Component: Terminal Block                        | Temperature<br>(°F)                | 267.0         | 345.0              | C-501              | Note 3           | Simultaneous<br>Test | None        |
| Manufacturer: Stanwick<br>Model Number: Type G                            | Pressure<br>(PSIA)                 | 15.61         | 74.7               | C-501              | Note 3           | Simultaneous<br>Test | None        |
| Function: Electrical<br>Circuit<br>Termination                            | Relative  <br> Humidity  <br>  (%) | 100.0         | 100.0              | A                  | Note 3           | Simultaneous<br>Test | None        |
| Accuracy: Spec: N/A  <br>Demon: N/A  <br>Service: Electrical  <br>Control | Chemical  <br> Spray  <br>         | N/A           | N/A                | N/A                | N/A              | N/A                  | None        |
| Location: Auxiliary Bldg. <br>Rm. 501                                     | Radiation                          | N/A           | N/A                | <br>  N/A          | N/A              | N/A                  | None        |
| Flood Level Elev: N/A  <br>Above Flood Level: N/A                         | Aging                              | 40 Years      | <br>  40 Years<br> | I                  | CAL-79<br>Note 4 | Analysis             | None        |
| Needed for:<br>  Hot Shutdown   X    <br>  Cold Shutdown   X              | Submergence                        | N/A           | N/A                | N/A                | N/A              | N/A                  | None        |

| Pacility: Davis-Besse Unit 1                                      | SYSTEM COMPONENT EVALUATION WORKSHEET  | Index No.: 221H-127A<br>Rev.: 2 |
|---|--|---------------------------------|
| Prepared by: <b>N. fewis</b> Dat<br>Checked by: <b>Manual</b> Dat | e: <u>11/1/15</u><br>e: <u>11/2/13</u> |                                 |

1. The test subjected the terminal block to a peak temperature of 345°F. At 30 minutes after the start of the test, the temperature was 320°F, at 1 hour the temperature was 300°F, at 1-1/2 hours the temperature was 290°F, at 2 hours the temperature was 280°F, at 3 hours the temperature was 260°F, at 4 hours the temperature was 255°F, at 8 hours the temperature was 235°F, at 12 hours the temperature was 225°F, and at 18 hours the temperature was 220°F which was maintained for the duration of the 96-hour test. The test pressure peak was 74.7 psia and at 35 minutes the test pressure was down to 19.7 psia which was maintained for the duration of the 96 hours. The temperature in Room 501 peaks at 267°F in 31 seconds. The pressure in Room 501 peaks at 15.6 psia in 9.5 seconds. The temperature and pressure in Room 501 return to ambient conditions in 19 minutes. (Reference C-501).

Based on this information, it can be concluded that the laboratory test subjected the terminal block to an overall more severe environment than that which would result from a postulated HELB. Since the terminal block remained operable throughout the test and functional after the test, it can be concluded that the terminal block will remain functional during and after exposure to the accident environment which would result from the postulated HELB.

In addition, the terminal blocks were tested for temperature and humidity by the Stanwick Electrical Products Company. The high temperature test of  $150^{\circ}F$  for 8 hours was passed successfully with a test voltage of 600 volts D.C. (References V-35A, and V-35B). Maximum continuous use temperatures for the terminal block base and barrier materials (only non-metallic parts) are  $302^{\circ}F$  and  $275^{\circ}F$ , respectively (References W-2, AA). Stanwick also conducted a humidity test on the terminal blocks with  $90^{\circ} \pm 10^{\circ}$  relative humidity at  $68^{\circ}F$  using a test voltage of 500 volts D.C. No shorting or arcing occurred during the test (References V-35A, V-35B).

- 2. One year operating time is used as a conservative maximum specification.
- This test data was obtained from a test performed by Duke Power Corporation on Stanwick terminal blocks (Reference ROC-35A). This test report is not available as a reference document.
- 4. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.



Facility: Davis-Besse Unit 1 Docket: 50-346

COMPONENT MATERIALS EVALUATION SHEET



0

Docket:

Prepared by: <u>h.</u> Checked by:

Date: 11/1/87

| Plant I.D. No.: | EV50750  |   | Component:    | Terminal Block | k         |  |
|-----------------|----------|---|---------------|----------------|-----------|--|
| Manufacturer:   | Stanwick |   | Model No.:    | Туре G         |           |  |
|                 |          | 4 | THERMAL AGING | 1              | RADIATION |  |

| Parts List  | Materials List  | Qualification  | Reference | Qualification  | Reference        |
|---|---|--|-----------|--|------------------|
| Terminal Block Links<br>Mounting Rods<br>Bolts<br>Insert<br>Nuts<br>Terminal Block Base<br>Terminal Block Barrier | Brass<br>Metallic<br>Silicone Bronze<br>Brass<br>Brass<br>Durez #791 Phenolic<br>Glass - Melamine | Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>40 Years @ 230°F<br>Greater than<br>40 Years @ 122°F | CAL-79    | Not Affected<br>Not Affected<br>Not Affected<br>Not Affected<br>Not Affected<br>$3.0 \times 10^8$ RADS<br>$1.6 \times 10^8$ RADS | CAL-79<br>CAL-79 |

?acility: Davis-Besse Unit 1

SYSTEM COMPONENT EVALUATION WORKSHEET



)ocket: 50-346

Prepared by: 7. Jen Date: 11/83 Thecked by: Ara Const Date: 11/83

| EQUIPMENT DESCRIPTION   | 1                           | ENVIRONMENT   |               | DOCUMENTATION REF. |                  | Qualification        | Outstanding |
|---|-----------------------------|---------------|---------------|--------------------|------------------|----------------------|-------------|
|   | Parameter                   | Specification | Qualification | Specification      | Qualification    | Method               | Items       |
| System: Generic 1E Elec-  <br>trical Components                           | Operating  <br> Time        | l Year        | 1.1 Years     | Note 2             | Note 1<br>Note 3 | Simultaneous<br>Test | None        |
| Plant ID No.: EV50780<br>Component: Terminal Block                        | Temperature<br>(°F)         | 267.0         | 345.0         | C-501              | Note 3           | Simultaneous<br>Test | None        |
| Manufacturer: Stanwick  <br>Model Number: Type G                          | Pressure  <br>(PSIA)        | 15.61         | 74.7          | C-501              | Note 3           | Simultaneous<br>Test | None        |
| Function: Electrical  <br>Circuit  <br>Termination                        | Relative<br>Humidity<br>(%) | 100.0         | 100.0         | A I                | Note 3           | Simultaneous<br>Test | None        |
| Accuracy: Spec: N/A  <br>Demon: N/A  <br>Service: Electrical  <br>Control | Chemical                    | N/A           | N/A           | N/A                | N/A              | N/A                  | None        |
| Location: Auxiliary Bldg.  <br>Rm. 501                                    | Radiation                   | N/A           | N/A           | N/A                | N/A              | N/A                  | None        |
| Flood Level Elev: N/A  <br>Above Flood Level: N/A                         | Aging                       | 40 Years      | 40 Years      | I                  | CAL-79<br>Note 4 | Analysis             | None        |
| Needed for:<br>Hot Shutdown   X    <br>Cold Shutdown   X                  | Submergence                 | N/A           | N/A           | N/A                | N/A              | N/A                  | None        |

| Facility: Davis-Besse Unit 1   | SYSTEM COMPONENT EVALUATION WORKSHEET | Index No.: 221H-128A<br>Rev.: 2 |
|--|---------------------------------------|---------------------------------|
| Docket: 50-346<br>Prepared by: <u><b>n</b></u> . Kino<br>Checked by: <u>Araban</u> | Date: 11/1/83<br>Date: 11/3/63        |                                 |

1. The test subjected the terminal block to a peak temperature of 345°F. At 30 minutes after the start of the test, the temperature was 320°F, at 1 hour the temperature was 300°F, at 1-1/2 hours the temperature was 290°F, at 2 hours the temperature was 280°F, at 3 hours the temperature was 260°F, at 4 hours the temperature was 255°F, at 8 hours the temperature was 235°F, at 12 hours the temperature was 225°F, and at 18 hours the temperature was 220°F which was maintained for the duration of the 96-hour test. The test pressure peak was 74.7 psia and at 35 minutes the test pressure was down to 19.7 psia which was maintained for the duration of the 96 hours. The temperature in Room 501 peaks at 267°F in 31 seconds. The pressure in Room 501 peaks at 15.6 psia in 9.5 seconds. The temperature and pressure in Room 501 return to ambient conditions in 19 minutes. (Reference C-501).

Based on this information, it can be concluded that the laboratory test subjected the terminal block to an overall more severe environment than that which would result from a postulated HELB. Since the terminal block remained operable throughout the test and functional after the test, it can be concluded that the terminal block will remain functional during and after exposure to the accident environment which would result from the postulated HELB.

In addition, the terminal blocks were tested for temperature and humidity by the Stanwick Electrical Products Company. The high temperature test of  $150^{\circ}F$  for 8 hours was passed successfully with a test voltage of 600 volts D.C. (References V-35A, and V-35B). Maximum continuous use temperatures for the terminal block base and barrier materials (only non-metallic parts) are  $302^{\circ}F$  and  $275^{\circ}F$ , respectively (References W-2, AA). Stanwick also conducted a humidity test on the terminal blocks with  $90^{\circ} \pm 10^{\circ}$  relative humidity at  $68^{\circ}F$  using a test voltage of 500 volts D.C. No shorting or arcing occurred during the test (References V-35A, V-35B).

- 2. One year operating time is used as a conservative maximum specification.
- This test data was obtained from a test performed by Duke Power Corporation on Stanwick terminal blocks (Reference ROC-35A). This test report is not available as a reference document.
- 4. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

Facility: Davis-Besse Unit 1

COMPONENT MATERIALS EVALUATION SHEET



Docket: 50-346

Prepared by: n. Ferre Date: 11/1/13 Checked by: Amand Date: 1/1/13

| Plant I.D. No<br>Manufacturer:  | Stanwick  | Component:<br>Model No.:  | Termi<br>Ty      | nal Block  | 1.00             |
|---|---|---|------------------|--|------------------|
|   |   | THERMAL AGIN  | G I              | RADIATION  |                  |
| Parts List  | Materials List  | Qualification   | Reference        | Qualification  | Reference        |
| Terminal Block Links<br>Mounting Rods<br>Bolts<br>Insert<br>Nuts<br>Terminal Block Base<br>Terminal Block Barrier | Brass<br>Metallic<br>Silicone Bronze<br>Brass<br>Brass<br>Durez #791 Phenolic<br>Glass - Melamine | Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>40 Years @ 230°F<br>Greater than<br>40 Years @ 122°F | CAL-79<br>CAL-79 | Not Affected<br>Not Affected<br>Not Affected<br>Not Affected<br>Not Affected<br>$3.0 \times 10^8$ RADS<br>$1.6 \times 10^8$ RADS | CAL-79<br>CAL-79 |

?acility: Davis-Besse Unit 1
Docket: 50-346

SYSTEM COMPONENT EVALUATION WORKSHEET



Prepared by: n. kin Checked by:

Date: 11/1/13 Date: 11/1/13

| FOUTDMENT DESCRIPTION   | ENVIRONMENT                 |                            |                                 | DOCUMENTATION REF. |                  | Qualification        | Outstanding |  |
|---|-----------------------------|----------------------------|---------------------------------|--------------------|------------------|----------------------|-------------|--|
| SUIPMENT DESCRIPTION  | Parameter                   | Specification              | Qualification                   | Specification      | Qualification    | Method               | Items       |  |
| System: Generic 1E Elec-<br>trical Components                             | Operating                   | l Year                     | 1.1 Years                       | Note 2             | Note 1 Note 3    | Simultaneous<br>Test | None        |  |
| Plant ID No.: EV50900<br>Component: Terminal Block                        | Temperature<br>(°F)         | 221.0                      | 345.0                           | C-314              | Note 3           | Simultaneous<br>Test | None        |  |
| Manufacturer: Stanwick  <br>  <br>Model Number: Type G                    | Pressure<br>(PSIA)          | 19.76                      | 74.7                            | C-314              | Note 3           | Simultaneous<br>Test | None        |  |
| Function: Electrical  <br>Circuit  <br>Termination                        | Relative<br>Humidity<br>(%) | 100.0                      | 100.0                           | A I                | Note 3           | Simultaneous<br>Test | None        |  |
| Accuracy: Spec: N/A  <br>Demon: N/A  <br>Service: Electrical  <br>Control | <br> Chemical<br> Spray     | N/A                        | <br>  N/A<br>                   | <br>  N/A<br>      | N/A              | N/A                  | None        |  |
| Location: Auxiliary Bldg. <br>Rm. 314                                     | Radiation                   | 1.0 x 10 <sup>6</sup> RADS | <br> 1.6 x 10 <sup>8</sup> RADS | I T                | CAL-79<br>Note 4 | Analysis             | None        |  |
| Flood Level Elev: N/A<br>Above Flood Level: N/A                           | Aging                       | 40 Years                   | 40 Years                        | I                  | CAL-79<br>Note 4 | Analysis             | None        |  |
| Needed for:<br>Hot Shutdown X   | <br> <br> Submergence       | N/A                        | <br>  N/A<br>                   | <br>  N/A          | N/A              | N/A                  | None        |  |

| Facility: Davis-Besse Unit 1   | SYSTEM COMPONENT EVALUATION WORKSHEET | Index No.: 221H-129A<br>Rev.: 2 |
|--|---------------------------------------|---------------------------------|
| Docket: 50-346<br>Prepared by: <b>D. Jun</b><br>Checked by: <b>D. Jun</b><br>Date: Date: | 11/1/83 NOTES                         |                                 |

1. The test subjected the terminal block to a peak temperature of 345°F. At 30 minutes after the start of the test, the temperature was 320°F, at 1 hour the temperature was 300°F, at 1-1/2 hours the temperature was 290°F, at 2 hours the temperature was 280°F, at 3 hours the temperature was 260°F, at 4 hours the temperature was 255°F, at 8 hours the temperature was 235°F, at 12 hours the temperature was 225°F, and at 18 hours the temperature was 220°F which was maintained for the duration of the 96 hours. The temperature in Room 314 peaks at 221°F in 1.55 seconds. The pressure in Room 314 peaks at 19.76 psia in .09 seconds. The temperature and pressure in Room 314 return to ambient conditions in 8 minutes (Reference C-314).

Based on this information, it can be concluded that the laboratory test subjected the terminal block to an overall more severe environment than that which would result from a postulated HELB. Since the terminal block remained operable throughout the test and functional after the test, it can be concluded that the terminal block will remain functional during and after exposure to the accident environment which would result from the postulated HELB.

In addition, the terminal blocks were tested for temperature and humidity by the Stanwick Electrical Products Company. The high temperature test of  $150^{\circ}F$  for 8 hours was passed successfully with a test voltage of 600 volts D.C. (References V-35A, and V-35B). Maximum continuous use temperatures for the terminal block base and barrier materials (only non-metallic parts) are  $302^{\circ}F$  and  $275^{\circ}F$ , respectively (References W-2, AA). Stanwick also conducted a humidity test on the terminal blocks with  $90^{\circ} \pm 10^{\circ}$  relative humidity at  $68^{\circ}F$  using a test voltage of 500 volts D.C. No shorting or arcing occurred during the test (References V-35A, V-35B).

- 2. One year operating time is used as a conservative maximum specification.
- This test data was obtained from a test performed by Duke Power Corporation on Stanwick terminal blocks (Reference ROC-35A). This test report is not available as a reference document.
- 4. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.



Facility: Davis-Besse Unit 1 Docket: 50-346 COMPONENT MATERIALS EVALUATION SHEET



Docket: 50 Prepared by:

Checked by :

Date: Date: At

Terminal Block Component: Plant I.D. No.: EV50900 Type G Model No.: Manufacturer: Stanwick

|   | 1   | THERMAL AGI  | NG I      | RADIATION  | 4                |
|---|---|--|-----------|--|------------------|
| Parts List  | Materials List  | Qualification  | Reference | Qualification  | Reference        |
| Terminal Block Links<br>Mounting Rods<br>Bolts<br>Insert<br>Nuts<br>Terminal Block Base<br>Terminal Block Barrier | Brass<br>  Metallic<br>  Silicone Bronze<br>  Brass<br>  Brass<br>  Durez #791 Phenolic<br>  Glass - Melamine | Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>40 Years @ 230°F<br>Greater than<br>40 Years @ 122°F | CAL-79    | Not Affected<br>Not Affected<br>Not Affected<br>Not Affected<br>Not Affected<br>$3.0 \times 10^8$ RADS<br>$1.6 \times 10^8$ RADS | CAL-79<br>CAL-79 |



SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-130 Rev.: 2

Facility: Davis-Besse Unit 1 Docket: 50-346

Prepared by: n. for

\_\_\_\_\_ Date: 11/1/83

| FOULTPMENT DESCRIPTION  | II ENVIRONMENT              |                            |                            | DOCUMENTATION REF. |                  | Qualification        | Outstanding |
|---|-----------------------------|----------------------------|----------------------------|--------------------|------------------|----------------------|-------------|
|   | Parameter                   | Specification              | Qualification              | Specia ication     | Qualification    | Method               | Items       |
| System: Generic 1E Elec-<br>trical Components                       | Operating                   | l Year                     | 1.1 Years                  | Note 2             | Note 1<br>Note 3 | Simultaneous<br>Test | None        |
| Plant ID No.: EV54210<br>Component: Terminal Block                  | Temperature<br>(°F)         | 130.0                      | <br>  345.0                | C-105              | Note 3           | Simultaneous<br>Test | None        |
| Manufacturer: Stanwick<br>Model Number: Type G                      | Pressure<br>(PSIA)          | 16.06                      | 74.7                       | C-105              | Note 3           | Simultaneous<br>Test | None        |
| Function: Electrical<br>Circuit<br>Termination                      | Relative<br>Humidity<br>(%) | 100.0                      | <br>  100.0                | A                  | Note 3           | Simultaneous<br>Test | None        |
| Accuracy: Spec: N/A<br>Demon: N/A<br>Service: Electrical<br>Control | <br> Chemical<br> Spray     | N/A                        | N/A                        | N/A                | N/A              | N/A                  | None        |
| Location: Auxiliary Bldg.<br>Rm. 105                                | Radiation                   | 1.9 x 10 <sup>6</sup> RADS | 1.6 x 10 <sup>8</sup> NADS | T                  | CAL-79<br>Note 4 | Analysis             | None        |
| Flood Level Elev: N/A<br>Above Flood Level: N/A                     | Aging                       | 40 Years                   | <br>  40 Years             | I                  | CAL-79           | Aualysis             | None        |
| Needed for:<br>Hot Shutdown X                                       | <br> Submergence            | N/A                        | N/A                        | N/A                | N/A              | N/A                  | None        |

| Facility: Davis-Besse Unit 1  | SYSTEM COMPONENT EVALUATION WORKSHEET | Index Not 221H-130A<br>Rev.: 2 |
|---|---------------------------------------|--------------------------------|
| Docket: 50-346<br>Prepared by: <b>N. Jewis</b> Date:<br>Checked by: <u>IsrauConel</u> Date: | notes                                 |                                |

1. The test subjected the terminal block to a peak temperature of 345°F. At 30 minutes after the start of the test, the temperature was 320°F, at 1 hour the temperature was 300°F, at 1-1/2 hours the temperature was 290°F, at 2 hours the temperature was 280°F, at 3 hours the temperature was 260°F, at 4 hours the temperature was 255°F, at 8 hours the temperature was 235°F, at 12 hours the temperature was 225°F, and at 18 hours the temperature was 220°F which was maintained temperature was 235°F, at 12 hours the temperature was 225°F, and at 18 hours the temperature was 220°F which was maintained for the duration of the 96-hour test. The test pressure peak was 74.7 psia and at 35 minutes the test pressure was down to 19.7 psia which was maintained for the duration of the 96 hours. The temperature in Room 105 peaks at 130°F in 19 seconds. The pressure in Room 105 peaks at 16.06 psia in 1.75 seconds. The temperature and pressure in Room 105 return to ambient conditions in 24 minutes (Reference C-105).

Based on this information, it can be concluded that the laboratory test subjected the terminal block to an overall more severe environment than that which would result from a postulated HELB. Since the terminal block remained operable throughout the test and functional after the test, it can be concluded that the terminal block will remain functional during and after exposure to the accident environment which would result from the postulated HELB.

In addition, the terminal blocks were tested for temperature and humidity by the Stanwick Electrical Products Company. The high temperature test of  $150^{\circ}$ F for 8 hours was passed successfully with a test voltage of 600 volts D.C. (References V-35A, and V-35B). Maximum continuous use temperatures for the terminal block base and barrier materials (orly non-metallic parts) are 302°F and 275°F, respectively (References W-2, AA). Stanwick also conducted a humidity test on the terminal blocks with 90% ± 10% relative humidity at 68°F using a test voltage of 500 volts D.C. No shorting or arcing occurred during the test (References V-35A, V-35B).

- 2. One year operating time is used as a conservative maximum specification.
- This test data was obtained from a test performed by Duke Power Corporation on Stanwick terminal blocks (Reference ROC-35A). This test report is not available as a reference document.

. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.
Facility: Davis-Besse Unit 1

COMPONENT MATERIALS EVALUATION SHEET



Docket: 50-346

Prepared by: n. k.

Date: 11/1/83

| Plant I.D. No.: | EV54210  | Component: | Terminal Block |
|-----------------|----------|------------|----------------|
| Manufacturer:   | Stanwick | Model No.: | Туре С         |

|   | I show the second se | THERMAL AGI  | NG        | RADIATION  | N                |
|---|---|--|-----------|--|------------------|
| Parts List  | Materials List  | Qualification  | Reference | Qualification  | Reference        |
| Terminal Block Links<br>Mounting Rods<br>Bolts<br>Insert<br>Nuts<br>Terminal Block Base<br>Terminal Block Barrier | Brass<br>  Metallic<br>  Silicone Bronze<br>  Brass<br>  Brass<br>  Durez #791 Phenolic<br>  Glass - Melamine   | Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>40 Years @ 230°F<br>Greater than<br>40 Years @ 122°F | CAL-79    | Not Affected<br>Not Affected<br>Not Affected<br>Not Affected<br>3.0 x 10 <sup>8</sup> RADS<br>1.6 x 10 <sup>8</sup> RADS | CAL-79<br>CAL-79 |

acility: Davis-Besse Unit 1 ocket: 50-346 SYSTEM COMPONENT EVALUATION WORKSHEET



repared by: n. ferre Date: 11/1/83 hecked by: Amande Date: 11/1/83

| FOUTPMENT DESCRIPTION   | ENVIRONMENT                 |                            |                            | DOCUMENTATION REF. |                  | Qualification        | Outstanding |  |
|---|-----------------------------|----------------------------|----------------------------|--------------------|------------------|----------------------|-------------|--|
|   | Parameter                   | Specification              | Qualification              | Specification      | Qualification    | Method               | Items       |  |
| System: Generic 1E Elec-  <br>trical Components                           | Operating                   | l Year                     | 1.1 Years                  | Note 2             | Note 1<br>Note 3 | Simultaneous<br>Test | None        |  |
| Plant ID No.: EV54220<br>Component: Terminal Block                        | Temperature<br>(°F)         | 130.0                      | 345.0                      | C-105              | Note 3           | Simultaneous<br>Test | None        |  |
| Manufacturer: Stanwick  <br> <br>Model Number: Type G                     | Pressure<br>(PSIA)          | 16.06                      | 1 74.7                     | c-105              | Note 3           | Simultaneous<br>Test | None        |  |
| Function: Electrical  <br>Circuit  <br>Termination                        | Relative<br>Humidity<br>(%) | 100.0                      | <br>  100.0<br>            | A                  | Note 3           | Simultaneous<br>Test | None        |  |
| Accuracy: Spec: N/A  <br>Demon: N/A  <br>Service: Electrical  <br>Control | <br> Chemical<br> Spray     | N/A                        | N/A                        | N/A                | N/A              | N/A                  | None        |  |
| Location: Auxiliary Bldg.<br>Rm. 105                                      | Radiation                   | 1.9 x 10 <sup>6</sup> RADS | 1.6 x 10 <sup>8</sup> RADS | I T                | CAL-79<br>Note 4 | Analysis             | None        |  |
| Flood Level Elev: N/A  <br>Above Flood Level: N/A                         | Aging                       | 40 Years                   | <br>  40 Years<br>         | I                  | CAL-79<br>Note 4 | Analysis             | None        |  |
| Needed for:<br>Hot Shutdown   X    <br>Cold Shutdowr   X                  | <br> Submergence            | N/A                        | <br>  N/A                  | N/A                | N/A              | N/A                  | None        |  |

| Facility: Davis-Besse Unit 1  | SYSTEM COMPONENT EVALUATION WORKSHEET | Index No. 221H-131A |
|---|---------------------------------------|---------------------|
| Docket: 50-346<br>Prepared by: <b>N. Acing</b> Date:<br>Checked by: <b>Statemen</b> Date: | ulii (1) NOTES                        |                     |

1. The test subjected the terminal block to a peak temperature of 345°F. At 30 minutes after the start of the test, the temperature was 320°F, at 1 hour the temperature was 300°F, at 1-1/2 hours the temperature was 290°F, at 2 hours the temperature was 280°F, at 3 hours the temperature was 260°F, at 4 hours the temperature was 255°F, at 8 hours the temperature was 235°F, at 12 hours the temperature was 225°F, and at 18 hours the temperature was 220°F which was maintained for the duration of the 96-hour test. The test pressure peak was 74.7 psia and at 35 minutes the test pressure was down to 19.7 psia which was maintained for the duration of the 96 hours. The temperature in Room 105 peaks at 130°F in 19 seconds. The pressure in Room 105 peaks at 16.06 psia in 1.75 seconds. The temperature and pressure in Room 105 return to ambient conditions in 24 minutes (Reference C-105).

Based on this information, it can be concluded that the laboratory test subjected the terminal block to an overall more severe environment than that which would result from a postulated HELB. Since the terminal block remained operable throughout the test and functional after the test, it can be concluded that the terminal block will remain functional during and after exposure to the accident environment which would result from the postulated HELB.

In addition, the terminal blocks were tested for temperature and humidity by the Stanwick Electrical Products Company. The high temperature test of 150°F for 8 hours was passed successfully with a test voltage of 600 volts D.C. (References V-35A, and V-35B). Maximum continuous use temperatures for the terminal block base and barrier materials (only non-metallic parts) are 302°F and 275°F, respectively (References W-2, AA). Stanwick also conducted a humidity test on the terminal blocks with 90% ± 10% relative humidity at 68°F using a test voltage of 500 volts D.C. No shorting or arcing occurred during the test (References V-35A, V-35B).

- 2. One year operating time is used as a conservative maximum specification.
- This test data was obtained from a test performed by Duke Power Corporation on Stanwick terminal blocks (Reference ROC-35A). This test report is not available as a reference document.
- 4. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

Facility: Davis-Besse Unit 1 50-346

COMPONENT MATERIALS EVALUATION SHEET



Docket:

Date: 1/1/ Prepared by: n. fe

| Plant I.D. No.: EV54220<br>Manufacturer: Stanwick   |  | Component:<br>Model No.:  | Termi<br>Ty      | Terminal Block<br>Type G   |                  |  |
|---|--|---|------------------|--|------------------|--|
|   |  | THERMAL AGIN  | I I              | RADIATION  |                  |  |
| Parts List  | Materials List   | Qualification   | Reference        | Qualification  | Reference        |  |
| Terminal Block Links<br>Mounting Rods<br>Bolts<br>Insert<br>Nuts<br>Terminal Block Base<br>Terminal Block Barrier | Brass<br>Metallic<br>Silicone Bronze<br>Brass<br>Durez #791 Phenolic<br>Glass - Melamine | Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>40 Years @ 230°F<br>Greater than<br>40 Years @ 122°F | CAL-79<br>CAL-79 | Not Affected<br>Not Affected<br>Not Affected<br>Not Affected<br>3.0 x 10 <sup>8</sup> RADS<br>1.6 x 10 <sup>8</sup> RADS | CAL-79<br>CAL-79 |  |

Facility: Davis-Besse Unit 1 Jocket: 50-346

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-132 Rev.: 2

Date: 11/1/62 Prepared by: J. Ferri Checked by:

| FOULTPMENT DESCRIPTION  | ENVIRONMENT                  |                            |                            | DOCUMENTATION REF. |                  | Qualification        | Outstanding |
|---|------------------------------|----------------------------|----------------------------|--------------------|------------------|----------------------|-------------|
|   | Parameter                    | Specification              | Qualification              | Specification      | Qualification    | Method               | Items       |
| System: Generic 1E Elec-<br>trical Components                             | Operating                    | l Year                     | 1.1 Years                  | Note 2             | Note 1<br>Note 3 | Simultaneous<br>Test | None        |
| Plant ID No.: EV54230<br>Component: Terminal Block                        | Temperature<br>(°F)          | 155.0                      | 345.0                      | C-113              | Note 3           | Simultaneous<br>Test | None        |
| Manufacturer: Stanwick<br>Model Number: Type G                            | Pressure (PSIA)              | 16.06                      | 74.7                       | C-113              | Note 3           | Simultaneous<br>Test | None        |
| Function: Electrical<br>Circuit<br>Termination                            | Relative<br>Humaidity<br>(%) | 100.0                      | 100.0                      | A                  | Note 3           | Simultaneous<br>Test | None        |
| Accuracy: Spec: N/A  <br>Demon: N/A  <br>Service: Electrical  <br>Control | <br> Chemical<br> Spray      | N/A                        | N/A                        | N/A                | N/A              | n/a                  | None        |
| Location: Auxiliary Bldg.   | Radiation                    | 7.1 x 10 <sup>6</sup> RADS | 1.6 x 10 <sup>8</sup> RADS | l T                | CAL-79<br>Note 4 | Analysis             | None        |
| Flood Level Elev: N/A  <br>Above Flood Level: N/A                         | Aging                        | 40 Years                   | 40 Years                   | I                  | CAL-79<br>Note 4 | Analysis             | None        |
| Needed for:<br>Hot Shutdown   X  <br>Cold Shutdown   X                    | Submergence                  | N/A                        | N/A                        | N/A                | N/A              | N/A                  | None        |

| Pacility: Davis-Besse Unit 1                                  | SYSTEM COMPONENT EVALUATION WORKSHEET | Index No. 221H-132A<br>Rev.: 2 |  |
|---|---------------------------------------|--------------------------------|--|
| Prepared by: <u>h. Ferre</u><br>Thecked by: <u>Derreconse</u> | Date: 11/1/3<br>Date: 1/1/3           |                                |  |

1. The test subjected the terminal block to a peak temperature of 345°F. At 30 minutes after the start of the test, the temperature was 320°F, at 1 hour the temperature was 300°F, at 1-1/2 hours the temperature was 290°F, at 2 hours the temperature was 280°F, at 3 hours the temperature was 260°F, at 4 hours the temperature was 255°F, at 8 hours the temperature was 235°F, at 12 hours the temperature was 225°F, and at 18 hours the temperature was 220°F which was maintained for the duration of the 96-hour test. The test pressure peak was 74.7 psia and at 35 minutes the test pressure was down to 19.7 psia which was maintained for the duration of the 96 hours. The temperature in Room 113 peaks at 155°F in 19 seconds. The pressure in Room 113 peaks at 16.06 psia in 1.75 seconds. The temperature and pressure in Room 113 return to ambient conditions in 6.7 minutes (Reference C-113).

Based on this information, it can be concluded that the laboratory test subjected the terminal block to an overall more severe environment than that which would result from a postulated HELB. Since the terminal block remained operable throughout the test and functional after the test, it can be concluded that the terminal block will remain functional during and after exposure to the accident environment which would result from the postulated HELB.

In addition, the terminal blocks were tested for temperature and humidity by the Stanwick Electrical Products Company. The high temperature test of 150°F for 8 hours was passed successfully with a test voltage of 600 volts D.C. (References V-35A, and V-35B). Maximum continuous use temperatures for the terminal block base and barrier materials (only non-metallic parts) are  $302^{\circ}F$  and  $275^{\circ}F$ , respectively (References W-2, AA). Stanwick also conducted a humidity test on the terminal blocks with  $90^{\circ} \pm 10^{\circ}$  relative humidity at  $68^{\circ}F$  using a test voltage of 500 volts D.C. No shorting or arcing occurred during the test (References V-35A, V-35B).

- 2. One year operating time is used as a conservative maximum specification.
- 3. This test data was obtained from a test performed by Duke Power Corporation on Stanwick terminal blocks (Reference ROC-35A). This test report is not available as a reference document.
- 4. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

Facility: Davis-Besse Unit 1 Docket: 50-346 COMPONENT MATERIALS EVALUATION SHEET

Index No. 221H-132B Rev.: 2

Prepared by: Checked by:

Fins Date: /

Terminal Block Component: EV54230 Plant I.D. No.: Type G Model No.: Stanwick Manufacturer: THERMAL AGING RADIATION Qualification Reference Qualification Reference Materials List Parts List Not Affected Not Sensitive Brass Terminal Block Links Not Affected Not Sensitive Metallic Mounting Rods Not Affected Not Sensitive Silicone Bronze Bolts Not Affected Not Sensitive Brass Insert Not Affected Not Sensitive Brass Nuts 3.0 x 10<sup>8</sup> RADS CAL-79 CAL-79 40 Years @ 230°F Durez #791 Phenolic Terminal Block Base 1.6 x 10<sup>8</sup> RADS CAL-79 Greater than CAL-79 Glass - Melamine Terminal Block Barrier 40 Years @ 122°F



Facility: Davis-Besse Unit 1

SYSTEM COMPONENT EVALUATION WORKSHEET



3

)ocket: 50-346

Prepared by: h. kins Date: 11/1/83 Thecked by: Employed Date: 11/1/83

| FOUTPMENT DESCRIPTION   | ENVIRONMENT             |                             |                            | DOCUMENTATION REF. |                  | Qualification        | Outstanding |
|---|-------------------------|-----------------------------|----------------------------|--------------------|------------------|----------------------|-------------|
|   | Parameter               | Specification               | Qualification              | Specification      | Qualification    | Method               | Items       |
| System: Generic 1E Elec-<br>trical Components                             | Operating<br>Time       | l Year                      | 1.1 Years                  | Note 2             | Note 1<br>Note 3 | Simultaneous<br>Test | None        |
| Plant ID No.: EV54240<br>Component: Terminal Block                        | Temperature<br>(°F)     | 177.0                       | 345.0                      | C-115              | Note 3           | Simultaneous<br>Test | t ne        |
| Manufacturer: Stanwick  | Pressure<br>(PSIA)      | 15.60                       | 74.7                       | C-115              | Note 3           | Simultaneous<br>Test | None        |
| Function: Electrical  <br>Circuit  <br>Termination                        | Relative Humidity (%)   | 100.0                       | 100.0                      | A                  | Note 3           | Simultaneous<br>Test | None        |
| Accuracy: Spec: N/A  <br>Demon: N/A  <br>Service: Electrical  <br>Control | <br> Chemical<br> Spray | N/A                         | N/A                        | N/A                | N/A              | N/A                  | None        |
| Location: Auxiliary Bldg.   | Radiation               | 2.67 x 10 <sup>6</sup> RADS | 1.6 x 10 <sup>8</sup> RADS | I T                | CAL-79<br>Note 4 | Analysis             | None        |
| Flood Level Elev: N/A A Above Flood Level: N/A                            | Aging                   | 40 Years                    | 40 Years                   | I                  | CAL-79<br>Note 4 | Analysis             | None        |
| Needed for:<br>  Hot Shutdown   X    <br>  Cold Shutdown   X              | Submergence             | N/A                         | N/A                        | N/A                | N/A              | N/A                  | None        |

| Pacility: Davis-Besse Unit 1                                    | SYSTEM COMPONENT SALUATION WORKSHEET | Index NO 221H-133A |
|---|--------------------------------------|--------------------|
| Prepared by: <b>D. Jend</b> Da<br>Checked by: <b>D. Jend</b> Da | e: 11/1/83 NOTES                     |                    |

1. The test subjected the terminal block to a peak temperature of 345°F. At 30 minutes after the start of the test, the temperature was 320°F, at 1 hour the temperature was 300°F, at 1-1/2 hours the temperature was 290°F, at 2 hours the temperature was 280°F, at 3 hours the temperature was 260°F, at 4 hours the temperature was 255°F, at 8 hours the temperature was 235°F, at 12 hours the temperature was 225°F, and at 18 hours the temperature was 220°F which was maintained for the duration of the 96-hour test. The test pressure peak was 74.7 psia and at 35 minutes the test pressure was down to 19.7 psia which was maintained for the duration of the 96 hours. The temperature in Room 115 peaks at 177°F in 19 seconds. The pressure in Room 115 peaks at 15.6 psia in 1.7 seconds. The temperature and pressure in Room 115 return to ambient conditions in 6.7 minutes (Reference C-115).

Based on this information, it can be concluded that the laboratory test subjected the terminal block to an overall more severe environment than that which would result from a postulated HELB. Since the terminal block remained operable throughout the test and functional after the test, it can be concluded that the terminal block will remain functional during and after exposure to the accident environment which would result from the postulated HELB.

In addition, the terminal blocks were tested for temperature and humidity by the Stanwick Electrical Products Company. The high temperature test of 150°F for 8 hours was passed successfully with a test voltage of 600 volts D.C. (References V-35A, and V-35B). Maximum continuous use temperatures for the terminal block base and barrier materials (only non-metallic parts) are  $302^{\circ}F$  and  $275^{\circ}F$ , respectively (References W-2, AA). Stanwick also conducted a humidity test on the terminal blocks with  $90\% \pm 10\%$  relative humidity at  $68^{\circ}F$  using a test voltage of 500 volts D.C. No shorting or arcing occurred during the test (References V-35A, V-35B).

- 2. One year operating time is used as a conservative maximum specification.
- This test data was obtained from a test performed by Duke Power Corporation on Stanwick terminal blocks (Reference ROC-35A). This test report is not available as a reference document.
- 4. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.



Facility: Davis-Besse Unit 1 50-346

COMPONENT MATERIALS EVALUATION SHEET



CAL-79

CAL-79

3.0 x 10<sup>8</sup> RADS

1.6 x 108 RADS

Prepared by: M. K. Checked by:

Nuts

Terminal Llock Base

Terminal Block Barrier

Docket:

Date: ( Date: 11

Durez #791 Phenolic

Glass - Melamine

Terminal Block Component: EV54240 Plant I.D. No.: Type G Model No.: Stanwick Manufacturer: RADIATION THERMAL AGING Qualification Reference Reference | Qualification Materials List Parts List Not Affected Not Sensitive Brass Terminal Block Links Not Affected Not Sensitive Metallic Mounting Rods Not Affected Not Sensitive Silicone Bronze Bolts Not Affected Not Sensitive Brass Insert Not Affected Not Sensitive Brass

40 Years @ 230°F

40 Years @ 122°F

Greater than

CAL-79

CAL-79

| Material and Parts Reference | List: | V-35A, | V-35B, | ROC-35B |
|------------------------------|-------|--------|--------|---------|
|------------------------------|-------|--------|--------|---------|

'acility: Davis-Besse Unit 1 locket: 50-346

SYSTEM COMPONENT EVALUATION WORKSHEET



repared by: n. fin Date: 11/1/13 Checked by: Extractional Date: 1/2/13

| FOUTDMENT DESCRIPTION   | ENVIRONMENT                 |                             |                            | DOCUMENTATION REF. |                  | Qualification        | Outstanding    |  |
|---|-----------------------------|-----------------------------|----------------------------|--------------------|------------------|----------------------|----------------|--|
| EQUIPMENT DESCRIPTION   | Parameter                   | Specification               | Qualification              | Specification      | Qualification    | Method               | Items          |  |
| System: Generic 1E Elec-<br>trical Components                       | Operating<br>Time           | l Year                      | 1.1 Years                  | Note 2             | Note 1<br>Note 3 | Simultaneous<br>Test | None           |  |
| Plant ID No.: EV54250<br>Component: Terminal Block                  | Temperature<br>(°F)         | 177.0                       | 345.0                      | C-115              | Note 3           | Simultaneous<br>Test | None           |  |
| Manufacturer: Stanwick<br>Model Number: Type G                      | Pressure<br>(PSIA)          | 15.60                       | 74.7                       | c-115              | Note 3           | Simultaneous<br>Test | None           |  |
| Function: Electrical<br>Circuit<br>Termination                      | Relative<br>Humidity<br>(%) | 100.0                       | 100.0                      | A                  | Note 3           | Simultaneous<br>Test | None           |  |
| Accuracy: Spec: N/A<br>Demon: N/A<br>Service: Electrical<br>Control | <br> Chemical<br> Spray     | N/A                         | N/A                        | N/A                | N/A              | N/A                  | None           |  |
| Location: Auxiliary Bldg.<br>Rm. 115                                | Radiation                   | 2.67 x 10 <sup>6</sup> RADS | 1.6 x 10 <sup>8</sup> RADS | т                  | CAL-79<br>Note 4 | Analysis             | None           |  |
| Flood Level Elev: N/A Above Flood Level: N/A                        | Aging                       | 40 Years                    | 40 Years                   | I                  | CAL-79<br>Note 4 | Analysis             | None           |  |
| Needed for:<br>Hot Shutdown   X  <br>Cold Shutdown   X              | <br> <br> Submergence       | N/A                         | N/A                        | N/A                | N/A              | N/A                  | <br>  None<br> |  |

| 'acility: Davis-Besse Unit 1   | SYSTEM COMPONENT EVALUATION WORKSHEET | Index No. 221H-134A<br>Rev.: 2 |
|--|---------------------------------------|--------------------------------|
| Prepared by: <u>n. kino</u> Date<br>Checked by: <u>Simalorely</u> Date | : <u>a/1/13</u><br>: <u>11/2/83</u>   |                                |

The test subjected the terminal block to a peak temperature of 345°F. At 30 minutes after the start of the test, the temperature was 320°F, at 1 hour the temperature was 300°F, at 1-1/2 hours the temperature was 290°F, at 2 hours the temperature was 280°F, at 3 hours the temperature was 260°F, at 4 hours the temperature was 255°F, at 8 hours the temperature was 235°F, at 12 hours the temperature was 225°F, and at 18 hours the temperature was 220°F which was maintained for the duration of the 96-hour test. The test pressure peak was 74.7 psia and at 35 minutes the test pressure was down to 19.7 psia which was maintained for the duration of the 96 hours. The temperature in Room 115 peaks at 177°F in 19 seconds. The pressure in Room 115 peaks at 15.6 psia in 1.7 seconds. The temperature and pressure in Room 115 return to ambient conditions in 6.7 minutes (Reference C-115).

Based on this information, it can be concluded that the laboratory test subjected the terminal block to an overall more severe environment than that which would result from a postulated HELB. Since the terminal block remained operable throughout the test and functional after the test, it can be concluded that the terminal block will remain functional during and after exposure to the accident environment which would result from the postulated HELB.

In addition, the terminal blocks were tested for temperature and humidity by the Stanwick Electrical Products Company. The high temperature test of 150°F for 8 hours was passed successfully with a test voltage of 600 volts D.C. (References V-35A, and V-35B). Maximum continuous use temperatures for the terminal block base and barrier materials (only non-metallic parts) are 302°F and 275°F, respectively (References W-2, AA). Stanwick also conducted a humidity test on the terminal blocks with  $90\% \pm 10\%$  relative humidity at 68°F using a test voltage of 500 volts D.C. No shorting or arcing occurred during the test (References V-35A, V-35B).

- 2. One year operating time is used as a conservative maximum specification.
- This test data was obtained from a test performed by Duke Power Corporation on Stanwick terminal blocks (Reference ROC-35A). This test report is not available as a reference document.
- 4. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

Facility: Davis-Besse Unit 1

COMPONENT MATERIALS EVALUATION SHEET



Docket: 50-346

Prepared by: n. Checked by: Shecken

Date: 11/1/83

| Plant I.D.           | No.: EV54250   | Component     | : Termi   | Terminal Block<br>Type G |           |
|----------------------|----------------|---------------|-----------|--------------------------|-----------|
| Manufacturer:        | r: Stanwick    | Model No.     | :Ту       |                          |           |
|                      | 1              | I THERMAL A   | GING      | RADIATIO                 | N         |
| Parts List           | Materials List | Qualification | Reference | Qualification            | Reference |
| Terminal Block Links | Brass          | Not Sensitive |           | Not Affected             |           |

| Parts List  | Materials List  | Qualification  | Reference        | Qualification  | Reference |
|---|---|--|------------------|--|-----------|
| Terminal Block Links<br>Mounting Rods<br>Bolts<br>Insert<br>Nuts<br>Terminal Block Base<br>Terminal Block Barrier | Brass<br>  Metallic<br>  Silicone Bronze<br>  Brass<br>  Brass<br>  Durez #791 Phenolic<br>  Glass - Melamine | Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>40 Years @ 230°F<br>Greater than<br>40 Years @ 122°F | CAL-79<br>CAL-79 | Not Affected<br>Not Affected<br>Not Affected<br>Not Affected<br>Not Affected<br>3.0 x $10^8$ RADS<br>1.6 x $10^8$ RADS | CAL-79    |



'acility: Davis-Besse Unit 1 locket: 50-346

SYSTEM COMPONENT EVALUATION WORKSHEET



10

repared by: n. Jeri Date: 11/1/93 Thecked by: Januane Date: 11/0/13

| BOUTDUENT DECODIDEION   |                               | ENVIRONMENT                |                                 | DOCUMENTA     | TION REF.        | Qualification        | Outstanding |
|---|-------------------------------|----------------------------|---------------------------------|---------------|------------------|----------------------|-------------|
| EQUIPMENT DESCRIPTION   | Parameter                     | Specification              | Qualification                   | Specification | Qualification    | Method               | Items       |
| System: Generic 1E Elec-<br>trical Components                             | <br> Operating<br> Time       | l Year                     | l 1.1 Years                     | Note 2        | Note 1<br>Note 3 | Simultaneous<br>Test | None        |
| Plant ID No.: EV54390<br>Component: Terminal Block                        | Temperature<br>(°F)           | 130.0                      | 345.0                           | C-105         | Note 3           | Simultaneous<br>Test | None        |
| Manufacturer: Stanwick<br>Model Number: Type G                            | Pressure<br>(PSIA)            | 16.06                      | 74.7                            | C-105         | Note 3           | Simultaneous<br>Test | None        |
| Function: Electrical<br>Circuit<br>Termination                            | Relative<br> Humidity<br> (%) | 100.0                      | 100.0                           | A             | Note 3           | Simultaneous<br>Test | None        |
| Accuracy: Spec: N/A  <br>Demon: N/A  <br>Service: Electrical  <br>Control | <br> Chemical<br> Spray<br>   | N/A                        | N/A                             | N/A           | N/A              | N/A                  | None        |
| Location: Auxiliary Bldg.<br>Rm. 105                                      | Radiation                     | 1.9 x 10 <sup>6</sup> RADS | <br> 1.6 x 10 <sup>8</sup> RADS | <br>  T       | CAL-79<br>Note 4 | Analysis             | None        |
| Flood Level Elev: N/A<br>Above Flood Level: N/A                           | Aging                         | 40 Years                   | <br>  40 Years                  | I             | CAL-79<br>Note 4 | Analysis             | None        |
| Needed for:<br>Hot Shutdown X   | <br> Submergence              | N/A                        | <br>  N/A<br>                   | N/A           | N/A              | N/A                  | None        |

| Facility:                | Davis-Besse Unit 1 | SYSTEM COMPONENT EVALUATION WORKSHEST | Index No. 221H-135A |
|--------------------------|--------------------|---------------------------------------|---------------------|
| Docket:                  | 50-346             |                                       | Rev.: 2             |
| Prepared b<br>Checked by | : h. feis          | Date: 1/2/13 NOTES                    |                     |

1. The test subjected the terminal block to a peak temperature of 345°F. At 30 minutes after the start of the test, the temperature was 320°F, at 1 hour the temperature was 300°F, at 1-1/2 hours the temperature was 290°F, at 2 hours the temperature was 280°F, at 3 hours the temperature was 260°F, at 4 hours the temperature was 255°F, at 8 hours the temperature was 235°F, at 12 hours the temperature was 225°F, and at 18 hours the temperature was 220°F which was maintained for the duration of the 96-hour test. The test pressure peak was 74.7 psia and at 35 minutes the test pressure was down to 19.7 psia which was maintained for the duration of the 96 hours. The temperature in Room 105 peaks at 130°F in 19 seconds. The pressure in Room 105 peaks at 16.06 psia in 1.75 seconds. The temperature and pressure in Room 105 return to ambient conditions in 24 minutes (Reference C-105).

Based on this information, it can be concluded that the laboratory test subjected the terminal block to an overall more severe environment than that which would result from a postulated HELB. Since the terminal block remained operable throughout the test and functional after the test, it can be concluded that the terminal block will remain functional during and after exposure to the accident environment which would result from the postulated HELB.

In addition, the terminal blocks were tested for temperature and humidity by the Stanwick Electrical Products Company. The high temperature test of  $150^{\circ}$ F for 8 hours was passed successfully with a test voltage of 600 volts D.C. (References V-35A, and V-35B). Maximum continuous use temperatures for the terminal block base and barrier materials (only non-metallic parts) are  $302^{\circ}$ F and  $275^{\circ}$ F, respectively (References W-2, AA). Stanwick also conducted a humidity test on the terminal blocks with  $90^{\circ} \pm 10^{\circ}$  relative humidity at 68°F using a test voltage of 500 volts D.C. No shorting or arcing occurred during the test (References V-35A, V-35B).

- 2. One year operating time is used as a conservative maximum specification.
- This test data was obtained from a test performed by Duke Power Corporation on Stanwick terminal blocks (Reference ROC-35A). This test report is not available as a reference document.
- 4. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

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Facility: Davis-Besse Unit 1 Docket: 50-346 COMPONENT MATERIAL EVALUATION SHEET



Prepared by: h. Checked by:  $S_{xa}$  Date: 11/2/13

| Plant I.D. No  | EV54390  | . Component:   | Termin           | hal Block  |                  |
|--|--|--|------------------|--|------------------|
| Manufacturer:  | Stanwick   | Model No.:   | Тут              | e G  |                  |
|  |  | I THERMAL AGIN   | ig I             | RADIATION  |                  |
| Parts List   | Materials List   | Qualification  | Reference        | Qualification  | Reference        |
| erminal Block Links<br>ounting Rods<br>olts<br>nsert<br>uts<br>erminal Block Base<br>erminal Block Barrier | Brass<br>Metallic<br>Silicone Bronze<br>Brass<br>Durez #791 Phenolic<br>Glass - Melamine | Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>40 Years @ 230°F<br>Greater than<br>40 Years @ 122°F | CAL-79<br>CAL-79 | Not Affected<br>Not Affected<br>Not Affected<br>3.0 x 10 <sup>8</sup> RADS<br>1.6 x 10 <sup>8</sup> RADS | CAL-79<br>CAL-79 |

Facility: Davis-Besse Unit 1 . SYSTEM COMPONENT E SUATION WORKSHEET Docket: 50-346



Prepared by: N. fer Date: 11/1/83 Checked by: Arcarbould Date: 11/2/83

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| I EQUIPMENT DESCRIPTION  | 1                                       | ENVIRONMENT                |                                      | DOCUMENTATION REF.   Qualification |                    | <br>  Outstanding    |                |
|--|---|----------------------------|--------------------------------------|------------------------------------|--------------------|----------------------|----------------|
|  | Parameter                               | Specification              | Qualification                        | Specification                      | Qualification      | Method               | Items          |
| <br> System: Generic 1E Elec-  <br>  trical Components   | <br> Operating  <br> Time               | l Year                     | <br>  1.1 Years<br>                  | Note 2                             | Note 1  <br>Note 3 | Simultaneous<br>Test | None           |
| Plant ID No.: EV54400<br>Component: Terminal Block   | <br> Temperature <br>  (°F)             | 130.0                      | 1<br>1 345.0<br>1                    | c-105                              | Note 3             | Simultaneous<br>Test | None           |
| <br> Manufacturer: Stanwick  <br> <br> Model Number: Type G  | Pressure                                | 16.06                      | 1 74.7                               | C-105                              | Note 3             | Simultaneous<br>Test | None           |
| Punction: Electrical  <br>  Circuit  <br>  Termination   | <br> Relative  <br> Humidity  <br>  (%) | 100.0                      | <br>  100.0<br>                      | A                                  | Note 3             | Simultaneous<br>Test | None<br>       |
| Accuracy: Spec: N/A  <br>Demon: N/A  <br>Service: Electrical  <br>Control  | <br> Chemical  <br> Spray  <br>         | N/A                        | N/A                                  | N/A                                | N/A                | N/A                  | <br>  None<br> |
| Location: Auxiliary Bldg. <br>Rm. 105  | <br> Radiation                          | 1.9 x 10 <sup>6</sup> RADS | <br> <br> 1.6 x 10 <sup>8</sup> RADS | T                                  | CAL-79<br>Note 4   | Analysis             | I None         |
| Flood Level Elev: N/A  <br> Above Flood Level: N/A   | Aging                                   | 40 Years                   | <br>  40 Years<br>                   | I                                  | CAL-79<br>Note 4   | Analysis             | None<br>       |
| Needed for: Image: Second state of the second state of t | <br> Submergence                        | N/A                        | <br>  N/A<br>                        | <br>  N/A  <br>                    | N/A                | N/A                  | <br>  None<br> |

| Facility: Date-Besse Unit 1<br>Docket: 50-346                | SYSTEM COMPONENT CLUATION WORKSHEET | Index No 221H-136A<br>Rev.: 2 |
|--|-------------------------------------|-------------------------------|
| Prepared by: n. Ferris Date:<br>Checked by: Springance Date: | uliles NOTES                        |                               |

1. The test subjected the terminal block to a peak temperature of 345°F. At 30 minutes after the start of the test, the temperature was 320°F, at 1 hour the temperature was 300°F, at 1-1/2 hours the temperature was 290°F, at 2 hours the temperature was 280°F, at 3 hours the temperature was 260°F, at 4 hours the temperature was 255°F, at 8 hours the temperature was 235°F, at 12 hours the temperature was 225°F, and at 18 hours the temperature was 220°F which was maintained for the duration of the 96-hour test. The test pressure peak was 74.7 psia and at 35 minutes the test pressure was down to 19.7 psia which was maintained for the duration of the 36 hours. The temperature in Room 105 peaks at 130°F in 19 seconds. The pressure in Room 105 peaks at 16.06 psia in 1.75 seconds. The temperature and pressure in Room 105 return to ambient conditions in 24 minutes (Reference C-105).

Based on this information, it can be concluded that the laboratory test subjected the terminal block to an overall more severe environment than that which would result from a postulated HELB. Since the terminal block remained operable throughout the test and functional after the test, it can be concluded that the terminal block will remain functional during and after exposure to the accident environment which would result from the postulated HELB.

In addition, the terminal blocks were tested for temperature and humidity by the Stanwick Electrical Products Company. The high temperature test of 150°F for 8 hours was passed successfully with a test voltage of 600 volts D.C. (References V-35A, and V-35B). Maximum continuous use temperatures for the terminal block base and barrier materials (only non-metallic parts) are 302°F and 275°F, respectively (References W-2, AA). Stanwick also conducted a humidity test on the terminal blocks with  $90\% \pm 10\%$  relative humidity at 68°F using a test voltage of 500 volts D.C. No shorting or arcing occurred during the test (References V-35A, V-35B).

- 2. One year operating time is used as a conservative maximum specification.
- 3. This test data was obtained from a test performed by Duke Power Corporation on Stanwick terminal blocks (Reference ROC-35A). This test report is not available as a reference document.

4. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

Facility: Davis-Besse Unit 1 Docket: 50-346 COMPONENT MATERIALS EVALUATION SHEET

Index No.: 121H-136B Rev.: 2

Prepared by: n. fein Date: 1/2/33 Checked by: Analong Date: 11/2/33

| Plant I.D. No   | D.: EV54400  | Component:  | Termi            | nal Block  |                  |
|---|--|---|------------------|--|------------------|
| Manufacturer  | :Stanwick  | Model No.:  | Ty               | pe G   |                  |
|   | I  | I THERMAL AGIN  | IG I             | RADIATION  |                  |
| Parts List  | Materials List   | Qualification   | Reference        | Qualification  | I Reference      |
| Terminal Block Links<br>Mounting Rods<br>Bolts<br>Insert<br>Nuts<br>Terminal Block Base<br>Terminal Block Barrier | Brass<br>Metallic<br>Silicone Bronze<br>Brass<br>Durez #791 Phenolic<br>Glass - Melamine | Not Sensitive<br>Not Sensitive<br>Not Sensitive<br>40 Years @ 230°F<br>Greater than<br>40 Years @ 122°F | CAL-79<br>CAL-79 | Not Affected<br>Not Affected<br>Not Affected<br>Not Affected<br>3.0 x 10 <sup>8</sup> RADS<br>1.6 x 10 <sup>8</sup> RADS | CAL-79<br>CAL-79 |