CALCULATION/PROBLEM COVER SHEET

Calculation/Problem No: 1040-001-024

Title: Generic 1E Electrical Components 2.21

Client: Toledo Edison Company Project: Davis-Besse Unit 1

Job No: 1040-001-671

I & E Bulletin 79-01B
Equipment Qualification

Design Input/References:

Design Inputs are outlined in the Cover Report.

Assumptions:

Assumptions are outlined in the Cover Report.

Method:

Methods are outlined in the Cover Report.

Remarks:

EDS Nuclear Report No. 02-1040-1076.

REV. NO.	REVISION	APPROVED	DATE
0	Original	Jeffrey S. Haverly	10-2-81
1	General Manual Revisions	N K Woodward	1/3/83
2	General Manual Revisions	N K Woodward	11/2/83

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

MASTER LIST
HARSH ENVIRONMENT
GENERIC 1E ELECTRICAL COMPONENTS

Index No.: 221M-001
Rev.: 2

Prepared by: D. Lewis Date: 11/1/83
Checked by: [signature] Date: 11/7/83

Worksheet Index No.	Rev.	Plant ID Number	Generic Name	LOCATION: Inside Primary Containment	LOCATION: Outside Primary Containment	REMARKS
221H-012	2	AG1	Cable	Containment		
221H-013	2	AG2	Cable	Containment		
221H-014	2	B01	Cable	Containment		
221H-015	2	B02	Cable	Containment		
221H-016	2	B04	Cable	Containment		
221H-017	2	B06	Cable	Containment		
221H-018	2	B07	Cable	Containment		
221H-019	2	Various	Cable		Aux. Bldg.	
221H-020	2	B10	Cable	Containment		
221H-021	2	B11	Cable	Containment		
221H-022	2	BE11A	Motor Control Center		Rm. 209	
221H-023	2	BE11B	Motor Control Center		Rm. 304	
221H-024	2	BE11C	Motor Control Center		Rm. 304	
221H-025	2	BE11D	Motor Control Center		Rm. 227	
221H-026	2	BF11A	Motor Control Center		Rm. 427	
221H-027	2	BF11C	Motor Control Center		Rm. 236	
221H-028	2	BF11D	Motor Control Center		Rm. 227	
221H-029	2	BG1	Cable	Containment		
221H-030	2	BG2	Cable	Containment		
221H-031	2	BG3	Cable	Containment		
221H-032	2	BG4	Cable	Containment		
221H-033	2	BG5	Cable	Containment		
221H-034	2	BG6	Cable	Containment		
221H-035	2	BYE2	Motor Control Center		Rm. 304	
221H-036	2	BYF2	Motor Control Center		Rm. 427	
221H-037	2	C01	Cable	Containment		
221H-038	2	C02	Cable	Containment		
221H-039	2	C10	Cable	Containment		
221H-040	2	C11	Cable	Containment		
221H-041	2	C12	Cable	Containment		
221H-042	2	C13	Cable	Containment		
221H-043	2	C14	Cable	Containment		

Facility: Davis-Besse Unit 1
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MASTER LIST
HARSH ENVIRONMENT
GENERIC 1E ELECTRICAL COMPONENTS

Index No.: 221M-002
Rev.: 2

Prepared by: N. Lewis Date: 11/1/83
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Worksheet Index No.	Rev.	Plant ID Number	Generic Name	LOCATION		REMARKS
				Inside Primary Containment	Outside Primary Containment	
221H-044	2	C15	Cable	Containment		
221H-045	2	C20	Cable	Containment		
221H-046	2	C21	Cable	Containment		
221H-047	2	C22	Cable	Containment		
221H-048	2	C23	Cable	Containment		
221H-049	2	C24	Cable	Containment		
221H-050	2	C25	Cable	Containment		
221H-051	2	Various	Disconnect Switch		Aux. Bldg.	
221H-052	2	CDE11A	Disconnect Switch Cabinet		Rm. 304	
221H-053	2	Various	Terminal Lugs		Aux. Bldg.	
221H-054	2	Various	Fuses		Aux. Bldg.	
221H-055	2	CDE11B-1	Disconnect Switch Cabinet		Rm. 304	
221H-056	2	CDE11B-2	Disconnect Switch Cabinet		Rm. 304	
221H-057	2	CDE11C	Disconnect Switch Cabinet		Rm. 304	
221H-058	2	CDE11D	Disconnect Switch Cabinet		Rm. 227	
221H-059	2	CDF11A-1	Disconnect Switch Cabinet		Rm. 427	
221H-060	2	CDF11A-2	Disconnect Switch Cabinet		Rm. 427	
221H-061	2	CDF11C	Disconnect Switch Cabinet		Rm. 236	
221H-062	2	CDF11D	Disconnect Switch Cabinet		Rm. 227	
221H-063	2	CDYE2	Disconnect Switch Cabinet		Rm. 304	
221H-064	2	CDYF2	Disconnect Switch Cabinet		Rm. 427	
221H-065	2	CS1	Cable	Containment		
221H-066	2	CS2	Cable	Containment		
221H-067	2	CS3	Cable	Containment		
221H-068	2	CS5	Cable	Containment		
221H-069	2	CS6	Cable	Containment		
221H-070	2	EC5017	Terminal Block Box		Rm. 515	
221H-071	2	EC5018	Terminal Block Box		Rm. 515	
221H-072	2	EC5056	Terminal Block Box		Rm. 515	
221H-073	2	EC5057	Terminal Block Box		Rm. 515	
221H-074	2	EV01060	Terminal Block Box		Rm. 501	
221H-075	0	EV0106A	Terminal Block Box		Rm. 501	

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MASTER LIST
HARSH ENVIRONMENT
GENERIC 1E ELECTRICAL COMPONENTS

Index No: 221M-003
Rev.: 2

Prepared by: N. Lewis Date: 11/1/83
Checked by: [signature] Date: 11/3/83

Worksheet Index No.	Rev.	Plant ID Number	Generic Name	LOCATION: Inside Primary Containment	LOCATION: Outside Primary Containment	REMARKS
221H-076	2	EV01070	Terminal Block Box		Rm. 501	
221H-077	2	EV0107A	Terminal Block Box		Rm. 501	
221H-078	2	EV0240B	Terminal Block Box		Rm. 314	
221H-079	2	EV05990	Terminal Block Box		Rm. 314	
221H-080	2	EV06010	Terminal Block Box		Rm. 314	
221H-081	2	EV06080	Terminal Block Box		Rm. 303	
221H-082	2	EV06120	Terminal Block Box		Rm. 303	
221H-083	2	EV0624B	Terminal Block Box		Rm. 427	
221H-084	2	EV08300	Terminal Block Box		Rm. 113	
221H-085	2	EV08310	Terminal Block Box		Rm. 113	
221H-086	2	EV1001	Terminal Block Box		Rm. 602	
221H-087	2	EV100A	Terminal Block Box		Rm. 602	
221H-088	2	EV1011	Terminal Block Box		Rm. 601	
221H-089	2	EV101B	Terminal Block Box		Rm. 601	
221H-090	2	EV13280	Terminal Block Box		Rm. 314	
221H-091	2	EV13380	Terminal Block Box		Rm. 314	
221H-092	2	EV13660	Terminal Block Box		Rm. 314	
221H-093	2	EV13670	Terminal Block Box		Rm. 314	
221H-094	2	EV13830	Terminal Block Box		Rm. 236	
221H-095	2	EV1407B	Terminal Block Box		Rm. 314	
221H-096	2	EV1411B	Terminal Block Box		Rm. 314	
221H-097	2	EV1467	Terminal Block Box		Rm. 113	
221H-098	2	EV1469	Terminal Block Box		Rm. 113	
221H-099	2	EV15170	Terminal Block Box		Rm. 236	
221H-100	2	EV15180	Terminal Block Box		Rm. 236	
221H-101	2	EV15300	Terminal Block Box		Rm. 303	
221H-102	2	EV15310	Terminal Block Box		Rm. 314	
221H-103	2	EV1544	Terminal Block Box		Rm. 303	
221H-104	2	EV1545	Terminal Block Box		Rm. 314	
221H-105	2	EV1567B	Terminal Block Box		Rm. 314	
221H-106	2	EV1719B	Terminal Block Box		Rm. 236	
221H-107	2	EV20000	Terminal Block Box		Rm. 303	

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MASTER LIST
HARSH ENVIRONMENT
GENERIC 1E ELECTRICAL COMPONENTS

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Prepared by: N. Lewis Date: 11/1/83
Checked by: [illegible] Date: 11/2/83

Worksheet Index No.	Rev.	Plant ID Number	Generic Name	LOCATION: Inside Primary Containment	LOCATION: Outside Primary Containment	REMARKS
221H-108	2	EV20010	Terminal Block Box		Rm. 427	
221H-109	2	EV20030	Terminal Block Box		Rm. 314	
221H-110	2	EV2010	Terminal Block Box		Rm. 314	
221H-111	2	EV2012B	Terminal Block Box		Rm. 236	
221H-112	2	EV27330	Terminal Block Box		Rm. 105	
221H-113	2	EV27340	Terminal Block Box		Rm. 113	
221H-114	2	EV27360	Terminal Block Box		Rm. 314	
221H-115	2	EV5005	Terminal Block Box		Rm. 601	
221H-116	2	EV5008	Terminal Block Box		Rm. 427	
221H-117	2	EV501CB	Terminal Block Box		Rm. 314	
221H-118	2	EV5010D	Terminal Block Box		Rm. 314	
221H-119	2	EV50240	Terminal Block Box		Rm. 515	
221H-120	2	EV50250	Terminal Block Box		Rm. 515	
221H-121	2	EV50370	Terminal Block Box		Rm. 236	
221H-122	2	EV50380	Terminal Block Box		Rm. 236	
221H-123	2	EV50650	Terminal Block Box		Rm. 208	
221H-124	2	EV50670	Terminal Block Box		Rm. 314	
221H-125	2	EV50700	Terminal Block Box		Rm. 500	
221H-126	2	EV50730	Terminal Block Box		Rm. 500	
221H-127	2	EV50750	Terminal Block Box		Rm. 501	
221H-128	2	EV50780	Terminal Block Box		Rm. 501	
221H-129	2	EV50900	Terminal Block Box		Rm. 314	
221H-130	2	EV54210	Terminal Block Box		Rm. 105	
221H-131	2	EV54220	Terminal Block Box		Rm. 105	
221H-132	2	EV54230	Terminal Block Box		Rm. 113	
221H-133	2	EV54240	Terminal Block Box		Rm. 115	
221H-134	2	EV54250	Terminal Block Box		Rm. 115	
221H-135	2	EV54390	Terminal Block Box		Rm. 105	
221H-136	2	EV54400	Terminal Block Box		Rm. 105	
221H-137	2	EV54420	Terminal Block Box		Rm. 115	
221H-138	2	EV607	Terminal Block Box		Rm. 314	
221H-139	2	EVDH01A	Terminal Block Box		Rm. 236	

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MASTER LIST
HARSH ENVIRONMENT
GENERIC 1E ELECTRICAL COMPONENTS

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Prepared by: D. Lewis Date: 11/1/83
Checked by: [illegible] Date: 11/2/83

Worksheet Index No.	Rev.	Plant ID Number	Generic Name	LOCATION Inside Primary Containment	LOCATION Outside Primary Containment	REMARKS
221H-140	2	EVDH01B	Terminal Block Box		Rm. 208	
221H-141	2	EVDH63	Terminal Block Box		Rm. 115	
221H-142	2	EVDH64	Terminal Block Box		Rm. 105	
221H-143	2	EVHP02A	Terminal Block Box		Rm. 236	
221H-144	2	EVHP02B	Terminal Block Box		Rm. 236	
221H-145	2	EVHP02C	Terminal Block Box		Rm. 208	
221H-146	2	EVHP02D	Terminal Block Box		Rm. 208	
221H-147	2	EVMU03	Terminal Block Box		Rm. 208	
221H-148	2	EVMU33	Terminal Block Box		Rm. 236	
221H-149	2	EVMU38	Terminal Block Box		Rm. 208	
221H-150	2	EVMU66	Terminal Block Box		Rm. 208	
221H-151	2	JT1715	Terminal Block Box		Rm. 115	
221H-152	2	JT2917	Terminal Block Box	Rm. 215		
221H-153	2	JT3606	Terminal Block Box		Rm. 314	
221H-154	2	JT3704	Terminal Block Box		Rm. 304	
221H-155	2	JT3712	Terminal Block Box		Rm. 314	
221H-156	2	JT3802	Terminal Block Box		Rm. 303	
221H-157	2	JT3803	Terminal Block Box		Rm. 304	
221H-158	2	JT3953	Terminal Block Box	Rm. 410		
221H-159	2	JT3954	Terminal Block Box	Rm. 410		
221H-160	2	JT5705	Terminal Block Box		Rm. 501	
221H-161	2	JT5706	Terminal Block Box		Rm. 501	
221H-162	2	JT5805	Terminal Block Box		Rm. 500	
221H-163	2	JT5806	Terminal Block Box		Rm. 500	
221H-164	2	JT6703	Terminal Block Box		Rm. 602	
221H-165	2	JT6704	Terminal Block Box		Rm. 602	
221H-166	2	JT6707	Terminal Block Box		Rm. 602	
221H-167	2	JT6801	Terminal Block Box		Rm. 601	
221H-168	2	JT6802	Terminal Block Box		Rm. 601	
221H-169	2	JT6807	Terminal Block Box		Rm. 601	
221H-170	2	Various	Fuse Block			
221H-171	2	L1P	Cable	Containment		

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HARSH ENVIRONMENT
GENERIC 1E ELECTRICAL COMPONENTS

Index No: 221M-006
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Prepared by: W. Lewis Date: 11/1/83
Checked by: L MacDonald Date: 11/2/83

Worksheet Index No.	Rev.	Plant ID Number	Generic Name	LOCATION		REMARKS
				Inside Primary Containment	Outside Primary Containment	
221H-172	2	L1Q	Cable	Containment		
221H-173	2	L1T	Cable	Containment		
221H-174	2	L4P	Cable	Containment		
221H-175	2	LXP	Cable	Containment		
221H-176	2	N/A	Splice Kit	Containment		
221H-177	2	NC0311	Push Button Switch		Rm. 115	
221H-178	2	NC0312	Push Button Switch		Rm. 115	
221H-179	2	NC0313	Push Button Switch		Rm. 113	
221H-180	2	NC0314	Push Button Switch		Rm. 105	
221H-181	2	NC0315	Push Button Switch		Rm. 105	
221H-182	2	NC0621	Push Button Switch		Rm. 314	
221H-183	2	NC0622	Push Button Switch		Rm. 208	
221H-184	2	NC5017	Push Button Switch		Rm. 515	
221H-185	2	NC5018	Push Button Switch		Rm. 515	
221H-186	2	NC5056	Push Button Switch		Rm. 515	
221H-187	2	NC5057	Push Button Switch		Rm. 515	
221H-188	2	Various	Timing Relay			
221H-189	2	Variois	Relay			
221H-190	2	NP0421	Push Button Switch		Rm. 105	
221H-191	2	NP0422	Push Button Switch		Rm. 115	
221H-192	2	NSV100	Push Button Switch		Rm. 602	
221H-193	2	NSV100E	Push Button Switch		Rm. 602	
221H-194	2	NSV101	Push Button Switch		Rm. 601	
221H-195	2	NSV101E	Push Button Switch		Rm. 601	
221H-196	2	NV0624B	Push Button Switch		Rm. 427	
221H-197	2	NV08300	Push Button Switch		Rm. 113	
221H-198	2	NV08310	Push Button Switch		Rm. 113	
221H-199	2	NV1001	Push Button Switch		Rm. 602	
221H-200	2	NV1911	Push Button Switch		Rm. 601	
221H-201	2	NV1356	Push Button Switch		Rm. 314	
221H-202	2	NV1357	Push Button Switch		Rm. 314	
221H-203	2	NV1358	Push Button Switch		Rm. 314	

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MASTER LIST
HARSH ENVIRONMENT
GENERIC 1E ELECTRICAL COMPONENTS

Index No: 221M-007
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Worksheet Index No.	Rev.	Plant ID Number	Generic Name	LOCATION		REMARKS
				Inside Primary Containment	Outside Primary Containment	
221H-204	2	NV13660	Push Button Switch		Rm. 314	
221H-205	2	NV13670	Push Button Switch		Rm. 314	
221H-206	2	NV13680A	Push Button Switch		Rm. 314	
221H-207	2	NV13680B	Push Button Switch		Rm. 314	
221H-208	2	NV13830	Push Button Switch		Rm. 236	
221H-209	2	NV1467	Push Button Switch		Rm. 113	
221H-210	2	NV1469	Push Button Switch		Rm. 113	
221H-211	2	NV15170	Push Button Switch		Rm. 236	
221H-212	2	NV15180	Push Button Switch		Rm. 236	
221H-213	2	NV1542	Push Button Switch		Rm. 314	
221H-214	2	NV1544	Push Button Switch		Rm. 303	
221H-215	2	NV1545	Push Button Switch		Rm. 314	
221H-216	2	NV1719B	Push Button Switch		Rm. 236	
221H-217	2	NV20000	Push Button Switch		Rm. 303	
221H-218	2	NV20010	Push Button Switch		Rm. 427	
221H-219	2	NV20030	Push Button Switch		Rm. 314	
221H-220	2	NV2010	Push Button Switch		Rm. 314	
221H-221	2	NV2011	Push Button Switch		Rm. 314	
221H-222	2	NV232	Push Button Switch		Rm. 236	
221H-223	2	NV235A	Push Button Switch		Rm. 314	
221H-224	2	NV236	Push Button Switch		Rm. 236	
221H-225	2	NV27360	Push Button Switch		Rm. 314	
221H-226	2	NV375	Push Button Switch		Rm. 602	
221H-227	2	NV394	Push Button Switch		Rm. 601	
221H-228	2	NV5008	Push Button Switch		Rm. 427	
221H-229	2	NV5010B	Push Button Switch		Rm. 314	
221H-230	2	NV5010D	Push Button Switch		Rm. 314	
221H-231	2	NV5010E	Push Button Switch		Rm. 314	
221H-232	2	NV5011A	Push Button Switch		Rm. 303	
221H-233	2	NV5011E	Push Button Switch		Rm. 314	
221H-234	2	Deleted				
221H-235	2	Deleted				

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MASTER LIST
HARSH ENVIRONMENT
GENERIC 1E ELECTRICAL COMPONENTS

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Worksheet Index No.	Rev.	Plant ID Number	Generic Name	LOCATION: Inside Primary Containment	LOCATION: Outside Primary Containment	REMARKS
221H-236	2	NV50370	Push Button Switch		Rm. 236	
221H-237	2	NV50380	Push Button Switch		Rm. 236	
221H-238	2	NV50650	Push Button Switch		Rm. 208	
221H-239	2	NV50670	Push Button Switch		Rm. 314	
221H-240	2	NV50900	Push Button Switch		Rm. 314	
221H-241	2	NV54210	Push Button Switch		Rm. 105	
221H-242	2	NV54220	Push Button Switch		Rm. 105	
221H-243	2	NV54230	Push Button Switch		Rm. 113	
221H-244	2	NV54240	Push Button Switch		Rm. 115	
221H-245	2	NV54250	Push Button Switch		Rm. 115	
221H-246	2	NV5715	Push Button Switch		Rm. 105	
221H-247	2	NV598	Push Button Switch		Rm. 314	
221H-248	2	NV607	Push Button Switch		Rm. 314	
221H-249	2	NV6831B	Push Button Switch		Rm. 208	
221H-250	2	NVDH01A	Push Button Switch		Rm. 236	
221H-251	2	NVDH01B	Push Button Switch		Rm. 208	
221H-252	2	NVDH13A	Push Button Switch		Rm. 113	
221H-253	2	NVDH13B	Push Button Switch		Rm. 113	
221H-254	2	NVDH14A	Push Button Switch		Rm. 113	
221H-255	2	NVDH14B	Push Button Switch		Rm. 113	
221H-256	2	NVDH63	Push Button Switch		Rm. 115	
221H-257	2	NVDH64	Push Button Switch		Rm. 105	
221H-258	2	NVICS11A	Push Button Switch		Rm. 602	
221H-259	2	NVICS11B	Push Button Switch		Rm. 601	
221H-260	2	NVMU03	Push Button Switch		Rm. 208	
221H-261	2	NVMU33	Push Button Switch		Rm. 236	
221H-262	2	NVMU38	Push Button Switch		Rm. 208	
221H-263	2	NVMU66A	Push Button Switch		Rm. 208	
221H-264	2	NVMU66B	Push Button Switch		Rm. 208	
221H-265	2	NVMU66C	Push Button Switch		Rm. 208	
221H-266	2	NVMU66D	Push Button Switch		Rm. 208	

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MASTER LIST
HARSH ENVIRONMENT
GENERIC 1E ELECTRICAL COMPONENTS

Index No: 221M-009
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Worksheet Index No.	Rev.	Plant ID Number	Generic Name	LOCATION: Inside Primary Containment	LOCATION: Outside Primary Containment	REMARKS
221H-267	2	P2C5G	Penetration Assembly	Containment	Annulus	
221H-268	2	Deleted				
221H-269	2	Deleted				
221H-270	2	Deleted				
221H-271	2	Deleted				
221H-272	2	P1C2L	Penetration Assembly	Containment	Annulus	
221H-273	2	Deleted				
221H-274	2	P1P3B	Penetration Assembly	Containment	Annulus	
221H-275	2	P3P4C	Penetration Assembly	Containment	Annulus	
221H-276	2	P2P5F	Penetration Assembly	Containment	Annulus	
221H-277	2	Deleted				
221H-278	2	P1P2M	Penetration Assembly	Containment	Annulus	
221H-279	2	P1L1L	Penetration Assembly	Containment	Annulus	
221H-280	2	P2L4G	Penetration Assembly	Containment	Annulus	
221H-281	2	P3L4S	Penetration Assembly	Containment	Annulus	
221H-282	2	P4L1G	Penetration Assembly	Containment	Annulus	
221H-283	2	Deleted				
221H-284	2	Deleted				
221H-285	2	P2C5GI	Penetration Box (Connector)	Containment		
221H-286	2	Deleted				
221H-287	2	Deleted				
221H-288	2	Deleted				
221H-289	2	Deleted				
221H-290	2	P1C2LI	Penetration Box (Connector)	Containment		
221H-291	2	Deleted				
221H-292	2	P1P3BI	Penetration Box (Connector)	Containment		
221H-293	2	P3P4CI	Penetration Box (Connector)	Containment		
221H-294	2	P2P5FI	Penetration Box (Connector)	Containment		
221H-295	2	Deleted				
221H-296	2	P1P2MI	Penetration Box (Connector)	Containment		
221H-297	2	P1L1LI	Penetration Box (Connector)	Containment		

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MASTER LIST
HARSH ENVIRONMENT
GENERIC 1E ELECTRICAL COMPONENTS

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Worksheet Index No.	Rev.	Plant ID Number	Generic Name	LOCATION: Inside Primary Containment	LOCATION: Outside Primary Containment	REMARKS
221H-298	2	P2L4GI	Penetration Box (Connector)	Containment		
221H-299	2	P3L4SI	Penetration Box (Connector)	Containment		
221H-300	2	P4L1GI	Penetration Box (Connector)	Containment		
221H-301	2	Deleted				
221H-302	2	Deleted				
221H-303	2	P2C5GX	Penetration Box (Terminal Block)		Rm. 427	
221H-304	2	Deleted				
221H-305	2	Deleted				
221H-306	2	Deleted				
221H-307	2	Deleted				
221H-308	2	P1C2LX	Penetration Box (Terminal Block)		Rm. 303	
221H-309	2	Deleted				
221H-310	2	P1P3BX	Penetration Box (Terminal Block)		Rm. 303	
221H-311	2	P3P4CX	Penetration Box (Terminal Block)		Rm. 427	
221H-312	2	P2P5FX	Penetration Box (Terminal Block)		Rm. 427	
221H-313	2	Deleted				
221H-314	2	P1P2MX	Penetration Box (Terminal Block)		Rm. 303	
221H-315	2	P1L1LX	Penetration Box (Terminal Block)		Rm. 303	
221H-316	2	P2L4GX	Penetration Box (Terminal Block)		Rm. 427	
221H-317	2	P4L1GX	Penetration Box (Terminal Block)		Rm. 314	
221H-318	2	Deleted				
221H-319	2	Deleted				
221H-320	2	RC2701	Relay Cabinet		Rm. 227	
221H-321	2	RC2825	Relay Cabinet		Rm. 208	
221H-322	2	RC2826	Relay Cabinet		Rm. 209	

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

MASTER LIST
HARSH ENVIRONMENT
GENERIC 1E ELECTRICAL COMPONENTS

Index No: 221M-011
Rev.: 2

Prepared by: N. Lewis Date: 11/1/83
Checked by: J. Meadows Date: 11/1/83

Worksheet Index No.	Rev.	Plant ID Number	Generic Name	LOCATION Inside Primary Containment	LOCATION Outside Primary Containment	REMARKS
221H-323	2	RC3701	Relay Cabinet		Rm. 314	
221H-324	2	RC3702	Relay Cabinet		Rm. 314	
221H-325	2	RC3703	Relay Cabinet		Rm. 314	
221H-326	2	RC3704	Relay Cabinet		Rm. 314	
221H-327	2	RC3705	Relay Cabinet		Rm. 314	
221H-328	2	RC3706	Relay Cabinet		Rm. 304	
221H-329	2	RC3801	Relay Cabinet		Rm. 303	
221H-330	2	RC4601	Relay Cabinet		Rm. 427	
221H-331	2	RC4602	Relay Cabinet		Rm. 427	
221H-332	2	P1C5S	Penetration Assembly	Containment	Annulus	
221H-333	2	P2C5C	Penetration Assembly	Containment	Annulus	
221H-334	2	Deleted				
221H-335	2	P1C5SI	Penetration Box	Containment		
221H-336	2	Deleted				
221H-337	2	P2C5CI	Penetration Box	Containment		
221H-338	2	P2C5CX	Penetration Box		Rm. 427	
221H-339	2	L1P	Cabling	Containment		
221H-340	2	L1Q	Cabling	Containment		
221H-341	2	JT3955	Terminal Block Box	Containment		
221H-342	2	BE16A	Motor Control Center		Rm. 515	
221H-343	2	BF16B	Motor Control Center		Rm. 500	
221H-344	2	EV06030	Terminal Block Box		Rm. 236	
221H-345	2	EV0603A	Terminal Block Box		Rm. 236	
221H-346	2	EV06110	Terminal Block Box		Rm. 208	
221H-347	2	EV0611A	Terminal Block Box		Rm. 208	
221H-348	2	NV06030	Push Button Switch		Rm. 236	
221H-349	2	NV0603A	Push Button Switch		Rm. 236	
221H-350	2	NV06110	Push Button Switch		Rm. 208	
221H-351	2	NV0611A	Push Button Switch		Rm. 208	
221H-352	2	N/A	Lubricants for 1E Equipment	Containment	Aux. Bldg.	
221H-353	2	Various	Electric Conductor Seal Assembly	Containment	Annulus	
221H-354	2	Various	Electrical Penetration Assembly	Containment	Annulus	

Facility: Davis-Besse Unit 1 SYSTEM COMPONENT EVALUATION WORKSHEET Index No.: 221H-012
Docket: 50-346 Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [illegible] Date: 11/4/83

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-012A
Rev.: 2

NOTES

Prepared by: N Harris Date 11/1/83
Checked by: [signature] Date 11/1/83

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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 287°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 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 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
Docket: 50-346

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No: 21H-013
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components	Operating Time	1 Year	1.1 Years	F	E-1 Note 1 ROC-30B	Simultaneous Test	None
Plant ID No. AG2	Temperature (°F)	283.0	346.0	H, X	E-1 ROC-30B	Simultaneous Test	None
Component: Cable							
Manufacturer: Okonite	Pressure (PSIA)	52.0	127.7	G, X	E-1 ROC-30B	Simultaneous Test	None
Model Number: Note 4							
Function: Power	Relative Humidity (%)	100.0	100.0	A	E-1 ROC-30B	Simultaneous Test	None
Accuracy: Spec: N/A Demon: N/A							
Service: Electrical Control	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	E-1 ROC-30B CAL-40 Note 2	Simultaneous Test, Analysis	None
Location: Containment	Radiation	3.87×10^7 RADS	2.0×10^8 RADS	CAL-44	E-1 ROC-30B	Sequential Test	None
Flood Level Elev: 572'-2" Above Flood Level: No	Aging	40 Years	40 Years	I	CAL-90 E-1 ROC-30B	Sequential Test	None
Needed for:							
Hot Shutdown [X]	Submergence	572'-2"	Note 3	B	Note 3	Note 3	None
Cold Shutdown [X]							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-013A
Rev.: 2

Prepared by: H. Lum Date 11/4/83
Checked by: S. McDonald Date 11/7/83

NOTES

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 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 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)

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No. 221H-014
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: J McDonald Date: 11/4/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components	Operating Time	1 Year	1.1 Years	F	E-3 Note 1 V-23B	Simultaneous Test	None
Plant ID No. B01	Temperature (°F)	283.0	320.0	H, X	E-3 V-23B	Simultaneous Test	None
Component: Cable							
Manufacturer: Kerite	Pressure (PSIA)	52.0	96.7	G, X	E-3 V-23B	Simultaneous Test	None
Model Number: Note 4							
Function: Power	Relative Humidity (%)	100.0	100.0	A	E-3 V-23B	Simultaneous Test	None
Accuracy: Spec: N/A Demon: N/A							
Service: Power Cable	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	E-3 V-23B CAL-40 Note 2	Simultaneous Test, Analysis	None
Location: Containment	Radiation	3.87×10^7 RADS	1.0×10^8 RADS	CAL-44	E-3 V-23B	Sequential Test	None
Flood Level Elev: 572'-2" Above Flood Level: No	Aging	40 Years	40 Years	I	CAL-91 E-3 V-23B	Sequential Test	None
Needed for: Hot Shutdown [X]	Submergence	572'-2"	Note 3	B	Note 3	Note 3	None
Cold Shutdown [X]							

'acility: Da[redacted] Besse Unit 1 SYSTEM COMPONENT [redacted]UATION WORKSHEET Index No. [redacted]21H-014A
'ocket: 50-346 Rev.: 2

NOTES

'repared by: Z Lewis Date 9/30/83
'hecked by: [redacted] 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)

!. 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 1 conductor 500 MCM 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

Index No: 221H-015
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components Plant ID No. BO2 Component: Cable Manufacturer: Kerite Model Number: Note 4 Function: Power Accuracy: Spec: N/A Demon: N/A Service: Power Cable Location: Containment Flood Level Elev: 572'-2" Above Flood Level: No Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	1.1 Years Note 1	F	E-3 Note 1 V-23B	Simultaneous Test	None
	Temperature (°F)	283.0	320.0	H, X	E-3 V-23B	Simultaneous Test	None
	Pressure (PSIA)	52.0	96.7	G, X	E-3 V-23B	Simultaneous Test	None
	Relative Humidity (%)	100.0	100.0	A	E-3 V-23B	Simultaneous Test	None
	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	E-3 V-23B CAL-40 Note 2	Simultaneous Test, Analysis	None
	Radiation	3.87×10^7 RADS	1.0×10^8 RADS	CAL-44	E-3 V-23B	Sequential Test	None
	Aging	40 Years	40 Years	I	CAL-91 E-3 V-23B	Sequential Test	None
	Submergence	572'-2"	Note 3	B	Note 3	Note 3	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No: 221H-015A
Rev.: 2

NOTES

Prepared by: Z Lewis Date 9/24/83
Checked by: [illegible] Date 9/30/83

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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.

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

Facility: Davis-Besse Unit 1 SYSTEM COMPONENT EVALUATION WORKSHEET Index No.: 221H-016
Docket: 50-346 Rev.: 2

Prepared by: N Harris Date: 11/1/87
Checked by: [signature] Date: 11/4/87

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components	Operating Time	1 Year	1.1 Years	F	E-3 Note 1 V-23B	Simultaneous Test	None
Plant ID No. BO4	Temperature (°F)	283.0	320.0	H, X	E-3 V-23B	Simultaneous Test	None
Component: Cable							
Manufacturer: Kerite	Pressure (PSIA)	52.0	96.7	G, X	E-3 V-23B	Simultaneous Test	None
Model Number: Note 4							
Function: Power	Relative Humidity (%)	100.0	100.0	A	E-3 V-23B	Simultaneous Test	None
Accuracy: Spec: N/A Demon: N/A							
Service: Power Cable	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0 Note 2	A	E-3 V-23B CAL-40 Note 2	Simultaneous Test, Analysis	None
Location: Containment	Radiation	3.87×10^7 RADS	1.0×10^8 RADS	CAL-44	E-3 V-23B	Sequential Test	None
Flood Level Elev: 572'-2" Above Flood Level: No	Aging	40 Years	40 Years	I	CAL-91 E-3 V-23B	Sequential Test	None
Needed for: Hot Shutdown [X]	Submergence	572'-2"	Note 3	B	Note 3	Note 3	None
Cold Shutdown [X]							

acility: Dav[redacted] Besse Unit 1 SYSTEM COMPONENT E[redacted]ATION WORKSHEET Index No. [redacted]1H-016A
ocket: 50-346 Rev.: 2

NOTES

repared by: Y Lewis Date 9/30/83
hecked by: G MacDonald 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)

. 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)

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-017
Rev.: 2

Prepared by: N Lewis Date: 11/1/93
Checked by: [illegible] Date: 11/2/93

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components	Operating Time	1 Year	1.1 Years	F	E-3 Note 1 V-23B	Simultaneous Test	None
Plant ID No. B06	Temperature (°F)	283.0	320.0	H, X	E-3 V-23B	Simultaneous Test	None
Component: Cable							
Manufacturer: Kerite	Pressure (PSIA)	52.0	96.7	G, X	E-3 V-23B	Simultaneous Test	None
Model Number: Note 4							
Function: Power	Relative Humidity (%)	100.0	100.0	A	E-3 V-23B	Simultaneous Test	None
Accuracy: Spec: N/A Demon: N/A	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	E-3 V-23B CAL-40 Note 2	Simultaneous Test, Analysis	None
Service: Power Cable							
Location: Containment	Radiation	3.87×10^7 RADS	1.0×10^8 RADS	CAL-44	E-3 V-23B	Sequential Test	None
Flood Level Elev: 572'-2" Above Flood Level: No	Aging	40 Years	40 Years	I	CAL-91 E-3 V-23B	Sequential Test	None
Needed for:							
Hot Shutdown [X]	Submergence	572'-2"	Note 3	B	Note 3	Note 3	None
Cold Shutdown [X]							

Facility: Davis-Besse Unit 1 SYSTEM COMPONENT EVALUATION WORKSHEET Index No. 221H-017A
Docket: 50-346 Rev.: 2

NOTES

Prepared by: J Lewis Date 9/30/83
Checked by: [illegible] Date 9/30/83

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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.

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 Index No.: 221H-018
Docket: 50-346 Rev.: 2

Prepared by: N Lewis Date: 11/1/87
Checked by: [signature] Date: 11/2/87

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components	Operating Time	1 Year	1.1 Years	F	E-3 Note 1 V-23B	Simultaneous Test	None
Plant ID No. B07	Temperature (°F)	283.0	320.0	H, X	E-3 V-23B	Simultaneous Test	None
Component: Cable							
Manufacturer: Kerite	Pressure (PSIA)	52.0	96.7	G, X	E-3 V-23B	Simultaneous Test	None
Model Number: Note 4							
Function: Power	Relative Humidity (%)	100.0	100.0	A	E-3 V-23B	Simultaneous Test	None
Accuracy: Spec: N/A Demon: N/A							
Service: Power Cable	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	E-3 V-23B CAL-40 Note 2	Simultaneous Test, Analysis	None
Location: Containment	Radiation	3.87×10^7 RADS	1.0×10^8 RADS	CAL-44	E-3 V-23B	Sequential Test	None
Flood Level Elev: 572'-2" Above Flood Level: No	Aging	40 Years	40 Years	I	CAL-91 E-3 V-23B	Sequential Test	None
Needed for:							
Hot Shutdown [X]	Submergence	572'-2"	Note 3	B	Note 3	Note 3	None
Cold Shutdown [X]							

Facility: Davis-Besse Unit 1 SYSTEM COMPONENT EVALUATION WORKSHEET Index No. 21H-018A
Docket: 50-346 Rev.: 2

NOTES

Prepared by: J Lewis Date 9/30/83
Checked by: G MacDonell Date 9/30/83

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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 283°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 3 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 Index No.: 221H-019
Docket: 50-346 Rev.: 2

Prepared by: [signature] Date: 11/1/83
Checked by: [signature] Date: 11/2/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components	Operating Time	1 Year	1.1 Years	Note 1	Note 2	Type Test	None
Plant ID No. Various Component: Cable	Temperature (°F)	221.0	340.0	C-314	E-19	Type Test	None
Manufacturer: General Electric Model Number: SI-57275	Pressure (PSIA)	19.76	77.7	C-314	E-19	Type Test	None
Function: Switchboard Wire Accuracy: Spec: N/A Demon: N/A	Relative Humidity (%)	100.0	100.0	C-314	E-19	Type Test	None
Service: Various	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg.	Radiation	1.97×10^6 RADS	2.1×10^8 RADS	T	E-23	Type Test	None
Flood Level Elev: N/A Above Flood Level: N/A	Aging	40 Years	40 Years	I	E-23 Note 3	Type Test	None
Needed for: Hot Shutdown [X] Cold Shutdown [X]	Submergence	N/A	N/A	N/A	N/A	N/A	None

Facility: D[redacted]-Besse Unit 1 SYSTEM COMPONENT [redacted]LUATION WORKSHEET Index N[redacted]221H-019A
Docket: 50-346 Rev.: 2

NOTES

Prepared by: J Lewis Date 9/30/83
Checked by: [signature] Date 11/2/83

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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 2.1×10^8 rads are for Rockbestos Firewall 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.

Facility: Davis-Besse Unit 1 — SYSTEM COMPONENT EVALUATION WORKSHEET — Index No. 21H-020
Docket: 50-346 — Rev.: 2

Prepared by: N Lewis — Date: 11/1/83
Checked by: [signature] — Date: 11/4/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components Plant ID No. B10 Component: Cable Manufacturer: Okonite Model Number: Note 4 Function: Control Accuracy: Spec: N/A Demon: N/A Service: Electrical Control Location: Containment Flood Level Elev: 572'-2" Above Flood Level: No Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	1.1 Years	F	E-1 Note 1 ROC-30B	Simultaneous Test	None
	Temperature (°F)	283.0	346.0	H, X	E-1 ROC-30B	Simultaneous Test	None
	Pressure (PSIA)	52.0	127.7	G, X	E-1 ROC-30B	Simultaneous Test	None
	Relative Humidity (%)	100.0	100.0	A	E-1 ROC-30B	Simultaneous Test	None
	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	E-1 ROC-30B CAL-40 Note 2	Simultaneous Test, Analysis	None
	Radiation	3.87×10^7 RADS	2.0×10^8 RADS	CAL-44	E-1 ROC-30B	Sequential Test	None
	Aging	40 Years	40 Years	I	CAL-90 E-1 ROC-30B	Sequential Test	None
	Submergence	572'-2"	Note 3	B	Note 3	Note 3	None

Facility: Davis-Besse Unit 1
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NOTES

Prepared by: [signature] Date 11/1/83
Checked by: [signature] Date 11/2/83

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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 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 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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Index No: 221H-021
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/4/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components Plant ID No. B11 Component: Cable Manufacturer: Kerite Model Number: Note 4 Function: Power Accuracy: Spec: N/A Demon: N/A Service: Power Cable Location: Containment Flood Level Elev: 572'-2" Above Flood Level: No Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	1.1 Years	F	E-3 Note 1 V-23B	Simultaneous Test	None
	Temperature (°F)	283.0	320.0	H, X	E-3 V-23B	Simultaneous Test	None
	Pressure (PSIA)	52.0	96.7	G, X	E-3 V-23B	Simultaneous Test	None
	Relative Humidity (%)	100.0	100.0	A	E-3 V-23B	Simultaneous Test	None
	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	E-3 V-23B CAL-40 Note 2	Simultaneous Test, Analysis	None
	Radiation	3.87×10^7 RADS	1.0×10^8 RADS	CAL-44	E-3 V-23B	Sequential Test	None
	Aging	40 Years	40 Years	I	CAL-91 E-3 V-23B	Sequential Test	None
	Submergence	572'-2"	Note 3	B	Note 3	Note 3	None

Facility: Da[redacted]-Besse Unit 1 SYSTEM COMPONENT [redacted]UATION WORKSHEET Index No: [redacted]21H-021A
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NOTES

Prepared by: J Lewis Date 9/30/83
Checked by: [illegible] Date 9/30/83

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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 postula[illegible] 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-23B)

Facility: Davis-Besse Unit 1
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SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-022
Rev.: 2

Prepared by: T Lewis Date: 9/30/87
Checked by: [illegible] Date: [illegible]

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components Plant ID No.: BE11A Component: Motor Control Center Manufacturer: Westinghouse Model Number: Type W Function: Circuit Breaker Accuracy: Spec: N/A, Demon: N/A Service: Power Supply/Control Location: Auxiliary Bldg. Rm. 209 Flood Level Elev: N/A Above Flood Level: N/A Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	Note 3, 4	F	N/A	N/A	Note 1
	Temperature (°F)	N/A	N/A	Note 2	N/A	N/A	None
	Pressure (PSIA)	N/A	N/A	Note 2	N/A	N/A	None
	Relative Humidity (%)	N/A	N/A	Note 2	N/A	N/A	None
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
	Radiation	1.62×10^6 RADS	Note 3, 4	T	N/A	N/A	Note 1
	Aging	40 Years	Note 4	I	N/A	N/A	Note 1
	Submergence	N/A	N/A	N/A	N/A	N/A	None

'acility: Davis-Besse Unit 1
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SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-022A
Rev.: 2

NOTES

repared by: Sonia Yoas Date 3/7/83
hecked by: [illegible] Date 3/7/83

.. 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.

. 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 4×10^6 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 1E 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 Index No.: 21H-023
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Prepared by: J Lewis Date: 9/30/83
Checked by: [illegible] Date: [illegible]

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components Plant ID No.: BE11B Component: Motor Control Center Manufacturer: Westinghouse Model Number: Type W Function: Circuit Breaker Accuracy: Spec: N/A Demon: N/A Service: Power Supply/Control Location: Auxiliary Bldg. Rm. 304 Flood Level Elev: N/A Above Flood Level: N/A Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	Note 3, 4	F	N/A	N/A	Note 1
	Temperature (°F)	208.0	Exempt	C-304	Note 2, 4	N/A	None
	Pressure (PSIA)	15.83	Exempt	C-304	Note 2, 4	N/A	None
	Relative Humidity (%)	100.0	Exempt	A	Note 2, 4	N/A	None
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
	Radiation	6.53×10^4 RADS	Note 3, 4	T	N/A	N/A	Note 1
	Aging	40 Years	Note 4	I	N/A	N/A	Note 1
	Submergence	N/A	N/A	N/A	N/A	N/A	None

'acility: Davis-Besse Unit 1
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Index No.: 221H-023A
Rev.: 2

NOTES

Prepared by: Sonia Yoosuf Date 3/7/83
Checked by: [illegible] Date 3/7/83

.. 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.

. 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 4×10^6 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 1E 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.

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SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-024
Rev.: 2

Prepared by: R Lewis Date: 9/30/83
Checked by: [illegible] Date: [illegible]

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components Plant ID No.: BE11C Component: Motor Control Center Manufacturer: Westinghouse Model Number: Type W Function: Circuit Breaker Accuracy: Spec: N/A Demon: N/A Service: Power Supply/Control Location: Auxiliary Bldg. Rm. 304 Flood Level Elev: N/A Above Flood Level: N/A Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	Note 2, 3, 4	F	N/A	N/A	Note 1
	Temperature (°F)	208.0	Note 2, 4	C-304	N/A	N/A	Note 1
	Pressure (PSIA)	15.83	Note 2, 4	C-304	N/A	N/A	Note 1
	Relative Humidity (%)	100.0	Note 2, 4	A	N/A	N/A	Note 1
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
	Radiation	6.53×10^4 RADS	Note 3, 4	T	N/A	N/A	Note 1
	Aging	40 Years	Note 4	I	N/A	N/A	Note 1
	Submergence	N/A	N/A	N/A	N/A	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-024A
Rev.: 2

NOTES

Prepared by: Sonia Yoosis Date 3/2/83
Checked by: [illegible] Date 3/2/83

.. 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 4×10^6 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. There 1E 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
'ocket: 50-346

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Index No. [illegible]21H-025
Rev.: 2

'repared by: F Lewis Date: 9/30/83
:hecked by: [illegible] Date: [illegible]

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components Plant ID No.: BE11D Component: Motor Control Center Manufacturer: Westinghouse Model Number: Type W Function: Circuit Breaker Accuracy: Spec: N/A Demon: N/A Service: Power Supply/Control Location: Auxiliary Bldg. Rm. 227 Flood Level Elev: N/A Above Flood Level: N/A Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	Note 3, 4	F	N/A	N/A	Note 1
	Temperature (°F)	N/A	N/A	Note 2	N/A	N/A	None
	Pressure (PSIA)	N/A	N/A	Note 2	N/A	N/A	None
	Relative Humidity (%)	N/A	N/A	Note 2	N/A	N/A	None
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
	Radiation	1.62×10^6 RADS	Note 3, 4	T	N/A	N/A	Note 1
	Aging	40 Years	Note 4	I	N/A	N/A	Note 1
	Submergence	N/A	N/A	N/A	N/A	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-025A
Rev.: 2

NOTES

Prepared by: Sonia Ybarra Date 3/2/83
Checked by: [illegible] Date 3/2/83

.. 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 4×10^6 Rads or higher. This value is greater than the total integrated dose that the MCC will see.

1. 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 1E 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.

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SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 21h-026
Rev.: 2

Prepared by: Z Lewis Date: 9/20/83
Checked by: [illegible] Date: [illegible]

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components Plant ID No.: BF11A Component: Motor Control Center Manufacturer: Westinghouse Model Number: Type W Function: Circuit Breaker Accuracy: Spec: N/A Demon: N/A Service: Power Supply/Control Location: Auxiliary Bldg. Rm. 427 Flood Level Elev: N/A Above Flood Level: N/A Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	Note 3, 4	F	N/A	N/A	Note 1
	Temperature (°F)	N/A	N/A	Note 2	N/A	N/A	None
	Pressure (PSIA)	N/A	N/A	Note 2	N/A	N/A	None
	Relative Humidity (%)	N/A	N/A	Note 2	N/A	N/A	None
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
	Radiation	3.12×10^5 RADS	Note 3, 4	T	N/A	N/A	Note 1
	Aging	40 Years	Note 4	I	N/A	N/A	Note 1
	Submergence	N/A	N/A	N/A	N/A	N/A	None

Facility: Davis-Besse Unit 1
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SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-026
Rev.: 2

NOTES

Prepared by: Sonia Yuan Date 3/7/83
Checked by: L McDonald Date 3/7/83

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

2. 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 4×10^6 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 1E 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 Index No.: 221H-027
Docket: 50-346 Rev.: 2

Prepared by: T Lewis Date: 9/30/83
Checked by: [illegible] Date: [illegible]

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

Facility: Davis-Besse Unit 1
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SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-027A
Rev.: 2

NOTES

Prepared by: Sania Ghaus Date 2/7/83
Checked by: [illegible] Date 3/7/83

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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 4×10^6 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 1E 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.

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SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-028
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Prepared by: Z Lewis Date: 9/30/83
Checked by: [illegible] Date: 10-3-83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components	Operating Time	1 Year	Note 3, 4	F	N/A	N/A	Note 1
Plant ID No.: BF11D Component: Motor Control Center	Temperature (°F)	N/A	N/A	Note 2	N/A	N/A	None
Manufacturer: Westinghouse	Pressure (PSIA)	N/A	N/A	Note 2	N/A	N/A	None
Model Number: Type W Function: Circuit Breaker	Relative Humidity (%)	N/A	N/A	Note 2	N/A	N/A	None
Accuracy: Spec: N/A Demon: N/A Service: Power Supply/Control	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 227	Radiation	1.62×10^6 RADS	Note 3, 4	T	N/A	N/A	Note 1
Flood Level Elev: N/A Above Flood Level: N/A	Aging	40 Years	Note 4	I	N/A	N/A	Note 1
Needed for: Hot Shutdown [X] Cold Shutdown [X]	Submergence	N/A	N/A	N/A	N/A	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-028
Rev.: 2

NOTES

Prepared by: Sonia Yanez Date 3/7/83
Checked by: G. McDonald Date 3/7/83

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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 4×10^6 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 1E 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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-029
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components Plant ID No. BG1 Component: Cable Manufacturer: Kerite Model Number: Note 4 Function: Power Accuracy: Spec: N/A Demon: N/A Service: Power Cable Location: Containment Flood Level Elev: 572'-2" Above Flood Level: No Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	1.1 Years	F	E-3 Note 1 V-23B	Simultaneous Test	None
	Temperature (°F)	283.0	320.0	H, X	E-3 V-23B	Simultaneous Test	None
	Pressure (PSIA)	52.0	96.7	G, X	E-3 V-23B	Simultaneous Test	None
	Relative Humidity (%)	100.0	100.0	A	E-3 V-23B	Simultaneous Test	None
	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	E-3 V-23B CAL-40 Note 2	Simultaneous Test, Analysis	None
	Radiation	3.87×10^7 RADS	1.0×10^8 RADS	CAL-44	E-3 V-23B	Sequential Test	None
	Aging	40 Years	40 Years	I	CAL-91 E-3 V-23B	Sequential Test	None
	Submergence	572'-2"	Note 3	B	Note 3	Note 3	None

Facility: Davis Besse Unit 1 SYSTEM COMPONENT EVALUATION WORKSHEET Index No. 21H-029A
Docket: 50-346 Rev.: 2

NOTES

Prepared by: T Lewis Date 9/30/83
Checked by: [illegible] Date 9/30/83

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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.

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)

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-030
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/4/83

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

acility: Dav[illegible] Besse Unit 1 SYSTEM COMPONENT E[illegible]ATION WORKSHEET Index No. [illegible]1H-030A
ocket: 50-346 Rev.: 2

NOTES

repared by: Z Lewis Date 9/30/83
hecked by: E MacDonald 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)

. 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
Docket: 50-346

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-031
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components	Operating Time	1 Year	1.1 Years	F	E-3 Note 1 V-23B	Simultaneous Test	None
Plant ID No. BG3 Component: Cable	Temperature (°F)	283.0	320.0	H, X	E-3 V-23B	Simultaneous Test	None
Manufacturer: Kerite Model Number: Note 4	Pressure (PSIA)	52.0	96.7	G, X	E-3 V-23B	Simultaneous Test	None
Function: Power Accuracy: Spec: N/A Demon: N/A	Relative Humidity (%)	100.0	100.0	A	E-3 V-23B	Simultaneous Test	None
Service: Power Cable	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	E-3 V-23B CAL-40 Note 2	Simultaneous Test, Analysis	None
Location: Containment	Radiation	3.87×10^7 RADS	1.0×10^8 RADS	CAL-44	E-3 V-23B	Sequential Test	None
Flood Level Elev: 572'-2" Above Flood Level: No	Aging	40 Years	40 Years	I	CAL-91 E-3 V-23B	Sequential Test	None
Needed for: Hot Shutdown [X] Cold Shutdown [X]	Submergence	572'-2"	Note 3	B	Note 3	Note 3	None

'acility: Davis-Besse Unit 1 SYSTEM COMPONENT EVALUATION WORKSHEET Index No. 221H-031A
Docket: 50-346 Rev.: 2

NOTES

Prepared by: Z Lewis Date 9/30/83
Checked by: DMacDonald 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 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

Index No.: 2218-032
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [illegible] Date: 11/2/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components	Operating Time	1 Year	1.1 Years	F	E-3 Note 1 V-23B	Simultaneous Test	None
Plant ID No. BG4	Temperature (°F)	283.0	320.0	H, X	E-3 V-23B	Simultaneous Test	None
Component: Cable							
Manufacturer: Kerite	Pressure (PSIA)	52.0	96.7	G, X	E-3 V-23B	Simultaneous Test	None
Model Number: Note 4							
Function: Power	Relative Humidity (%)	100.0	100.0	A	E-3 V-23B	Simultaneous Test	None
Accuracy: Spec: N/A Demon: N/A							
Service: Power Cable	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	E-3 V-23B CAL-40 Note 2	Simultaneous Test, Analysis	None
Location: Containment	Radiation	3.87×10^7 RADS	1.0×10^8 RADS	CAL-44	E-3 V-23B	Sequential Test	None
Flood Level Elev: 572'-2" Above Flood Level: No	Aging	40 Years	40 Years	I	CAL-91 E-3 V-23B	Sequential Test	None
Needed for: Hot Shutdown [X] Cold Shutdown [X]	Submergence	572'-2"	Note 3	B	Note 3	Note 3	None

Facility: Da[redacted]-Besse Unit 1 SYSTEM COMPONENT [redacted]EVALUATION WORKSHEET Index No: [redacted]21H-032A
Docket: 50-346 Rev.: 2

NOTES

Prepared by: F Lewis Date 9/30/83
Checked by: G MacDonald Date 9/30/83

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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.

4. 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)

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-033
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/4/83

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

acility: Davis Besse Unit 1 SYSTEM COMPONENT EVALUATION WORKSHEET Index No.: 21H-033A
ocket: 50-346 Rev.: 2

NOTES

repared by: [signature] Date 9/30/83
hecked by: [signature] 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)

. 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 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
Docket: 50-346

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-034
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [illegible] Date: 11/3/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components	Operating Time	1 Year	1.1 Years	F	E-3 Note 1 V-23B	Simultaneous Test	None
Plant ID No. BG6 Component: Cable	Temperature (°F)	283.0	320.0	H, X	E-3 V-23B	Simultaneous Test	None
Manufacturer: Kerite Model Number: Note 4	Pressure (PSIA)	52.0	96.7	G, X	E-3 V-23B	Simultaneous Test	None
Function: Power Accuracy: Spec: N/A Demon: N/A	Relative Humidity (%)	100.0	100.0	A	E-3 V-23B	Simultaneous Test	None
Service: Power Cable	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	E-3 V-23B CAL-40 Note 2	Simultaneous Test, Analysis	None
Location: Containment	Radiation	3.87×10^7 RADS	1.0×10^8 RADS	CAL-44	E-3 V-23B	Sequential Test	None
Flood Level Elev: 572'-2" Above Flood Level: No	Aging	40 Years	40 Years	I	CAL-91 E-3 V-23B	Sequential Test	None
Needed for: Hot Shutdown [X] Cold Shutdown [X]	Submergence	572'-2"	Note 3	B	Note 3	Note 3	None

Facility: Davis-Besse Unit 1 SYSTEM COMPONENT EVALUATION WORKSHEET Index No. 21H-034A
Docket: 50-346 Rev.: 2

NOTES

Prepared by: T Lewis Date 9/30/83
Checked by: J MacDonald Date 9/30/83

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.

4. Cable is Kerite Company stranded copper wire 3 conductor No. 4 AWG 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

Index No.: 221H-035
Rev.: 2

Prepared by: T Lewis Date: 9/30/83
Checked by: [illegible] Date: [illegible]

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components Plant ID No.: BYE2 Component: Motor Control Center Manufacturer: Westinghouse Model Number: Type W Function: Circuit Breaker Accuracy: Spec: N/A Demon: N/A Service: Power Supply/Control Location: Auxiliary Bldg. Rm. 304 Flood Level Elev: N/A Above Flood Level: N/A Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	Note 2, 3, 4	F	N/A	N/A	Note 1
	Temperature (°F)	208.0	Exempt	C-304	Note 2, 4	N/A	None
	Pressure (PSIA)	15.83	Exempt	C-304	Note 2, 4	N/A	None
	Relative Humidity (%)	100.0	Exempt	A	Note 2, 4	N/A	None
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
	Radiation	6.53×10^4 RADS	Note 3, 4	T	N/A	N/A	Note 1
	Aging	40 Years	Note 4	I	N/A	N/A	Note 1
	Submergence	N/A	N/A	N/A	N/A	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-035A
Rev.: 2

NOTES

Prepared by: Sonia Yanas Date 3/7/83
Checked by: [illegible] Date 3/7/83

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

2. 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 4×10^6 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 1E 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 Index No.: 221H-036
Docket: 50-346 Rev.: 2

Prepared by: F Lewis Date: 9/30/83
Checked by: [illegible] Date: [illegible]

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components Plant ID No.: BYF2 Component: Motor Control Center Manufacturer: Westinghouse Model Number: Type W Function: Circuit Breaker Accuracy: Spec: N/A Demon: N/A Service: Power Supply/Control Location: Auxiliary Bldg. Rm. 427 Flood Level Elev: N/A Above Flood Level: N/A Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	Note 3, 4	F	N/A	N/A	Note 1
	Temperature (°F)	N/A	N/A	Note 2	N/A	N/A	None
	Pressure (PSIA)	N/A	N/A	Note 2	N/A	N/A	None
	Relative Humidity (%)	N/A	N/A	Note 2	N/A	N/A	None
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
	Radiation	0.12×10^5 RADS	Note 3, 4	T	N/A	N/A	Note 1
	Aging	40 Years	Note 4	I	N/A	N/A	Note 1
	Submergence	N/A	N/A	N/A	N/A	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-036A
Rev.: 2

NOTES

Prepared by: Sonia Wasko Date 3/7/83
Checked by: [illegible] Date 3/7/83

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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 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 4×10^6 Rads or h[illegible]r. 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 1E 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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-037
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components	Operating Time	1 Year	1.1 Years	F	E-3 Note 1 V-23B	Simultaneous Test	None
Plant ID No. C01	Temperature (°F)	283.0	320.0	H, X	E-3 V-23B	Simultaneous Test	None
Component: Cable							
Manufacturer: Kerite	Pressure (PSIA)	52.0	96.7	G, X	E-3 V-23B	Simultaneous Test	None
Model Number: Note 4							
Function: Control	Relative Humidity (%)	100.0	100.0	A	E-3 V-23B	Simultaneous Test	None
Accuracy: Spec: N/A Demon: N/A							
Service: Control Cable	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	E-3 V-23B CAL-40 Note 2	Simultaneous Test, Analysis	None
Location: Containment	Radiation	3.87×10^7 RADS	1.0×10^8 RADS	CAL-44	E-3 V-23B	Sequential Test	None
Flood Level Elev: 572'-2" Above Flood Level: No	Aging	40 Years	40 Years	I	CAL-91 E-3 V-23B	Sequential Test	None
Needed for:							
Hot Shutdown [X]	Submergence	572'-2"	Note 3	B	Note 3	Note 3	None
Cold Shutdown [X]							

Facility: Davis-Besse Unit 1 SYSTEM COMPONENT EVALUATION WORKSHEET Index No: 21H-037A
Docket: 50-346 Rev.: 2

NOTES

Prepared by: T Lewis Date 9/30/83
Checked by: BMacDonald Date 9/30/83

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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.

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)

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-038
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components	Operating Time	1 Year	1.1 Years	F	E-3 Note 1 V-23B	Simultaneous Test	None
Plant ID No. CO2 Component: Cable	Temperature (°F)	283.0	320.0	H, X	E-3 V-23B	Simultaneous Test	None
Manufacturer: Kerite Model Number: Note 4	Pressure (PSIA)	52.0	96.7	G, X	E-3 V-23B	Simultaneous Test	None
Function: Control Accuracy: Spec: N/A Demon: N/A	Relative Humidity (%)	100.0	100.0	A	E-3 V-23B	Simultaneous Test	None
Service: Control Cable	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	E-3 V-23B CAL-40 Note 2	Simultaneous Test, Analysis	None
Location: Containment	Radiation	3.87×10^7 RADS	1.0×10^8 RADS	CAL-44	E-3 V-23B	Sequential Test	None
Flood Level Elev: 572'-2" Above Flood Level: No	Aging	40 Years	40 Years	I	CAL-91 E-3 V-23B	Sequential Test	None
Needed for: Hot Shutdown [X] Cold Shutdown [X]	Submergence	572'-2"	Note 3	B	Note 3	Note 3	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No. [illegible]21H-038A
Rev.: 2

NOTES

repared by: T Lewis Date 9/30/83
hecked by: D MacDonald 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)

. 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 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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-039
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/1/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components Plant ID No. C10 Component: Cable Manufacturer: Kerite Model Number: Note 4 Function: Control Accuracy: Spec: N/A Demon: N/A Service: Control Cable Location: Containment Flood Level Elev: 572'-2" Above Flood Level: No Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	1.1 Years	F	E-3 Note 1 V-23B	Simultaneous Test	None
	Temperature (°F)	283.0	320.0	H, X	E-3 V-23B	Simultaneous Test	None
	Pressure (PSIA)	52.0	96.7	G, X	E-3 V-23B	Simultaneous Test	None
	Relative Humidity (%)	100.0	100.0	A	E-3 V-23B	Simultaneous Test	None
	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	E-3 V-23B CAL-40 Note 2	Simultaneous Test, Analysis	None
	Radiation	3.87×10^7 RADS	1.0×10^8 RADS	CAL-44	E-3 V-23B	Sequential Test	None
	Aging	40 Years	40 Years	I	CAL-91 E-3 V-23B	Sequential Test	None
	Submergence	572'-2"	Note 3	B	Note 3	Note 3	None

Facility: Davis-Besse Unit 1 SYSTEM COMPONENT EVALUATION WORKSHEET Index No.: 21H-039A
Docket: 50-346 Rev.: 2

NOTES

Prepared by: J Lewis Date 9/30/83
Checked by: [illegible] Date 9/30/83

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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.

4. 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)

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-040
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components	Operating Time	1 Year	1.1 Years	F	E-3 Note 1 V-23B	Simultaneous Test	None
Plant ID No. C11	Temperature (°F)	283.0	320.0	H, X	E-3 V-23B	Simultaneous Test	None
Component: Cable							
Manufacturer: Kerite	Pressure (PSIA)	52.0	96.7	G, X	E-3 V-23B	Simultaneous Test	None
Model Number: Note 4							
Function: Control	Relative Humidity (%)	100.0	100.0	A	E-3 V-23B	Simultaneous Test	None
Accuracy: Spec: N/A Demon: N/A							
Service: Control Cable	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	E-3 V-23B CAL-40 Note 2	Simultaneous Test, Analysis	None
Location: Containment	Radiation	3.87×10^7 RADS	1.0×10^8 RADS	CAL-44	E-3 V-23B	Sequential Test	None
Flood Level Elev: 572'-2" Above Flood Level: No	Aging	40 Years	40 Years	I	CAL-91 E-3 V-23B	Sequential Test	None
Needed for: Hot Shutdown [X]	Submergence	572'-2"	Note 3	B	Note 3	Note 3	None
Cold Shutdown [X]							

Facility: Davis-Besse Unit 1 SYSTEM COMPONENT EVALUATION WORKSHEET Index No. 21H-040A
Docket: 50-346 Rev.: 2

NOTES

Prepared by: J Lewis Date 9/30/83
Checked by: Bruce Davis Date 9/30/83

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.

4. 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: Davis-Besse Unit 1 SYSTEM COMPONENT EVALUATION WORKSHEET Index No.: 221H-041
Docket: 50-346 Rev.: 2

Prepared by: N Harris Date: 11/1/83
Checked by: [illegible] Date: 11/2/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components	Operating Time	1 Year	1.1 Years	F	E-3 Note 1 V-23B	Simultaneous Test	None
Plant ID No. C12	Temperature (°F)	283.0	320.0	H, X	E-3 V-23B	Simultaneous Test	None
Component: Cable							
Manufacturer: Kerite	Pressure (PSIA)	52.0	96.7	G, X	E-3 V-23B	Simultaneous Test	None
Model Number: Note 4							
Function: Control	Relative Humidity (%)	100.0	100.0	A	E-3 V-23B	Simultaneous Test	None
Accuracy: Spec: N/A Demon: N/A							
Service: Control Cable	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	E-3 V-23B CAL-40 Note 2	Simultaneous Test, Analysis	None
Location: Containment	Radiation	3.87×10^7 RADS	1.0×10^8 RADS	CAL-44	E-3 V-23B	Sequential Test	None
Flood Level Elev: 572'-2" Above Flood Level: No	Aging	40 Years	40 Years	I	CAL-91 E-3 V-23B	Sequential Test	None
Needed for:							
Hot Shutdown [X]	Submergence	572'-2"	Note 3	B	Note 3	Note 3	None
Cold Shutdown [X]							

acility: Davis-Besse Unit 1 SYSTEM COMPONENT EVALUATION WORKSHEET Index No. 21H-041A
ocket: 50-346 Rev.: 2

NOTES

repared by: F Lewis Date 9/30/83
hecked by: H MacDonald 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 7C No. 12 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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221E-042
Rev.: 2

Prepared by: N Lewis Date: 11/1/93
Checked by: [illegible] Date: 11/2/93

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components Plant ID No. C13 Component: Cable Manufacturer: Kerite Model Number: Note 4 Function: Control Accuracy: Spec: N/A Demon: N/A Service: Control Cable Location: Containment Flood Level Elev: 572'-2" Above Flood Level: No Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	1.1 Years	F	E-3 Note 1 V-23B	Simultaneous Test	None
	Temperature (°F)	283.0	320.0	H, X	E-3 V-23B	Simultaneous Test	None
	Pressure (PSIA)	52.0	96.7	G, X	E-3 V-23B	Simultaneous Test	None
	Relative Humidity (%)	100.0	100.0	A	E-3 V-23B	Simultaneous Test	None
	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	E-3 V-23B CAL-40 Note 2	Simultaneous Test, Analysis	None
	Radiation	3.87×10^7 RADS	1.0×10^8 RADS	CAL-44	E-3 V-23B	Sequential Test	None
	Aging	40 Years	40 Years	I	CAL-91 E-3 V-23B	Sequential Test	None
	Submergence	572'-2"	Notes 3 and 5	B	Note 3 CAL-65	Note 3	None

acility: Davis-Besse Unit 1 SYSTEM COMPONENT E[illegible]UATION WORKSHEET Index No.: [illegible]21H-042A
ocket: 50-346 Rev.: 2

NOTES

repared by: B Lewis Date 9/30/83
hecked by: [illegible] 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)

. 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 inabilty to operate MV5010C for any reason would not impact any other safety-related functions or mislead an operator. (Reference Evaluation Worksheet Index No. 221H-152)

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-043
Rev.: 2

Prepared by: N Lewis Date: 11/1/82
Checked by: [illegible] Date: 11/4/82

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components	Operating Time	1 Year	1.1 Years	F	E-3 Note 1 V-23B	Simultaneous Test	None
Plant ID No. C14	Temperature (°F)	283.0	320.0	H, X	E-3 V-23B	Simultaneous Test	None
Component: Cable							
Manufacturer: Kerite	Pressure (PSIA)	52.0	96.7	G, X	E-3 V-23B	Simultaneous Test	None
Model Number: Note 4							
Function: Control	Relative Humidity (%)	100.0	100.0	A	E-3 V-23B	Simultaneous Test	None
Accuracy: Spec: N/A Demon: N/A							
Service: Control Cable	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	E-3 V-23B CAL-40 Note 2	Simultaneous Test, Analysis	None
Location: Containment	Radiation	3.87×10^7 RADS	1.0×10^8 RADS	CAL-44	E-3 V-23B	Sequential Test	None
Flood Level Elev: 572'-2" Above Flood Level: No	Aging	40 Years	40 Years	I	CAL-91 E-3 V-23B	Sequential Test	None
Needed for: Hot Shutdown [X] Cold Shutdown [X]	Submergence	572'-2"	Note 3	B	Note 3	Note 3	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No. 21H-043A
Rev.: 2

NOTES

Prepared by: B Lewis Date 9/30/83
Checked by: [illegible] Date 9/30/83

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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.

4. 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)

Facility: Davis-Besse Unit 1
Docket: 50 346

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-044
Rev.: 2

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

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components Plant ID No. C15 Component: Cable Manufacturer: Kerite Model Number: Note 4 Function: Control Accuracy: Spec: N/A Demon: N/A Service: Control Cable Location: Containment Flood Level Elev: 572'-2" Above Flood Level: No Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	1.1 Years	F	E-3 Note 1 V-23B	Simultaneous Test	None
	Temperature (°F)	283.0	320.0	H, X	E-3 V-23B	Simultaneous Test	None
	Pressure (PSIA)	52.0	96.7	G, X	E-3 V-23B	Simultaneous Test	None
	Relative Humidity (%)	100.0	100.0	A	E-3 V-23B	Simultaneous Test	None
	Chemical Spray	boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	E-3 V-23B CAL-40 Note 2	Simultaneous Test, Analysis	None
	Radiation	3.87×10^7 RADS	1.0×10^8 RADS	CAL-44	E-3 V-23B	Sequential Test	None
	Aging	40 Years	40 Years	I	CAL-91 E-3 V-23B	Sequential Test	None
	Submergence	572'-2"	Note 3	B	Note 3	Note 3	None

Facility: Davis-Besse Unit 1 SYSTEM COMPONENT EVALUATION WORKSHEET Index No: 21H-044A
Docket: 50-346 Rev.: 2

NOTES

Prepared by: Z Lewis Date 9/30/83
Checked by: [illegible] Date 9/30/83

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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 168 hours. The temperature in containment peaks at 286°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 3C No. 12 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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-045
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [illegible] Date: 11/2/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components Plant ID No. C20 Component: Cable Manufacturer: Kerite Model Number: Note 4 Function: Control Accuracy: Spec: N/A Demon: N/A Service: Control Cable Location: Containment Flood Level Elev: 572'-2" Above Flood Level: No Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	1.1 Years	F	E-3 Note 1 V-23B	Simultaneous Test	None
	Temperature (°F)	283.0	320.0	H, X	E-3 V-23B	Simultaneous Test	None
	Pressure (PSIA)	52.0	96.7	G, X	E-3 V-23B	Simultaneous Test	None
	Relative Humidity (%)	100.0	100.0	A	E-3 V-23B	Simultaneous Test	None
	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	E-3 V-23B CAL-40 Note 2	Simultaneous Test, Analysis	None
	Radiation	3.87×10^7 RADS	1.0×10^8 RADS	CAL-44	E-3 V-23B	Sequential Test	None
	Aging	40 Years	40 Years	I	CAL-91 E-3 V-23B	Sequential Test	None
	Submergence	572'-2"	Notes 3 and 5	B	Note 3 CAL-65	Note 3	None

acility: Davis-Besse Unit 1 SYSTEM COMPONENT EVALUATION WORKSHEET Index No.: 221H-045A
ocket: 50-346 Rev.: 2

NOTES

repared by: J Lewis Date 9/30/83
hecked by: [illegible] 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)

. 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 2C No. 14 AWG with Kerite FR insulation and Kerite FR jacket. (References E-11, ROC-23A, and ROC-23B)

. 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. 224H-014 and 224H-015)

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-046
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [illegible] Date: 11/2/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components Plant ID No. C21 Component: Cable Manufacturer: Kerite Model Number: Note 4 Function: Control Accuracy: Spec: N/A Demon: N/A Service: Control Cable Location: Containment Flood Level Elev: 572'-2" Above Flood Level: No Needed for: Hot Shutdown | X | Cold Shutdown | X |	Operating Time	1 Year	1.1 Years	F	E-3 Note 1 V-23B	Simultaneous Test	None
	Temperature (°F)	283.0	320.0	H, X	E-3 V-23B	Simultaneous Test	None
	Pressure (PSIA)	52.0	96.7	G, X	E-3 V-23B	Simultaneous Test	None
	Relative Humidity (%)	100.0	100.0	A	E-3 V-23B	Simultaneous Test	None
	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	E-3 V-23B CAL-40 Note 2	Simultaneous Test, Analysis	None
	Radiation	3.87×10^7 RADS	1.0×10^8 RADS	CAL-44	E-3 V-23B	Sequential Test	None
	Aging	40 Years	40 Years	I	CAL-91 E-3 V-23B	Sequential Test	None
	Submergence	572'-2"	Note 3	B	Note 3	Note 3	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No. 221H-046A
Rev.: 2

NOTES

Prepared by: R. Lewis Date 9/30/83
Checked by: [signature] Date 9/30/83

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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.

4. 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
Docket: 50-346

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-047
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [illegible] Date: 11/2/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components Plant ID No. C22 Component: Cable Manufacturer: Kerite Model Number: Note 4 Function: Control Accuracy: Spec: N/A Demon: N/A Service: Control Cable Location: Containment Flood Level Elev: 572'-2" Above Flood Level: No Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	1.1 Years	F	E-3 Note 1 V-23B	Simultaneous Test	None
	Temperature (°F)	283.0	320.0	H, X	E-3 V-23B	Simultaneous Test	None
	Pressure (PSIA)	52.0	96.7	G, X	E-3 V-23B	Simultaneous Test	None
	Relative Humidity (%)	100.0	100.0	A	E-3 V-23B	Simultaneous Test	None
	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	E-3 V-23B CAL-40 Note 2	Simultaneous Test, Analysis	None
	Radiation	3.87×10^7 RADS	1.0×10^8 RADS	CAL-44	E-3 V-23B	Sequential Test	None
	Aging	40 Years	40 Years	I	CAL-01 E-3 V-23B	Sequential Test	None
	Submergence	572'-2"	Note 3	B	Note 3	Note 3	None

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

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Index No. 21H-047A
Rev.: 2

NOTES

Prepared by: T Lewis Date 9/30/83
Checked by: [illegible] Date 9/30/83

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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.

4. 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)

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Docket: 50-346 — Rev.: 2

Prepared by: N Lewis — Date: 11/1/83
Checked by: [signature] — Date: 11/4/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components Plant ID No. C23 Component: Cable Manufacturer: Kerite Model Number: Note 4 Function: Control Accuracy: Spec: N/A Demon: N/A Service: Control Cable Location: Containment Flood Level Elev: 572'-2" Above Flood Level: No Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	1.1 Years	F	E-3 Note 1 V-23B	Simultaneous Test	None
	Temperature (°F)	283.0	320.0	H, X	E-3 V-23B	Simultaneous Test	None
	Pressure (PSIA)	52.0	96.7	G, X	E-3 V-23B	Simultaneous Test	None
	Relative Humidity (%)	100.0	100.0	A	E-3 V-23B	Simultaneous Test	None
	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	E-3 V-23B CAL-40 Note 2	Simultaneous Test, Analysis	None
	Radiation	3.87×10^7 RADS	1.0×10^8 RADS	CAL-44	E-3 V-23B	Sequential Test	None
	Aging	40 Years	40 Years	I	CAL-91 E-3 V-23B	Sequential Test	None
	Submergence	572'-2"	Note 3	B	Note 3	Note 3	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No: 221H-048A
Rev.: 2

NOTES

Prepared by: J Lewis Date 9/30/83
Checked by: [illegible] Date 9/30/83

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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.

4. 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: Davis-Besse Unit 1 SYSTEM COMPONENT EVALUATION WORKSHEET Index No: 221H-049
Docket: 50-346 Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [illegible] Date: 11/2/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components Plant ID No. C24 Component: Cable Manufacturer: Kerite Model Number: Note 4 Function: Control Accuracy: Spec: N/A Demon: N/A Service: Control Cable Location: Containment Flood Level Elev: 572'-2" Above Flood Level: No Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	1.1 Years	F	E-3 Note 1 V-23B	Simultaneous Test	None
	Temperature (°F)	283.0	320.0	H, X	E-3 V-23B	Simultaneous Test	None
	Pressure (PSIA)	52.0	96.7	G, X	E-3 V-23B	Simultaneous Test	None
	Relative Humidity (%)	100.0	100.0	A	E-3 V-23B	Simultaneous Test	None
	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	E-3 V-23B CAL-40 Note 2	Simultaneous Test, Analysis	None
	Radiation	3.87×10^7 RADS	1.0×10^8 RADS	CAL-44	E-3 V-23B	Sequential Test	None
	Aging	40 Years	40 Years	I	CAL-91 E-3 V-23B	Sequential Test	None
	Submergence	572'-2"	Note 3	B	Note 3	Note 3	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No: 21H-049A
Rev.: 2

NOTES

Prepared by: J Lewis Date 9/30/83
Checked by: [signature] Date 9/3/83

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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.

4. 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: Davis-Besse Unit 1 SYSTEM COMPONENT EVALUATION WORKSHEET Index No. 221H-050
Docket: 50-346 Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/4/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components	Operating Time	1 Year	1.1 Years	F	E-3 Note 1 V-23B	Simultaneous Test	None
Plant ID No. C25 Component: Cable	Temperature (°F)	283.0	320.0	H, X	E-3 V-23B	Simultaneous Test	None
Manufacturer: Kerite Model Number: Note 4	Pressure (PSIA)	52.0	96.7	G, X	E-3 V-23B	Simultaneous Test	None
Function: Control Accuracy: Spec: N/A Demon: N/A	Relative Humidity (%)	100.0	100.0	A	E-3 V-23B	Simultaneous Test	None
Service: Control Cable	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	E-3 V-23B CAL-40 Note 2	Simultaneous Test, Analysis	None
Location: Containment	Radiation	3.87×10^7 RADS	1.0×10^8 RADS	CAL-44	E-3 V-23B	Sequential Test	None
Flood Level Elev: 572'-2" Above Flood Level: No	Aging	40 Years	40 Years	I	CAL-91 E-3 V-23B	Sequential Test	None
Needed for: Hot Shutdown [X] Cold Shutdown [X]	Submergence	572'-2"	Note 3	B	Note 3	Note 3	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-050A
Rev.: 2

NOTES

Prepared by: Y Lewis Date 9/30/83
Checked by: [illegible] Date 9/[illegible]/83

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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.

4. 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)

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

SYSTEM COMPONENT EVALUATION WORKSHEET

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Rev.: 2

Prepared by: [signature] Date: 1/4/83
Checked by: [signature] Date: 6/24/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification	Outstanding
	Parameter	Specification	Qualification	Specification	Qualification	Method	Items
System: Generic 1E Electrical Components Plant ID No. Various Component: Disconnect Switch Manufacturer: General Electric Model Number: SB-1 Function: Electrical Continuity Accuracy: Spec: N/A Demon: N/A Service: Various Location: Auxiliary Bldg. Flood Level Elev: N/A Above Flood Level: N/A Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	1.1 Years	Note 1	Note 2	Analysis	None
	Temperature (°F)	208	208	C-304	CAL-94	Analysis	None
	Pressure (PSIA)	15.83	15.83	C-304	Note 3	Analysis	None
	Relative Humidity (%)	100	None	A	N/A	N/A	Note 4
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
	Radiation	1.97×10^6 RADS	3.0×10^6 RADS	T	CAL-94	Analysis	None
	Aging	40 Years	40 Years	I	CAL-94	Analysis	None
	Submergence	N/A	N/A	N/A	N/A	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-051A
Rev.: 2

NOTES

Prepared by: [signature] Date 4/1/83
Checked by: [signature] Date 11/2/83

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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 CDE11A, CDE11B-1, CDE11B-2, CDE11C, CDYE2, and CDF11C 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.

Facility: Davis-Besse Unit 1 COMPONENT MATERIAL EVALUATION SHEET Index No. 221H-051B
Docket: 50-346 Rev.: 2

Prepared by: [signature] Date: 11/16/83
Checked by: [signature] Date: 11/21/83

Plant I.D. No.: Various Component: Switch
Manufacturer: General Electric Model No.: SB-1

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Cams Barriers Mounting Plate Rear Support Fixed Contact Support	Wood-Flour Filled Phenolic	40 Years @ 104°F	CAL-94	3×10^6 RADS (25% reduction all properties)	CAL-94
Barrier	Polyester Glass	40 Years @ 131°F	CAL-94	4×10^8 RADS (Threshold - tensile strength)	CAL-94
Cover	Polyvinyl Chloride	40 Years @ 140°F	CAL-94	8.0×10^6 RADS (25% reduction tensile strength)	CAL-94
Cover Screws	Zytel (Nylon)	40 Years @ 342°F	CAL-94	4.0×10^6 RADS (25% reduction elongation)	CAL-94

Material & Parts List Reference: V-36A

Facility: Davis-Besse Unit 1
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SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-052
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components Plant ID No. CD211A Component: Disconnect Switch Cabinet (CD) (Note 1) Terminal Block Manufacturer: Cabinet: GE Block: The States Co. Model Number: ZWM-250 Function: Switching & Control Accuracy: Spec: N/A Demon: N/A Service: Electrical Control Location: Auxiliary Bldg. Rm. 304 Flood Level Elev: N/A Above Flood Level: N/A Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	1.1 Years	F	Note 2, 3	Analysis	None
	Temperature (°F)	208.0	307.0	C-304	V-36B E-14	Simultaneous Test	None
	Pressure (PSIA)	15.83	61.0	C-304	V-36B E-14	Simultaneous Test	None
	Relative Humidity (%)	100.0	100.0	A	V-36B E-14	Simultaneous Test	None
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
	Radiation	6.53×10^4 RADS	2.0×10^6 RADS	T	CAL-92 Note 2	Analysis	None
	Aging	40 Years	Greater than 40 Years @ 104°F	I	CAL-92 Note 2	Analysis	None
	Submergence	N/A	N/A	N/A	N/A	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No. 221H-052A
Rev.: 2

NOTES

Prepared by: N Lewis Date 11/1/83
Checked by: [signature] Date 11/2/83

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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

Index No.: 221H-052B
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

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

Parts List	Materials List	THERMAL AGING Qualification	Reference	RADIATION Qualification	Reference
Base	General Purpose Durez #791	Greater than 40 Years @ 104°F	CAL-92	1.0×10^7 RADS	CAL-92
Barrier	Polypropolene Plaskon 1083 or Moplen CRV0-8	Greater than 40 Years @ 104°F	CAL-92	2.0×10^6 RADS	CAL-92
Terminal Strip	Galvanized Steel	Not Sensitive		Not Affected	
Screws	Steel	Not Sensitive		Not Affected	
Electrical Strips	Copper Alloy	Not Sensitive		Not Affected	
Rivet	Nylon	Greater than 40 Years @ 104°F	CAL-92	6.0×10^7 RADS	CAL-92

Material & Parts List Reference: V-36A

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-053
Rev.: 2

Prepared by: [signature] Date: 11/1/85
Checked by: [signature] Date: 11/2/85

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components Plant ID No. Various	Operating Time	1 Year	Exempt	Note 1	Note 2	N/A	None
Component: Terminal Lugs	Temperature (°F)	221	Exempt	C-314	Note 2	N/A	None
Manufacturer: Various	Pressure (PSIA)	19.76	Exempt	C-314	Note 2	N/A	None
Model Number: Various	Relative Humidity (%)	100%	Exempt	A	Note 2	N/A	None
Function: Electrical Continuity							
Accuracy: Spec: N/A Demon: N/A	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Service: Various							
Location: Auxiliary Bldg.	Radiation	1.97×10^6 RADS	Exempt	T	Note 2	N/A	None
Flood Level Elev: N/A Above Flood Level: N/A	Aging	40 Years	Exempt	I	Note 2	N/A	None
Needed for: Hot Shutdown [X] Cold Shutdown [X]	Submergence	N/A	N/A	N/A	N/A	N/A	None

Facility: Davis-Besse Unit 1
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SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-053A
Rev.: 2

NOTES

Prepared by: [signature] Date 11/1/93
Checked by: [signature] Date 11/2/93

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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 equipment 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
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SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221h-054
Rev.: 2

Prepared by: [signature] Date: 11/1/82
Checked by: [signature] Date: 11/2/82

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components Plant ID No. Various	Operating Time	1 Year	1.1 Years	Note 1	E-20 Note 2	Simultaneous Test	None
Component: Electric Fuses	Temperature (°F)	221	212	C-314	E-20 Note 3	Simultaneous Test	None
Manufacturer: Gould Electronics	Pressure (PSIA)	19.76	19.76	C-314	Note 4	Simultaneous Test	None
Model Number: AMP-Trap 250V-3 amp Function: Circuit Protection	Relative Humidity (%)	100%	100%	A	E-20	Simultaneous Test	None
Accuracy: Spec: N/A Demon: N/A Service: Various	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg.	Radiation	1.97×10^6 RADS	1.0×10^7 RADS	T	E-20	Simultaneous Test	None
Flood Level Elev: N/A Above Flood Level: N/A	Aging	40 Years	37.2 Years	I	E-20	Type Test	None
Needed for: Hot Shutdown [X] Cold Shutdown [X]	Submergence	N/A	N/A	N/A	N/A	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221E-054A
Rev.: 2

NOTES

Prepared by: [signature] Date 11/1/93
Checked by: [signature] Date 11/2/93

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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 qualification is enveloped by the qualified life and radiation testing.

3. The initial peak accident temperature of 221°F occurs almost instantaneously and returns to within the qualified temperature of 212°F within 10 seconds. Due to thermal lag considerations, this equipment will not be heated to even 212°F 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.

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

SYSTEM COMPONENT EVALUATION WORKSHEET

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

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components Plant ID No. CDE11B-1 Component: Disconnect Switch Cabinet (CD) (Note 1) Terminal Block Manufacturer: Cabinet: GE Block: The States Co. Model Number: ZWM-250 Function: Switching & Control Accuracy: Spec: N/A Demon: N/A Service: Electrical Control Location: Auxiliary Bldg. Rm. 304 Flood Level Elev: N/A Above Flood Level: N/A Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	1.1 Years	F	Note 2, 3	Analysis	None
	Temperature (°F)	208.0	307.0	C-304	V-36B E-14	Simultaneous Test	None
	Pressure (PSIA)	15.83	61.0	C-304	V-36B E-14	Simultaneous Test	None
	Relative Humidity (%)	100.0	100.0	A	V 36B E-14	Simultaneous Test	None
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
	Radiation	6.53×10^4 RADS	2.0×10^6 RADS	T	CAL-92 Note 2	Analysis	None
	Aging	40 Years	Greater than 40 Years @ 104°F	I	CAL-92 Note 2	Analysis	None
	Submergence	N/A	N/A	N/A	N/A	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

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

NOTES

'repared by: N Lewis Date 11/1/83
'hecked by: [signature] Date 11/2/83

. 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
Docket: 50-346

COMPONENT MATERIALS EVALUATION SHEET

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

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

Plant I.D. No.: CDE11B-1
Manufacturer: States Co.

Component: Terminal Block
Model No.: ZWM-250

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Base	General Purpose Durez #791	Greater than 40 Years @ 104°F	CAL-92	1.0×10^7 RADS	CAL-92
Barrier	Polypropolene Plaskon 1083 or Moplen CRV0-8	Greater than 40 Years @ 104°F	CAL-92	2.0×10^6 RADS	CAL-92
Terminal Strip	Galvanized Steel	Not Sensitive		Not Affected	
Screws	Steel	Not Sensitive		Not Affected	
Electrical Strips	Copper Alloy	Not Sensitive		Not Affected	
Rivet	Nylon	Greater than 40 Years @ 104°F	CAL-92	6.0×10^7 RADS	CAL-92

Material & Parts List Reference: V-36A

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-056
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components Plant ID No. CDE11B-2 Component: Disconnect Switch Cabinet (CD) (Note 1) Terminal Block Manufacturer: Cabinet: GE Block: The States Co. Model Number: ZWM-250 Function: Switching & Control Accuracy: Spec: N/A Demon: N/A Service: Electrical Control Location: Auxiliary Bldg. Rm. 304 Flood Level Elev: N/A Above Flood Level: N/A Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	1.1 Years	F	Note 2, 3	Analysis	None
	Temperature (°F)	208.0	307.0	C-304	V-36B E-14	Simultaneous Test	None
	Pressure (PSIA)	15.83	61.0	C-304	V-36B E-14	Simultaneous Test	None
	Relative Humidity (%)	100.0	100.0	A	V-36B E-14	Simultaneous Test	None
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
	Radiation	6.53×10^4 RADS	2.0×10^6 RADS	T	CAL-92 Note 2	Analysis	None
	Aging	40 Years	Greater than 40 Years @ 104°F	I	CAL-92 Note 2	Analysis	None
	Submergence	N/A	N/A	N/A	N/A	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-056A
Rev.: 2

NOTES

'repared by: N Lewis Date 11/1/83
:hecked by: D.C. McDonald Date 11/2/83

.. 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

Index No.: 221H-056B
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

Plant I.D. No.: CDE11B-2
Manufacturer: States Co.

Component: Terminal Block
Model No.: ZWM-250

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Base	General Purpose Durez #791	Greater chan 40 Years @ 104°F	CAL-92	1.0×10^7 RADS	CAL-92
Barrier	Polypropolene Plaskon 1083 or Moplen CRV0-8	Greater than 40 Years @ 104°F	CAL-92	2.0×10^6 RADS	CAL-92
Terminal Strip	Galvanized Steel	Not Sensitive		Not Affected	
Screws	Steel	Not Sensitive		Not Affected	
Electrical Strips	Copper Alloy	Not Sensitive		Not Affected	
Rivet	Nylon	Greater than 40 Years @ 104°F	CAL-92	6.0×10^7 RADS	CAL-92

Material & Parts List Reference: V-36A

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

SYSTEM COMPONENT EVALUATION WORKSHEET

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

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/4/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components Plant ID No. CDE11C Component: Disconnect Switch Cabinet (CD) (Note 1) Terminal Block Manufacturer: Cabinet: GE Block: The States Co. Model Number: ZWM-250 Function: Switching & Control Accuracy: Spec: N/A Demon: N/A Service: Electrical Control Location: Auxiliary Bldg. Rm. 304 Flood Level Elev: N/A Above Flood Level: N/A Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	1.1 Years	F	Note 2, 3	Analysis	None
	Temperature (°F)	208.0	307.0	C-304	V-36B E-14	Simultaneous Test	None
	Pressure (PSIA)	15.83	61.0	C-304	V-36B E-14	Simultaneous Test	None
	Relative Humidity (%)	100.0	100.0	A	V-36B E-14	Simultaneous Test	None
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
	Radiation	6.53×10^4 RADS	2.0×10^6 RADS	T	CAL-92 Note 2	Analysis	None
	Aging	40 Years	Greater than 40 Years @ 104°F	I	CAL-92 Note 2	Analysis	None
	Submergence	N/A	N/A	N/A	N/A	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

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

NOTES

Prepared by: N Lewis Date 11/1/83
Checked by: [signature] Date 11/4/83

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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

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

Prepared by: N Lewis Date: 11/1/83
Checked by: [illegible] Date: 11/2/83

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

Component: Terminal Block
Model No.: ZWM-250

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Base	General Purpose Durez #791	Greater than 40 Years @ 104°F	CAL-92	1.0×10^7 RADS	CAL-92
Barrier	Polypropolene Plaskon 1083 or Moplen CRV0-8	Greater than 40 Years @ 104°F	CAL-92	2.0×10^6 RADS	CAL-92
Terminal Strip	Galvanized Steel	Not Sensitive		Not Affected	
Screws	Steel	Not Sensitive		Not Affected	
Electrical Strips	Copper Alloy	Not Sensitive		Not Affected	
Rivet	Nylon	Greater than 40 Years @ 104°F	CAL-92	6.0×10^7 RADS	CAL-92

Material & Parts List Reference: V-36A

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

SYSTEM COMPONENT EVALUATION WORKSHEET

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

Prepared by: N Lewis Date: 11/1/83
Checked by: [illegible] Date: 11/4/83

EQUIPMENT DESCRIPTION	ENVIRONMENT		DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components Plant ID No. CDE11D Component: Disconnect Switch Cabinet (CD) (Note 1) Terminal Block Manufacturer: Cabinet: General Electric Block: The States Co. Model Number: ZWM-250 Function: Switching & Control Accuracy: Spec: N/A Demon: N/A Service: Electrical Control Location: Auxiliary Bldg. Rm. 227 Flood Level Elev: N/A Above Flood Level: N/A Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	40 Years	F	Note 3, 4	Analysis	None
	Temperature (°F)	N/A	N/A	Note 2	N/A	N/A	None
	Pressure (PSIA)	N/A	N/A	Note 2	N/A	N/A	None
	Relative Humidity (%)	N/A	N/A	Note 2	N/A	N/A	None
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
	Radiation	1.62×10^6 RADS	2.0×10^6 RADS	T	CAL-92 Note 3	Analysis	None
	Aging	40 Years	Greater than 40 Years @ 104°F	I	CAL-92 Note 3	Analysis	None
	Submergence	N/A	N/A	N/A	N/A	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

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

NOTES

repared by: N Lewis Date 11/1/93
hecked by: [illegible] Date 11/2/93

. 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.

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

COMPONENT MATERIALS EVALUATION SHEET

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

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

Plant I.D. No.: CDE11D
Manufacturer: States Co.

Component: Terminal Block
Model No.: ZWM-250

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Base	General Purpose Durez #791	Greater than 40 Years @ 104°F	CAL-92	1.0×10^7 RADS	CAL-92
Barrier	Polypropolene Plaskon 1083 or Moplen CRV0-8	Greater than 40 Years @ 104°F	CAL-92	2.0×10^6 RADS	CAL-92
Terminal Strip	Galvanized Steel	Not Sensitive		Not Affected	
Screws	Steel	Not Sensitive		Not Affected	
Electrical Strips	Copper Alloy	Not Sensitive		Not Affected	
Rivet	Nylon	Greater than 40 Years @ 104°F	CAL-92	6.0×10^7 RADS	CAL-92

Material & Parts List Reference: V-36A

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

SYSTEM COMPONENT EVALUATION WORKSHEET

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

repared by: N Lewis Date: 11/1/83
hecked by: [signature] Date: 11/4/83

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

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

NOTES

Prepared by: N Lewis Date 11/1/83
Checked by: [signature] Date 11/2/83

---

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

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.

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

COMPONENT MATERIALS EVALUATION SHEET

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

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

Plant I.D. No.: CDF11A-1
Manufacturer: States Co.

Component: Terminal Block
Model No.: ZWM-250

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Base	General Purpose Durez #791	Greater than 40 Years @ 104°F	CAL-92	1.0×10^7 RADS	CAL-92
Barrier	Polypropolene Plaskon 1083 or Moplen CRV0-8	Greater than 40 Years @ 104°F	CAL-92	2.0×10^6 RADS	CAL-92
Terminal Strip	Galvanized Steel	Not Sensitive		Not Affected	
Screws	Steel	Not Sensitive		Not Affected	
Electrical Strips	Copper Alloy	Not Sensitive		Not Affected	
Rivet	Nylon	Greater than 40 Years @ 104°F	CAL-92	6.0×10^7 RADS	CAL-92

Material & Parts List Reference: V-36A

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

SYSTEM COMPONENT EVALUATION WORKSHEET

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

repared by: N Lewis Date: 11/1/83
hecked by: [signature] Date: 11/2/83

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

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

NOTES

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

---

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

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.

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

COMPONENT MATERIALS EVALUATION SHEET

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

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

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

Component: Terminal Block
Model No.: ZWM-250

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Base	General Purpose Durez #791	Greater than 40 Years @ 104°F	CAL-92	1.0×10^7 RADS	CAL-92
Barrier	Polypropolene Plaskon 1083 or Moplen CRV0-8	Greater than 40 Years @ 104°F	CAL-92	2.0×10^6 RADS	CAL-92
Terminal Strip	Galvanized Steel	Not Sensitive		Not Affected	
Screws	Steel	Not Sensitive		Not Affected	
Electrical Strips	Copper Alloy	Not Sensitive		Not Affected	
Rivet	Nylon	Greater than 40 Years @ 104°F	CAL-92	6.0×10^7 RADS	CAL-92

Material & Parts List Reference: V-36A

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

SYSTEM COMPONENT EVALUATION WORKSHEET

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

Prepared by: N Ferris Date: 11/6/87
Checked by: [signature] Date: 11/6/87

EQUIPMENT DESCRIPTION	ENVIRONMENT		DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components Plant ID No. CDF11C Component: Disconnect Switch Cabinet (CD) Note (1) Terminal Block Manufacturer: Cabinet: General Electric Block: The States Co. Model Number: ZWM-250 Function: Switching Accuracy: Spec: N/A Demon: N/A Service: Electrical Control Location: Auxiliary Bldg. Rm. 236 Flood Level Elev: N/A Above Flood Level: N/A Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	1.1 Years	F	Note 2, 3	Analysis	None
	Temperature (°F)	198.0	307.0	C-236	V-36B E-14	Simultaneous Test	None
	Pressure (PSIA)	15.51	61.0	C-236	V-36B E-14	Simultaneous Test	None
	Relative Humidity (%)	100.0	100.0	A	V-36B E-14	Simultaneous Test	None
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
	Radiation	1.97 x 10^6 RADS	2.0 x 10^6 RADS	T	CAL-92 Note 2	Analysis	None
	Aging	40 Years	Greater than 40 Years @ 104°F	I	CAL-92 Note 2	Analysis	None
	Submergence	N/A	N/A	N/A	N/A	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

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

NOTES

Prepared by: N Lewis Date 11/1/83
Checked by: [signature] Date 11/2/83

---

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.

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

COMPONENT MATERIALS EVALUATION SHEET

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

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

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

Component: Terminal Block
Model No.: ZWM-250

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Base	General Purpose Durez #791	Greater than 40 Years @ 104°F	CAL-92	1.0×10^7 RADS	CAL-92
Barrier	Polypropolene Plaskon 1083 or Moplen CRV0-8	Greater than 40 Years @ 104°F	CAL-92	2.0×10^6 RADS	CAL-92
Terminal Strip	Galvanized Steel	Not Sensitive		Not Affected	
Screws	Steel	Not Sensitive		Not Affected	
Electrical Strips	Copper Alloy	Not Sensitive		Not Affected	
Rivet	Nylon	Greater than 40 Years @ 104°F	CAL-92	6.0×10^7 RADS	CAL-92

Material & Parts List Reference: V-36A

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-062
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/4/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components Plant ID No. CDF11D Component: Disconnect Switch Cabinet (CD) Note (1) Terminal Block Manufacturer: Cabinet: General Electric Block: The States Co. Model Number: ZWM-250 Function: Switching & Control Accuracy: Spec: N/A Demon: N/A Service: Electrical Control Location: Auxiliary Bldg. Rm. 227 Flood Level Elev: N/A Above Flood Level: N/A Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	40 Years	F	Note 3, 4	Analysis	None
	Temperature (°F)	N/A	N/A	Note 2	N/A	N/A	None
	Pressure (PSIA)	N/A	N/A	Note 2	N/A	N/A	None
	Relative Humidity (%)	N/A	N/A	Note 2	N/A	N/A	None
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
	Radiation	1.62 x 10^6 RADS	2.0 x 10^6 RADS	T	CAL-92 Note 3	Analysis	None
	Aging	40 Years	Greater than 40 Years @ 104°F	I	CAL-92 Note 3	Analysis	None
	Submergence	N/A	N/A	N/A	N/A	N/A	None

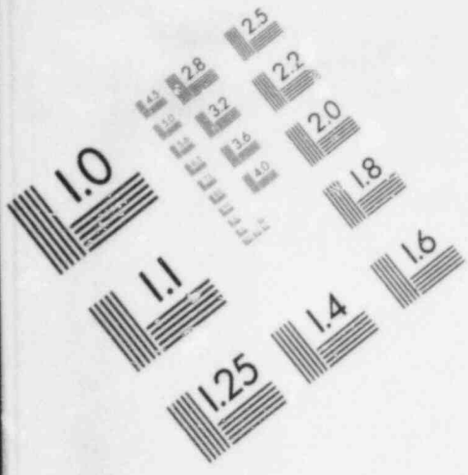
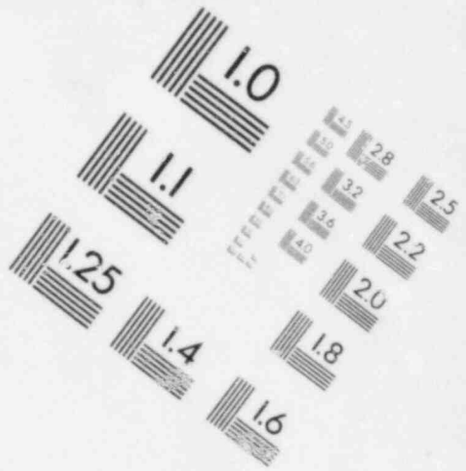
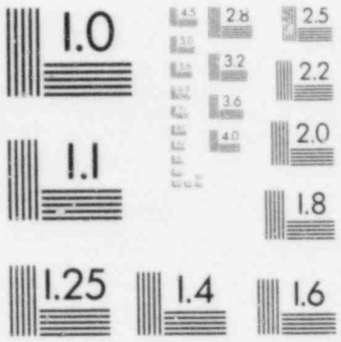
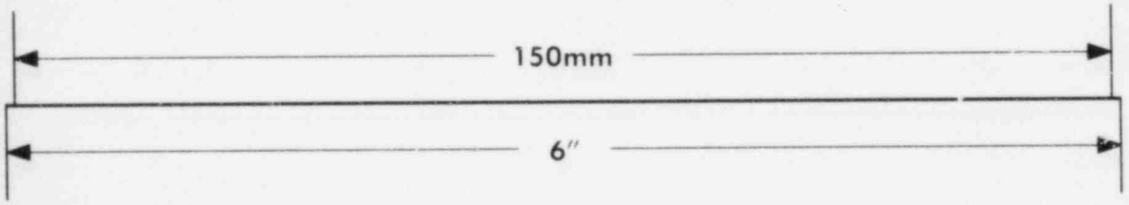
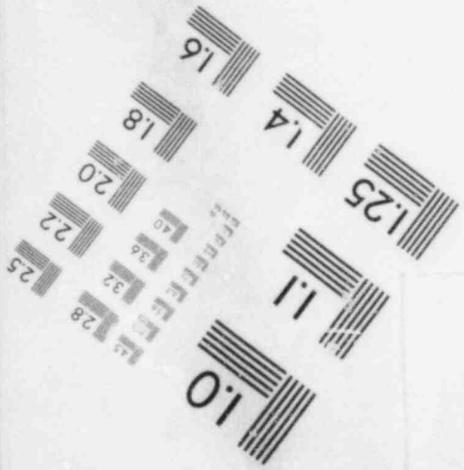


IMAGE EVALUATION TEST TARGET (MT-3)









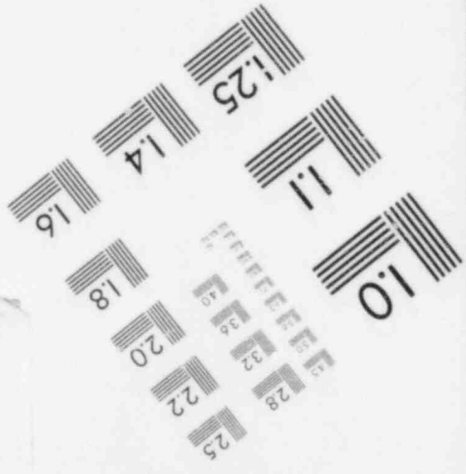
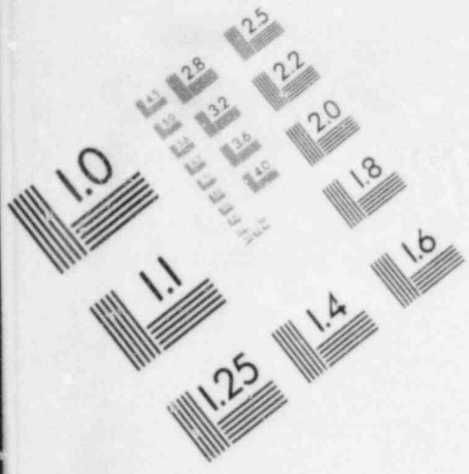
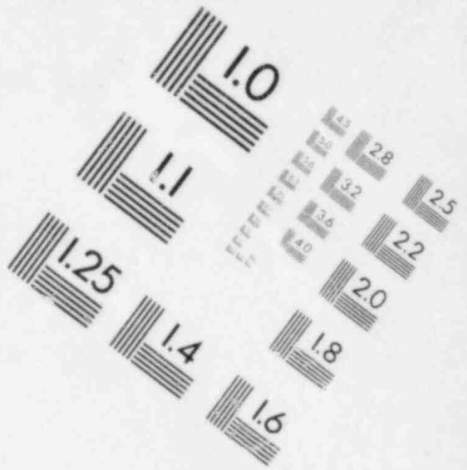
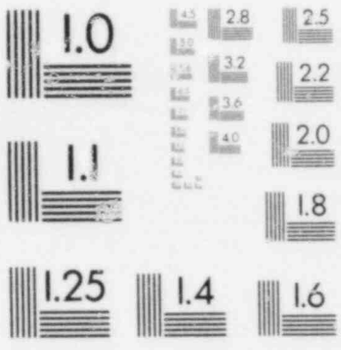
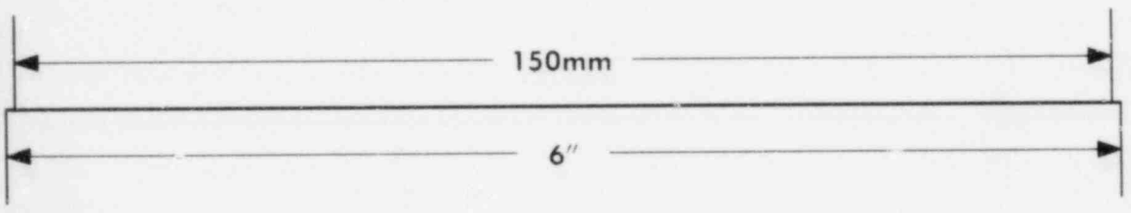


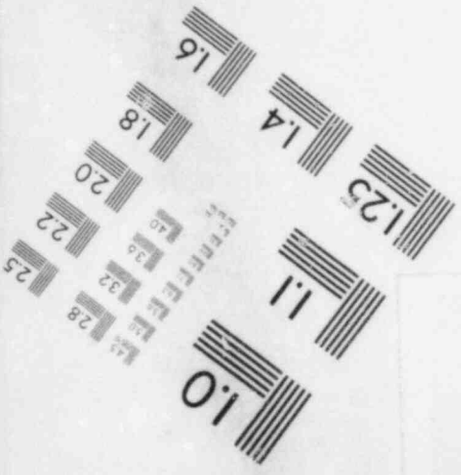
IMAGE EVALUATION
TEST TARGET (MT-3)

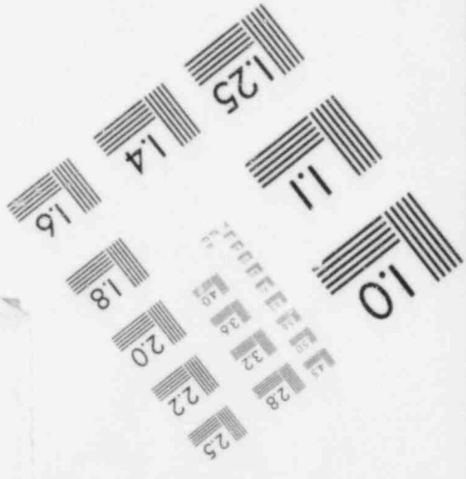












Facility: Davis-Besse Unit 1
Docket: 50-346

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-062A
Rev.: 2

NOTES

Prepared by: N Lewis Date 11/1/83
Checked by: [signature] Date 11/4/83

---

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

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.

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

COMPONENT MATERIALS EVALUATION SHEET

Index No.: 221H-062B
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/4/83

Plant I.D. No.: CDF11D
Manufacturer: States Co.

Component: Terminal Block
Model No.: ZWM-250

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Base	General Purpose Durez #791	Greater than 40 Years @ 104°F	CAL-92	1.0×10^7 RADS	CAL-92
Barrier	Polypropolene Plaskon 1083 or Moplen CRV0-8	Greater than 40 Years @ 104°F	CAL-92	2.0×10^6 RADS	CAL-92
Terminal Strip	Galvanized Steel	Not Sensitive		Not Affected	
Screws	Steel	Not Sensitive		Not Affected	
Electrical Strips	Copper Alloy	Not Sensitive		Not Affected	
Rivet	Nylon	Greater than 40 Years @ 104°F	CAL-92	6.0×10^7 RADS	CAL-92

Material & Parts List Reference: V-36A

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-063
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components Plant ID No. CDYE2 Component: Disconnect Switch Cabinet (CD) (Note 1) Terminal Block Manufacturer: Block: The States Co. Model Number: ZWM-250 Function: Switching & Control Accuracy: Spec: N/A Demon: N/A Service: Electrical Control Location: Auxiliary Bldg. Rm. 304 Flood Level Elev: N/A Above Flood Level: N/A Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	1.1 Years	F	Note 2, 3	Analysis	None
	Temperature (°F)	208.0	307.0	C-304	V-36B E-14	Simultaneous Test	None
	Pressure (PSIA)	15.83	61.0	C-304	V-36B E-14	Simultaneous Test	None
	Relative Humidity (%)	100.0	100.0	A	V-36B E-14	Simultaneous Test	None
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
	Radiation	6.53×10^4 RADS	2.0×10^6 RADS	T	CAL-92 Note 2	Analysis	None
	Aging	40 Years	Greater than 40 Years @ 104°F	I	CAL-92 Note 2	Analysis	None
	Submergence	N/A	N/A	N/A	N/A	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-063A
Rev.: 2

NOTES

Prepared by: N Lewis Date 11/1/83
Checked by: [signature] Date 11/2/83

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

Index No.: 221H-063B
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/3/83

Plant I.D. No.: CDYE2
Manufacturer: States Co.

Component: Terminal Block
Model No.: ZWM-250

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Base	General Purpose Durez #791	Greater than 40 Years @ 104°F	CAL-92	1.0×10^7 RADS	CAL-92
Barrier	Polypropolene Plaskon 1083 or Moplen CRV0-8	Greater than 40 Years @ 104°F	CAL-92	2.0×10^6 RADS	CAL-92
Terminal Strip	Galvanized Steel	Not Sensitive		Not Affected	
Screws	Steel	Not Sensitive		Not Affected	
Electrical Strips	Copper Alloy	Not Sensitive		Not Affected	
Rivet	Nylon	Greater than 40 Years @ 104°F	CAL-92	6.0×10^7 RADS	CAL-92

Material & Parts List Reference: V-36A

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-064
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [illegible] Date: 11/2/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components Plant ID No. CDYF2	Operating Time	1 Year	40 Years	F	Note 3, 4	Analysis	None
Component: Disconnect Switch Cabinet (CD) (Note 1) Terminal Block Manufacturer: Cabinet: GE Block: The States Co.	Temperature (°F)	N/A	N/A	Note 2	N/A	N/A	None
	Pressure (PSIA)	N/A	N/A	Note 2	N/A	N/A	None
Model Number: ZWM-250	Relative Humidity (%)	N/A	N/A	Note 2	N/A	N/A	None
Function: Switching & Control	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Accuracy: Spec: N/A Demon: N/A							
Service: Electrical Control							
Location: Auxiliary Bldg. Rm. 427	Radiation	3.12×10^5 RADS	2.0×10^6 RADS	T	CAL-92 Note 3	Analysis	None
Flood Level Elev: N/A Above Flood Level: N/A	Aging	40 Years	Greater than 40 Years @ 104°F	I	CAL-92 Note 3	Analysis	None
Needed for: Hot Shutdown [X] Cold Shutdown [X]	Submergence	N/A	N/A	N/A	N/A	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-064A
Rev.: 2

NOTES

Prepared by: N Lewis Date 11/1/83
Checked by: [signature] Date 11/2/83

---

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

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.

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

COMPONENT MATERIALS EVALUATION SHEET

Index No.: 221H-064B
Rev.: 2

Prepared by: N Lewis Date: 11/1/82
Checked by: [signature] Date: 11/2/83

Plant I.D. No.: CDYF2 Component: Terminal Block
Manufacturer: States Co. Model No.: ZWM-250

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Base	General Purpose Durez #791	Greater than 40 Years @ 104°F	CAL-92	1.0×10^7 RADS	CAL-92
Barrier	Polypropolene Plaskon 1083 or Moplen CRV0-8	Greater than 40 Years @ 104°F	CAL-92	2.0×10^6 RADS	CAL-92
Terminal Strip	Galvanized Steel	Not Sensitive		Not Affected	
Screws	Steel	Not Sensitive		Not Affected	
Electrical Strips	Copper Alloy	Not Sensitive		Not Affected	
Rivet	Nylon	Greater than 40 Years @ 104°F	CAL-92	6.0×10^7 RADS	CAL-92

Material & Parts List Reference: V-36A

Facility: Davis-Besse Unit 1 SYSTEM COMPONENT EVALUATION WORKSHEET Index No. 221H-065
Docket: 50-346 Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components Plant ID No. CS1 Component: Cable Manufacturer: Kerite Model Number: Note 4 Function: Control Accuracy: Spec: N/A Demon: N/A Service: Control Cable Location: Containment Flood Level Elev: 572'-2" Above Flood Level: No Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	1.1 Years	F	E-3 Note 1 V-23B	Simultaneous Test	None
	Temperature (°F)	283.0	320.0	H, X	E-3 V-23B	Simultaneous Test	None
	Pressure (PSIA)	52.0	96.7	G, X	E-3 V-23B	Simultaneous Test	None
	Relative Humidity (%)	100.0	100.0	A	E-3 V-23B	Simultaneous Test	None
	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	E-3 V-23B CAL-40 Note 2	Simultaneous Test, Analysis	None
	Radiation	3.87×10^7 RADS	1.0×10^8 RADS	CAL-44	E-3 V-23B	Sequential Test	None
	Aging	40 Years	40 Years	I	CAL-91 E-3 V-23B	Sequential Test	None
	Submergence	572'-2"	Note 3	B	Note 3	Note 3	None

Facility: Davis-Besse Unit 1 SYSTEM COMPONENT EVALUATION WORKSHEET Index No.: 221H-065A
Docket: 50-346 Rev.: 2

NOTES

Prepared by: T Lewis Date 9/30/83
Checked by: [illegible] Date 9/30/83

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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.

4. 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)

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-066
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: Date: 11/4/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components	Operating Time	1 Year	1.1 Years	F	E-3 Note 1 V-23B	Simultaneous Test	None
Plant ID No. CS2 Component: Cable	Temperature (°F)	283.0	320.0	H, X	E-3 V-23B	Simultaneous Test	None
Manufacturer: Kerite Model Number: Note 4	Pressure (PSIA)	52.0	96.7	G, X	E-3 V-23B	Simultaneous Test	None
Function: Control Accuracy: Spec: N/A Demon: N/A	Relative Humidity (%)	100.0	100.0	A	E-3 V-23B	Simultaneous Test	None
Service: Control Cable	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	E-3 V-23B CAL-40 Note 2	Simultaneous Test, Analysis	None
Location: Containment	Radiation	3.87×10^7 RADS	1.0×10^8 RADS	CAL-44	E-3 V-23B	Sequential Test	None
Flood Level Elev: 572'-2" Above Flood Level: No	Aging	40 Years	40 Years	I	CAL-91 E-3 V-23B	Sequential Test	None
Needed for: Hot Shutdown [X] Cold Shutdown [X]	Submergence	572'-2"	Note 3	B	Note 3	Note 3	None

Facility: Davis-Besse Unit 1 SYSTEM COMPONENT EVALUATION WORKSHEET Index No.: 221H-066A
Docket: 50-346 Rev.: 2

NOTES

Prepared by: T Lewis Date 9/30/83
Checked by: [illegible] Date 9/30/83

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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.

4. 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)

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-067
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [illegible] Date: 11/2/83

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

Facility: Davis-Besse Unit 1 SYSTEM COMPONENT EVALUATION WORKSHEET Index No. 21H-067A
Docket: 50-346 Rev.: 2

NOTES

Prepared by: T Lewis Date 9/30/83
Checked by: [signature] Date 9/30/83

---

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.

4. 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)

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-068
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: J MacDonald Date: 11/4/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components	Operating Time	1 Year	1.1 Years	F	E-3 Note 1 V-23B	Simultaneous Test	None
Plant ID No. CS5 Component: Cable	Temperature (°F)	283.0	320.0	H, X	E-3 V-23B	Simultaneous Test	None
Manufacturer: Kerite Model Number: Note 4	Pressure (PSIA)	52.0	96.7	G, X	E-3 V-23B	Simultaneous Test	None
Function: Control Accuracy: Spec: N/A Demon: N/A	Relative Humidity (%)	100.0	100.0	A	E-3 V-23B	Simultaneous Test	None
Service: Control Cable	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	E-3 V-23B CAL-40 Note 2	Simultaneous Test, Analysis	None
Location: Containment	Radiation	3.87×10^7 RADS	1.0×10^8 RADS	CAL-44	E-3 V-23B	Sequential Test	None
Flood Level Elev: 572'-2" Above Flood Level: No	Aging	40 Years	40 Years	I	CAL-91 E-3 V-23B	Sequential Test	None
Needed for: Hot Shutdown [X] Cold Shutdown [X]	Submergence	572'-2"	Note 3	B	Note 3	Note 3	None

Facility: Davis-Besse Unit 1 SYSTEM COMPONENT EVALUATION WORKSHEET Index No. 21H-068A
Docket: 50-346 Rev.: 2

NOTES

Prepared by: T Lewis Date 9/30/83
Checked by: [illegible] Date 9/30/83

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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.

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)

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-069
Rev.: 2

Prepared by: N Lewis Date: 11/1/13
Checked by: [signature] Date: 11/2/13

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components	Operating Time	1 Year	1.1 Years	F	E-3 Note 1 V-23B	Simultaneous Test	None
Plant ID No. CS6 Component: Cable	Temperature (°F)	283.0	320.0	H, X	E-3 V-23B	Simultaneous Test	None
Manufacturer: Kerite Model Number: Note 4	Pressure (PSIA)	52.0	96.7	G, X	E-3 V-23B	Simultaneous Test	None
Function: Control Accuracy: Spec: N/A Demon: N/A	Relative Humidity (%)	100.0	100.0	A	E-3 V-23B	Simultaneous Test	None
Service: Control Cable	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	E-3 V-23B CAL-40 Note 2	Simultaneous Test, Analysis	None
Location: Containment	Radiation	3.87×10^7 RADS	1.0×10^8 RADS	CAL-44	E-3 V-23B	Sequential Test	None
Flood Level Elev: 572'-2" Above Flood Level: No	Aging	40 Years	40 Years	I	CAL-91 E-3 V-23B	Sequential Test	None
Needed for: Hot Shutdown [X] Cold Shutdown [X]	Submergence	572'-2"	Note 3	B	Note 3	Note 3	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-069A
Rev.: 2

NOTES

Prepared by: F Lewis Date 9/30/83
Checked by: [illegible] Date 9/30/83

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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.

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)

Facility: Davis-Besse Unit 1 SYSTEM COMPONENT EVALUATION WORKSHEET Index No. 221H-070
Docket: 50-346 Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [illegible] Date: 11/4/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components	Operating Time	1 Year	1.1 Years	Note 2	Note 1 Note 3	Simultaneous Test	None
Plant ID No.: EC5017 Component: Terminal Block	Temperature (°F)	203.0	345.0	C-515	Note 3	Simultaneous Test	None
Manufacturer: Stanwick Model Number: Type G	Pressure (PSIA)	15.60	74.7	C-515	Note 3	Simultaneous Test	None
Function: Electrical Circuit Termination	Relative Humidity (%)	100.0	100.0	A	Note 3	Simultaneous Test	None
Accuracy: Spec: N/A Demon: N/A Service: Electrical Control	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 515	Radiation	N/A	N/A	N/A	N/A	N/A	None
Flood Level Elev: N/A Above Flood Level: N/A	Aging	40 Years	40 Years	I	CAL-79 Note 4	Analysis	None
Needed for: Hot Shutdown [X] Cold Shutdown [X]	Submergence	N/A	N/A	N/A	N/A	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-070A
Rev.: 2

NOTES

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

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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.

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

COMPONENT MATERIALS EVALUATION SHEET

Index No.: 221H-070B
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

Plant I.D. No.: EC5017 Component: Terminal Block

Manufacturer: Stanwick Model No.: Type G

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Terminal Block Links	Brass	Not Sensitive		Not Affected	
Mounting Rods	Metallic	Not Sensitive		Not Affected	
Bolts	Silicone Bronze	Not Sensitive		Not Affected	
Insert	Brass	Not Sensitive		Not Affected	
Nuts	Brass	Not Sensitive		Not Affected	
Terminal Block Base	Durez #791 Phenolic	40 Years @ 230°F	CAL-79	3.0×10^8 RADS	CAL-79
Terminal Block Barrier	Glass - Melamine	Greater than 40 Years @ 122°F	CAL-79	1.6×10^8 RADS	CAL-79

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

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

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components	Operating Time	1 Year	1.1 Years	Note 2	Note 1 Note 3	Simultaneous Test	None
Plant ID No.: EC5018 Component: Terminal Block	Temperature (°F)	203.0	345.0	C-515	Note 3	Simultaneous Test	None
Manufacturer: Stanwick Model Number: Type G	Pressure (PSIA)	15.60	74.7	C-515	Note 3	Simultaneous Test	None
Function: Electrical Circuit Termination	Relative Humidity (%)	100.0	100.0	A	Note 3	Simultaneous Test	None
Accuracy: Spec: N/A Demon: N/A Service: Electrical Control	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 515	Radiation	N/A	N/A	N/A	N/A	N/A	None
Flood Level Elev: N/A Above Flood Level: N/A	Aging	40 Years	40 Years	I	CAL-79 Note 4	Analysis	None
Needed for: Hot Shutdown [X] Cold Shutdown [X]	Submergence	N/A	N/A	N/A	N/A	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

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

NOTES

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

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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.

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

COMPONENT MATERIALS EVALUATION SHEET

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

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

Plant I.D. No.: EC5018 Component: Terminal Block

Manufacturer: Stanwick Model No.: Type G

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Terminal Block Links	Brass	Not Sensitive		Not Affected	
Mounting Rods	Metallic	Not Sensitive		Not Affected	
Bolts	Silicone Bronze	Not Sensitive		Not Affected	
Insert	Brass	Not Sensitive		Not Affected	
Nuts	Brass	Not Sensitive		Not Affected	
Terminal Block Base	Durez #791 Phenolic	40 Years @ 230°F	CAL-79	3.0×10^8 RADS	CAL-79
Terminal Block Barrier	Glass - Melamine	Greater than 40 Years @ 122°F	CAL-79	1.6×10^8 RADS	CAL-79

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-072
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components	Operating Time	1 Year	1.1 Years	Note 2	Note 1 Note 3	Simultaneous Test	None
Plant ID No.: EC5056 Component: Terminal Block	Temperature (°F)	203.0	345.0	C-515	Note 3	Simultaneous Test	None
Manufacturer: Stanwick Model Number: Type G	Pressure (PSIA)	15.60	74.7	C-515	Note 3	Simultaneous Test	None
Function: Electrical Circuit Termination	Relative Humidity (%)	100.0	100.0	A	Note 3	Simultaneous Test	None
Accuracy: Spec: N/A Demon: N/A Service: Electrical Control	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 515	Radiation	N/A	N/A	N/A	N/A	N/A	None
Flood Level Elev: N/A Above Flood Level: N/A	Aging	40 Years	40 Years	I	CAL-79 Note 4	Analysis	None
Needed for: Hot Shutdown [X] Cold Shutdown [X]	Submergence	N/A	N/A	N/A	N/A	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-072A
Rev.: 2

NOTES

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

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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.

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

COMPONENT MATERIALS EVALUATION SHEET

Index No.: 221H-072B
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

Plant I.D. No.: EC5056 Component: Terminal Block

Manufacturer: Stanwick Model No.: Type G

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Terminal Block Links	Brass	Not Sensitive		Not Affected	
Mounting Rods	Metallic	Not Sensitive		Not Affected	
Bolts	Silicone Bronze	Not Sensitive		Not Affected	
Insert	Brass	Not Sensitive		Not Affected	
Nuts	Brass	Not Sensitive		Not Affected	
Terminal Block Base	Durez #791 Phenolic	40 Years @ 230°F	CAL-79	3.0×10^8 RADS	CAL-79
Terminal Block Barrier	Glass - Melamine	Greater than 40 Years @ 122°F	CAL-79	1.6×10^8 RADS	CAL-79

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-073
Rev.: 2

Prepared by: N Lewis Date: 11/1/82
Checked by: [illegible] Date: 11/2/82

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components	Operating Time	1 Year	1.1 Years	Note 2	Note 1 Note 3	Simultaneous Test	None
Plant ID No.: EC5057 Component: Terminal Block	Temperature (°F)	203.0	345.0	C-515	Note 3	Simultaneous Test	None
Manufacturer: Stanwick Model Number: Type G	Pressure (PSIA)	15.60	74.7	C-515	Note 3	Simultaneous Test	None
Function: Electrical Circuit Termination	Relative Humidity (%)	100.0	100.0	A	Note 3	Simultaneous Test	None
Accuracy: Spec: N/A Demon: N/A Service: Electrical Control	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 515	Radiation	N/A	N/A	N/A	N/A	N/A	None
Flood Level Elev: N/A Above Flood Level: N/A	Aging	40 Years	40 Years	I	CAL-79 Note 4	Analysis	None
Needed for: Hot Shutdown [X] Cold Shutdown [X]	Submergence	N/A	N/A	N/A	N/A	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-073A
Rev.: 2

NOTES

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/8/83

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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.

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

COMPONENT MATERIALS EVALUATION SHEET

Index No.: 221H-073B
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

Plant I.D. No.: EC5057 Component: Terminal Block

Manufacturer: Stanwick Model No.: Type G

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Terminal Block Links	Brass	Not Sensitive		Not Affected	
Mounting Rods	Metallic	Not Sensitive		Not Affected	
Bolts	Silicone Bronze	Not Sensitive		Not Affected	
Insert	Brass	Not Sensitive		Not Affected	
Nuts	Brass	Not Sensitive		Not Affected	
Terminal Block Base	Durez #791 Phenolic	40 Years @ 230°F	CAL-79	3.0×10^8 RADS	CAL-79
Terminal Block Barrier	Glass - Melamine	Greater than 40 Years @ 122°F	CAL-79	1.6×10^8 RADS	CAL-79

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-074
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components	Operating Time	1 Year	1.1 Years	Note 2	Note 1 Note 3	Simultaneous Test	None
Plant ID No.: EV01060	Temperature (°F)	267.0	345.0	C-501	Note 3	Simultaneous Test	None
Component: Terminal Block							
Manufacturer: Stanwick	Pressure (PSIA)	15.61	74.7	C-501	Note 3	Simultaneous Test	None
Model Number: Type G							
Function: Electrical Circuit Termination	Relative Humidity (%)	100.0	100.0	A	Note 3	Simultaneous Test	None
Accuracy: Spec: N/A Demon: N/A							
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Service: Electrical Control							
Location: Auxiliary Bldg. Rm. 501	Radiation	N/A	N/A	N/A	N/A	N/A	None
Flood Level Elev: N/A							
Above Flood Level: N/A	Aging	40 Years	40 Years	I	CAL-79 Note 4	Analysis	None
Needed for:							
Hot Shutdown [X]	Submergence	N/A	N/A	N/A	N/A	N/A	None
Cold Shutdown [X]							

Facility: Davis-Besse Unit 1 SYSTEM COMPONENT EVALUATION WORKSHEET Index No.: 221H-0074A
Docket: 50-346 Rev.: 2

NOTES

Prepared by: N Lewis Date: 11/1/83
Checked by: [illegible] Date: 11/1/83

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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°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.: 221H-0743
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/3/83

Plant I.D. No.: EV01060 Component: Terminal Block

Manufacturer: Stanwick Model No.: Type G

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Terminal Block Links	Brass	Not Sensitive		Not Affected	
Mounting Rods	Metallic	Not Sensitive		Not Affected	
Bolts	Silicone Bronze	Not Sensitive		Not Affected	
Insert	Brass	Not Sensitive		Not Affected	
Nuts	Brass	Not Sensitive		Not Affected	
Terminal Block Base	Durez #791 Phenolic	40 Years @ 230°F	CAL-79	1.0×10^8 RADS	CAL-79
Terminal Block Barrier	Glass - Melamine	Greater than 40 Years @ 122°F	CAL-79	1.6×10^8 RADS	CAL-79

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-075
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-075A
Rev.: 2

NOTES

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

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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°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 MATERIAL EVALUATION SHEET

Index No.: 21H-075B
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

Plant I.D. No.: EV0106A
Component: Terminal Block
Manufacturer: Stanwick
Model No.: Type G

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Terminal Block Links	Brass	Not Sensitive		Not Affected	
Mounting Rods	Metallic	Not Sensitive		Not Affected	
Bolts	Silicone Bronze	Not Sensitive		Not Affected	
Insert	Brass	Not Sensitive		Not Affected	
Nuts	Brass	Not Sensitive		Not Affected	
Terminal Block Base	Durez #791 Phenolic	40 Years @ 230°F	CAL-79	3.0×10^8 RADS	CAL-79
Terminal Block Barrier	Glass - Melamine	Greater than 40 Years @ 122°F	CAL-79	1.6×10^8 RADS	CAL-79

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-076
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [illegible] Date: 11/2/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components Plant ID No.: EV01070 Component: Terminal Block Manufacturer: Stanwick Model Number: Type G Function: Electrical Circuit Termination Accuracy: Spec: N/A Demon: N/A Service: Electrical Control Location: Auxiliary Bldg. Rm. 501 Flood Level Elev: N/A Above Flood Level: N/A Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	1.1 Years	Note 2	Note 1 Note 3	Simultaneous Test	None
	Temperature (°F)	267.0	345.0	C-501	Note 3	Simultaneous Test	None
	Pressure (PSIA)	15.61	74.7	C-501	Note 3	Simultaneous Test	None
	Relative Humidity (%)	100.0	100.0	A	Note 3	Simultaneous Test	None
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
	Radiation	N/A	N/A	N/A	N/A	N/A	None
	Aging	40 Years	40 Years	I	CAL-79 Note 4	Analysis	None
	Submergence	N/A	N/A	N/A	N/A	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-076A
Rev.: 2

NOTES

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

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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°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

COMPONENT MATERIALS EVALUATION SHEET

Index No.: 221H-076B
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

Plant I.D. No.: EV01070
Manufacturer: Stanwick

Component: Terminal Block
Model No.: Type G

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Terminal Block Links	Brass	Not Sensitive		Not Affected	
Mounting Rods	Metallic	Not Sensitive		Not Affected	
Bolts	Silicone Bronze	Not Sensitive		Not Affected	
Insert	Brass	Not Sensitive		Not Affected	
Nuts	Brass	Not Sensitive		Not Affected	
Terminal Block Base	Durez #791 Phenolic	40 Years @ 230°F	CAL-79	3.0×10^8 RADS	CAL-79
Terminal Block Barrier	Glass - Melamine	Greater than 40 Years @ 122°F	CAL-79	1.6×10^8 RADS	CAL-79

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-077
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [illegible] Date: 11/2/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components Plant ID No.: EV0107A Component: Terminal Block Manufacturer: Stanwick Model Number: Type G Function: Electrical Circuit Termination Accuracy: Spec: N/A Demon: N/A Service: Electrical Control Location: Auxiliary Bldg. Rm. 501 Flood Level Elev: N/A Above Flood Level: N/A Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	1.1 Years	Note 2	Note 1 Note 3	Simultaneous Test	None
	Temperature (°F)	267.0	345.0	C-501	Note 3	Simultaneous Test	None
	Pressure (PSIA)	15.61	74.7	C-501	Note 3	Simultaneous Test	None
	Relative Humidity (%)	100.0	100.0	A	Note 3	Simultaneous Test	None
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
	Radiation	N/A	N/A	N/A	N/A	N/A	None
	Aging	40 Years	40 Years	I	CAL-79 Note 4	Analysis	None
	Submergence	N/A	N/A	N/A	N/A	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-077A
Rev.: 2

NOTES

Prepared by: N Lewis Date: 11/1/83
Checked by: G Macdonald Date: 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 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).

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
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COMPONENT MATERIALS EVALUATION SHEET

Index No.: 221H-077B
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

Plant I.D. No.: EV0107A
Manufacturer: Stanwick

Component: Terminal Block
Model No.: Type G

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Terminal Block Links	Brass	Not Sensitive		Not Affected	
Mounting Rods	Metallic	Not Sensitive		Not Affected	
Bolts	Silicone Bronze	Not Sensitive		Not Affected	
Insert	Brass	Not Sensitive		Not Affected	
Nuts	Brass	Not Sensitive		Not Affected	
Terminal Block Base	Durez #791 Phenolic	40 Years @ 230°F	CAL-79	3.0×10^8 RADS	CAL-79
Terminal Block Barrier	Glass - Melamine	Greater than 40 Years @ 122°F	CAL-79	1.6×10^8 RADS	CAL-79

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-078
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [illegible] Date: 11/2/83

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

NOTES

Index No.: 221H-078A
Rev.: 2

Prepared by: N Lewis Date: 11/1/93
Checked by: [signature] Date: 11/2/93

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: Davis-Besse Unit 1
Docket: 50-346

COMPONENT MATERIALS EVALUATION SHEET

Index No.: 221H-078B
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

Plant I.D. No.: EV0240B
Manufacturer: Stanwick

Component: Terminal Block
Model No.: Type G

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Terminal Block Links	Brass	Not Sensitive		Not Affected	
Mounting Rods	Metallic	Not Sensitive		Not Affected	
Bolts	Silicone Bronze	Not Sensitive		Not Affected	
Insert	Brass	Not Sensitive		Not Affected	
Nuts	Brass	Not Sensitive		Not Affected	
Terminal Block Base	Durez #791 Phenolic	40 Years @ 230°F	CAL-79	3.0×10^8 RADS	CAL-79
Terminal Block Barrier	Glass - Melamine	Greater than 40 Years @ 122°F	CAL-79	1.6×10^8 RADS	CAL-79

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-079
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components Plant ID No.: EV05990 Component: Terminal Block Manufacturer: Stanwick Model Number: Type G Function: Electrical Circuit Termination Accuracy: Spec: N/A Demon: N/A Service: Electrical Control Location: Auxiliary Bldg. Rm. 314 Flood Level Elev: N/A Above Flood Level: N/A Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	1.1 Years	Note 2	Note 1 Note 3	Simultaneous Test	None
	Temperature (°F)	221.0	345.0	C-314	Note 3	Simultaneous Test	None
	Pressure (PSIA)	19.76	74.7	C-314	Note 3	Simultaneous Test	None
	Relative Humidity (%)	100.0	100.0	A	Note 3	Simultaneous Test	None
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
	Radiation	1.0×10^6 RADS	1.6×10^8 RADS	T	CAL-79 Note 4	Analysis	None
	Aging	40 Years	40 Years	I	CAL-79 Note 4	Analysis	None
	Submergence	N/A	N/A	N/A	N/A	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

NOTES

Index No.: 221H-079A
Rev.: 2

'repared by: N Lewis Date: 11/1/83
:hecked by: [signature] Date: 11/2/83

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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.

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-079B
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

Plant I.D. No.: EV05990
Manufacturer: Stanwick

Component: Terminal Block
Model No.: Type G

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Terminal Block Links	Brass	Not Sensitive		Not Affected	
Mounting Rods	Metallic	Not Sensitive		Not Affected	
Bolts	Silicone Bronze	Not Sensitive		Not Affected	
Insert	Brass	Not Sensitive		Not Affected	
Nuts	Brass	Not Sensitive		Not Affected	
Terminal Block Base	Durez #791 Phenolic	40 Years @ 230°F	CAL-79	3.0×10^8 RADS	CAL-79
Terminal Block Barrier	Glass - Melamine	Greater than 40 Years @ 122°F	CAL-79	1.6×10^8 RADS	CAL-79

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-080
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components Plant ID No.: EV06010 Component: Terminal Block Manufacturer: Stanwick Model Number: Type G Function: Electrical Circuit Termination Accuracy: Spec: N/A Demon: N/A Service: Electrical Control Location: Auxiliary Bldg. Rm. 314 Flood Level Elev: N/A Above Flood Level: N/A Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	1.1 Years	Note 2	Note 1 Note 3	Simultaneous Test	None
	Temperature (°F)	221.0	345.0	C-314	Note 3	Simultaneous Test	None
	Pressure (PSIA)	19.76	74.7	C-314	Note 3	Simultaneous Test	None
	Relative Humidity (%)	100.0	100.0	A	Note 3	Simultaneous Test	None
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
	Radiation	1.0×10^6 RADS	1.6×10^8 RADS	T	CAL-79 Note 4	Analysis	None
	Aging	40 Years	40 Years	I	CAL-79 Note 4	Analysis	None
	Submergence	N/A	N/A	N/A	N/A	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

NOTES

Index No.: 221H-080A
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 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 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

COMPONENT MATERIALS EVALUATION SHEET

Index No.: 221H-080B
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [illegible] Date: 11/2/83

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

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Terminal Block Links	Brass	Not Sensitive		Not Affected	
Mounting Rods	Metallic	Not Sensitive		Not Affected	
Bolts	Silicone Bronze	Not Sensitive		Not Affected	
Insert	Brass	Not Sensitive		Not Affected	
Nuts	Brass	Not Sensitive		Not Affected	
Terminal Block Base	Durez #791 Phenolic	40 Years @ 230°F	CAL-79	3.0×10^8 RADS	CAL-79
Terminal Block Barrier	Glass - Melamine	Greater than 40 Years @ 122°F	CAL-79	1.6×10^8 RADS	CAL-79

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-081
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

NOTES

Index No.: 221H-081A
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

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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.

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

COMPONENT MATERIALS EVALUATION SHEET

Index No.: 221H-081B
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/1/83

Plant I.D. No.: EV06080
Manufacturer: Stanwick

Component: Terminal Block
Model No.: Type G

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Terminal Block Links	Brass	Not Sensitive		Not Affected	
Mounting Rods	Metallic	Not Sensitive		Not Affected	
Bolts	Silicone Bronze	Not Sensitive		Not Affected	
Insert	Brass	Not Sensitive		Not Affected	
Nuts	Brass	Not Sensitive		Not Affected	
Terminal Block Base	Durez #791 Phenolic	40 Years @ 230°F	CAL-79	3.0×10^8 RADS	CAL-79
Terminal Block Barrier	Glass - Melamine	Greater than 40 Years @ 122°F	CAL-79	1.6×10^8 RADS	CAL-79

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-082
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

NOTES

Index No.: 221H-082A
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/4/83

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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% $\pm$ 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.: 221H-082B
Rev.: 2

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

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

Manufacturer: Stanwick Model No.: Type G

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Terminal Block Links	Brass	Not Sensitive		Not Affected	
Mounting Rods	Metallic	Not Sensitive		Not Affected	
Bolts	Silicone Bronze	Not Sensitive		Not Affected	
Insert	Brass	Not Sensitive		Not Affected	
Nuts	Brass	Not Sensitive		Not Affected	
Terminal Block Base	Durez #791 Phenolic	40 Years @ 230°F	CAL-79	3.0×10^8 RADS	CAL-79
Terminal Block Barrier	Glass - Melamine	Greater than 40 Years @ 122°F	CAL-79	1.6×10^8 RADS	CAL-79

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-083
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-083A
Rev.: 2

NOTES

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

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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

Index No.: 221H-083B
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

Plant I.D. No.: EV0624B
Component: Terminal Block
Manufacturer: Stanwick
Model No.: Type G

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Terminal Block Links	Brass	Not Sensitive		Not Affected	
Mounting Rods	Metallic	Not Sensitive		Not Affected	
Bolts	Silicone Bronze	Not Sensitive		Not Affected	
Insert	Brass	Not Sensitive		Not Affected	
Nuts	Brass	Not Sensitive		Not Affected	
Terminal Block Base	Durez #791 Phenolic	40 Years @ 230°F	CAL-79	3.0×10^8 RADS	CAL-79
Terminal Block Barrier	Glass - Melamine	Greater than 40 Years @ 122°F	CAL-79	1.6×10^8 RADS	CAL-79

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-084
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components Plant ID No.: EV08300 Component: Terminal Block Manufacturer: Stanwick Model Number: Type G Function: Electrical Circuit Termination Accuracy: Spec: N/A Demon: N/A Service: Electrical Control Location: Auxiliary Bldg. Rm. 113 Flood Level Elev: N/A Above Flood Level: N/A Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	1.1 Years	Note 2	Note 1 Note 3	Simultaneous Test	None
	Temperature (°F)	155.0	345.0	C-113	Note 3	Simultaneous Test	None
	Pressure (PSIA)	16.06	74.7	C-113	Note 3	Simultaneous Test	None
	Relative Humidity (%)	100.0	100.0	A	Note 3	Simultaneous Test	None
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
	Radiation	7.1×10^6 RADS	1.6×10^8 RADS	T	CAL-79 Note 4	Analysis	None
	Aging	40 Years	40 Years	I	CAL-79 Note 4	Analysis	None
	Submergence	N/A	N/A	N/A	N/A	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

NOTES

Index No.: 221H-084A
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

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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°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.: 221H-084B
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

Plant I.D. No.: EV08300
Manufacturer: Stanwick

Component: Terminal Block
Model No.: Type G

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Terminal Block Links	Brass	Not Sensitive		Not Affected	
Mounting Rods	Metallic	Not Sensitive		Not Affected	
Bolts	Silicone Bronze	Not Sensitive		Not Affected	
Insert	Brass	Not Sensitive		Not Affected	
Nuts	Brass	Not Sensitive		Not Affected	
Terminal Block Base	Durez #791 Phenolic	40 Years @ 230°F	CAL-79	3.0×10^8 RADS	CAL-79
Terminal Block Barrier	Glass - Melamine	Greater than 40 Years @ 122°F	CAL-79	1.6×10^8 RADS	CAL-79

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-085
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-085A
Rev.: 2

NOTES

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

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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°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.: 221H-085B
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

Plant I.D. No.: EV08310
Manufacturer: Stanwick

Component: Terminal Block
Model No.: Type G

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Terminal Block Links	Brass	Not Sensitive		Not Affected	
Mounting Rods	Metallic	Not Sensitive		Not Affected	
Bolts	Silicone Bronze	Not Sensitive		Not Affected	
Insert	Brass	Not Sensitive		Not Affected	
Nuts	Brass	Not Sensitive		Not Affected	
Terminal Block Base	Durez #791 Phenolic	40 Years @ 230°F	CAL-79	3.0×10^8 RADS	CAL-79
Terminal Block Barrier	Glass - Melamine	Greater than 40 Years @ 122°F	CAL-79	1.6×10^8 RADS	CAL-79

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-086
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components	Operating Time	1 Year	1.1 Years	Note 2	Note 1 Note 3	Simultaneous Test	None
Plant ID No.: EV1001 Component: Terminal Block	Temperature (°F)	344.0	345.0	C-602	Note 3	Simultaneous Test	None
Manufacturer: Stanwick Model Number: Type G	Pressure (PSIA)	20.0	74.7	C-602	Note 3	Simultaneous Test	None
Function: Electrical Circuit Termination	Relative Humidity (%)	100.0	100.0	A	Note 3	Simultaneous Test	None
Accuracy: Spec: N/A Demon: N/A Service: Electrical Control	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 602	Radiation	1.86×10^4 RADS	1.6×10^8 RADS	T	CAL-79 Note 4	Analysis	None
Flood Level Elev: N/A Above Flood Level: N/A	Aging	40 Years	40 Years	I	CAL-79 Note 4	Analysis	None
Needed for: Hot Shutdown [X] Cold Shutdown [X]	Submergence	N/A	N/A	N/A	N/A	N/A	None

Facility: [redacted]-Besse Unit 1 SYSTEM COMPONENT [redacted]LUATION WORKSHEET Index No. [redacted]221H-086A
Docket: 50-346 Rev.: 2

NOTES

Prepared by N Lewis Date: 11/1/83
Checked by: [redacted] Date: 11/2/83

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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 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.

Facility: Davis-Besse Unit 1 COMPONENT MATERIAL EVALUATION SHEET Index 21H-0868
Docket: 50-346 Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/3/83

Plant I.D. No.: EV1001 Component: Terminal Block
Manufacturer: Stanwick Model No.: Type G

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Terminal Block Links	Brass	Not Sensitive		Not Affected	
Mounting Rods	Metallic	Not Sensitive		Not Affected	
Bolts	Silicone Bronze	Not Sensitive		Not Affected	
Insert	Brass	Not Sensitive		Not Affected	
Nuts	Brass	Not Sensitive		Not Affected	
Terminal Block Base	Durez #791 Phenolic	40 Years @ 230°F	CAL-79	3.0×10^8 RADS	CAL-79
Terminal Block Barrier	Glass - Melamine	Greater than 40 Years @ 122°F	CAL-79	1.6×10^8 RADS	CAL-79

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-087
Rev.: 2

Prepared by: N Lewis Date: 10/1/83
Checked by: [signature] Date: 11/2/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components	Operating Time	1 Year	1.1 Years	Note 2	Note 1 Note 3	Simultaneous Test	None
Plant ID No.: EV100A Component: Terminal Block	Temperature (°F)	344.0	345.0	C-602	Note 3	Simultaneous Test	None
Manufacturer: Stanwick Model Number: Type G	Pressure (PSIA)	20.0	74.7	C-602	Note 3	Simultaneous Test	None
Function: Electrical Circuit Termination	Relative Humidity (%)	100.0	100.0	A	Note 3	Simultaneous Test	None
Accuracy: Spec: N/A Demon: N/A Service: Electrical Control	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 602	Radiation	1.86×10^4 RADS	1.6×10^8 RADS	T	CAL-79 Note 4	Analysis	None
Flood Level Elev: N/A Above Flood Level: N/A	Aging	40 Years	40 Years	I	CAL-79 Note 4	Analysis	None
Needed for: Hot Shutdown [X] 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-087A
Docket: 50-346 Rev.: 2

NOTES

Prepared by: N Lewis Date: 11/1/83
Checked by: [illegible] Date: 11/2/83

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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 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.

Facility: [redacted]s-Besse Unit 1
Docket: 50-346

COMPONENT MATERI[redacted]VALUATION SHEET

Index [redacted]221H-087B
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

Plant I.D. No.: EV100A
Manufacturer: Stanwick

Component: Terminal Block
Model No.: Type G

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Terminal Block Links	Brass	Not Sensitive		Not Affected	
Mounting Rods	Metallic	Not Sensitive		Not Affected	
Bolts	Silicone Bronze	Not Sensitive		N Affected	
Insert	Brass	Not Sensitive		Not Affected	
Nuts	Brass	Not Sensitive		Not Affected	
Terminal Block Base	Durez #791 Phenolic	40 Years @ 230°F	CAL-79	3.0×10^8 RADS	CAL-79
Terminal Block Barrier	Glass - Melamine	Greater than 40 Years @ 122°F	CAL-79	1.6×10^8 RADS	CAL-79

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-088
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components	Operating Time	1 Year	1.1 Years	Note 2	Note 1 Note 3	Simultaneous Test	None
Plant ID No.: EV1011 Component: Terminal Block	Temperature (°F)	282.0	345.0	C-601	Note 3	Simultaneous Test	None
Manufacturer: Stanwick Model Number: Type G	Pressure (PSIA)	17.0	74.7	C-601	Note 3	Simultaneous Test	None
Function: Electrical Circuit Termination	Relative Humidity (%)	100.0	100.0	A	Note 3	Simultaneous Test	None
Accuracy: Spec: N/A Demon: N/A Service: Electrical Control	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 601	Radiation	1.86 x 10^4 RADS	1.6 x 10^8 RADS	T	CAL-79 Note 4	Analysis	None
Flood Level Elev: N/A Above Flood Level: N/A	Aging	40 Years	40 Years	I	CAL-79 Note 4	Analysis	None
Needed for: Hot Shutdown [X] 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-088A
Docket: 50-346 Rev.: 2

NOTES

Prepared by: N Lewis Date: 11/1/83
Checked by: [illegible] Date: 11/2/83

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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°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

COMPONENT MATERIAL EVALUATION SHEET

Index No. 221H-088B
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

Plant I.D. No.: EV1011
Manufacturer: Stanwick

Component: Terminal Block
Model No.: Type G

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Terminal Block Links	Brass	Not Sensitive		Not Affected	
Mounting Rods	Metallic	Not Sensitive		Not Affected	
Bolts	Silicone Bronze	Not Sensitive		Not Affected	
Insert	Brass	Not Sensitive		Not Affected	
Nuts	Brass	Not Sensitive		Not Affected	
Terminal Block Base	Durez #791 Phenolic	40 Years @ 230°F	CAL-79	3.0×10^8 RADS	CAL-79
Terminal Block Barrier	Glass - Melamine	Greater than 40 Years @ 122°F	CAL-79	1.6×10^8 RADS	CAL-79

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-089
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [illegible] Date: 11/2/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components	Operating Time	1 Year	1.1 Years	Note 2	Note 1 Note 3	Simultaneous Test	None
Plant ID No.: EV101B Component: Terminal Block	Temperature (°F)	282.0	345.0	C-601	Note 3	Simultaneous Test	None
Manufacturer: Stanwick Model Number: Type G	Pressure (PSIA)	17.0	74.7	C-601	Note 3	Simultaneous Test	None
Function: Electrical Circuit Termination	Relative Humidity (%)	100.0	100.0	A	Note 3	Simultaneous Test	None
Accuracy: Spec: N/A Demon: N/A Service: Electrical Control	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 601	Radiation	1.86×10^4 RADS	1.6×10^8 RADS	T	CAL-79 Note 4	Analysis	None
Flood Level Elev: N/A Above Flood Level: N/A	Aging	40 Years	40 Years	I	CAL-79 Note 4	Analysis	None
Needed for: Hot Shutdown [X] Cold Shutdown [X]	Submergence	N/A	N/A	N/A	N/A	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-089A
Rev.: 2

NOTES

Prepared by: N Lewis Date: 11/1/83
Checked by: [illegible] Date: 11/2/83

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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°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: [redacted]s-Besse Unit 1 COMPONENT MATERI[redacted]VALUATION SHEET Index [redacted]221H-0898
Docket: 50-346 Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

Plant I.D. No.: EV101B Component: Terminal Block
Manufacturer: Stanwick Model No.: Type G

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Terminal Block Links	Brass	Not Sensitive		Not Affected	
Mounting Rods	Metallic	Not Sensitive		Not Affected	
Bolts	Silicone Bronze	Not Sensitive		Not Affected	
Insert	Brass	Not Sensitive		Not Affected	
Nuts	Brass	Not Sensitive		Not Affected	
Terminal Block Base	Durez #791 Phenolic	40 Years @ 230°F	CAL-79	3.0×10^8 RADS	CAL-79
Terminal Block Barrier	Glass - Melamine	Greater than 40 Years @ 122°F	CAL-79	1.6×10^8 RADS	CAL-79

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-090
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [illegible] Date: 11/2/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components	Operating Time	1 Year	1.1 Years	Note 2	Note 1 Note 3	Simultaneous Test	None
Plant ID No.: EV13280 Component: Terminal Block	Temperature (°F)	221.0	345.0	C-314	Note 3	Simultaneous Test	None
Manufacturer: Stanwick Model Number: Type G	Pressure (PSIA)	19.76	74.7	C-314	Note 3	Simultaneous Test	None
Function: Electrical Circuit Termination	Relative Humidity (%)	100.0	100.0	A	Note 3	Simultaneous Test	None
Accuracy: Spec: N/A Demon: N/A Service: Electrical Control	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 314	Radiation	1.0×10^6 RADS	1.6×10^8 RADS	T	CAL-79 Note 4	Analysis	None
Flood Level Elev: N/A Above Flood Level: N/A	Aging	40 Years	40 Years	I	CAL-79 Note 4	Analysis	None
Needed for: Hot Shutdown [X] 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-090A
Docket: 50-346 Rev.: 2

NOTES

Prepared by: N Lewis Date: 11/11/83
Checked by: [illegible] Date: 11/21/83

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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.

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 MATERIAL EVALUATION SHEET

Index: 221H-090B
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

Plant I.D. No.: EV13280
Manufacturer: Stanwick

Component: Terminal Block
Model No.: Type G

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Terminal Block Links	Brass	Not Sensitive		Not Affected	
Mounting Rods	Metallic	Not Sensitive		Not Affected	
Bolts	Silicone Bronze	Not Sensitive		Not Affected	
Insert	Brass	Not Sensitive		Not Affected	
Nuts	Brass	Not Sensitive		Not Affected	
Terminal Block Base	Durez #791 Phenolic	40 Years @ 230°F	CAL-79	3.0×10^8 RADS	CAL-79
Terminal Block Barrier	Glass - Melamine	Greater than 40 Years @ 122°F	CAL-79	1.6×10^8 RADS	CAL-79

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-091
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components	Operating Time	1 Year	1.1 Years	Note 2	Note 1 Note 3	Simultaneous Test	None
Plant ID No.: EV13380 Component: Terminal Block	Temperature (°F)	221.0	345.0	C-314	Note 3	Simultaneous Test	None
Manufacturer: Stanwick Model Number: Type G	Pressure (PSIA)	19.76	74.7	C-314	Note 3	Simultaneous Test	None
Function: Electrical Circuit Termination	Relative Humidity (%)	100.0	100.0	A	Note 3	Simultaneous Test	None
Accuracy: Spec: N/A Demon: N/A Service: Electrical Control	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 314	Radiation	1.0×10^6 RADS	1.6×10^8 RADS	T	CAL-79 Note 4	Analysis	None
Flood Level Elev: N/A Above Flood Level: N/A	Aging	40 Years	40 Years	I	CAL-79 Note 4	Analysis	None
Needed for: Hot Shutdown [X] Cold Shutdown [X]	Submergence	N/A	N/A	N/A	N/A	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-091A
Rev.: 2

NOTES

Prepared by: N Lewis Date: 11/1/82
Checked by: [illegible] Date: 11/2/82

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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.

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: [redacted]is-Besse Unit 1 COMPONENT MATERI[redacted]EVALUATION SHEET Index [redacted]221H-09/B
Docket: 50-346 Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

Plant I.D. No.: EV13380 Component: Terminal Block
Manufacturer: Stanwick Model No.: Type G

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Terminal Block Links	Brass	Not Sensitive		Not Affected	
Mounting Rods	Metallic	Not Sensitive		Not Affected	
Bolts	Silicone Bronze	Not Sensitive		Not Affected	
Insert	Brass	Not Sensitive		Not Affected	
Nuts	Brass	Not Sensitive		Not Affected	
Terminal Block Base	Durez #791 Phenolic	40 Years @ 230°F	CAL-79	3.0×10^8 RADS	CAL-79
Terminal Block Barrier	Glass - Melamine	Greater than 40 Years @ 122°F	CAL-79	1.6×10^8 RADS	CAL-79

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-092
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [illegible] Date: 11/2/83

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

Facility: Davis-Besse Unit 1 SYSTEM COMPONENT EVALUATION WORKSHEET Index No: 221H-092A
Docket: 50-346 Rev.: 2

NOTES

Prepared by: N Lewis Date: 11/2/82
Checked by: [illegible] Date: 11/2/82

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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: [redacted]is-Besse Unit 1 COMPONENT MATERI[redacted]EVALUATION SHEET Index [redacted]221H-092B
Docket: 50-346 Rev.: 2

Prepared by: IV Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

Plant I.D. No.: EV13660 Component: Terminal Block
Manufacturer: Stanwick Model No.: Type G

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Terminal Block Links	Brass	Not Sensitive		Not Affected	
Mounting Rods	Metallic	Not Sensitive		Not Affected	
Bolts	Silicone Bronze	Not Sensitive		Not Affected	
Insert	Brass	Not Sensitive		Not Affected	
Nuts	Brass	Not Sensitive		Not Affected	
Terminal Block Base	Durez #791 Phenolic	40 Years @ 230°F	CAL-79	3.0×10^8 RADS	CAL-79
Terminal Block Barrier	Glass - Melamine	Greater than 40 Years @ 122°F	CAL-79	1.6×10^8 RADS	CAL-79

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-093
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No. [illegible]21H-093A
Rev.: 2

NOTES

Prepared by: N Lewis Date: 11/1/93
Checked by: [signature] Date: 11/2/93

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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: Davis-Besse Unit 1
Docket: 50-346

COMPONENT MATERIAL EVALUATION SHEET

Index: 221H-093B
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

Plant I.D. No.: EV1357O
Manufacturer: Stanwick

Component: Terminal Block
Model No.: Type G

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Terminal Block Links	Brass	Not Sensitive		Not Affected	
Mounting Rods	Metallic	Not Sensitive		Not Affected	
Bolts	Silicone Bronze	Not Sensitive		Not Affected	
Insert	Brass	Not Sensitive		Not Affected	
Nuts	Brass	Not Sensitive		Not Affected	
Terminal Block Base	Durez #791 Phenolic	40 Years @ 230°F	CAL-79	3.0×10^8 RADS	CAL-79
Terminal Block Barrier	Glass - Melamine	Greater than 40 Years @ 122°F	CAL-79	1.6×10^8 RADS	CAL-79

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-094
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components	Operating Time	1 Year	1.1 Years	Note 2	Note 1 Note 3	Simultaneous Test	None
Plant ID No.: EV13830	Temperature (°F)	198.0	345.0	C-236	Note 3	Simultaneous Test	None
Component: Terminal Block							
Manufacturer: Stanwick	Pressure (PSIA)	15.51	74.7	C-236	Note 3	Simultaneous Test	None
Model Number: Type G							
Function: Electrical Circuit Termination	Relative Humidity (%)	100.0	100.0	A	Note 3	Simultaneous Test	None
Accuracy: Spec: N/A Demon: N/A							
Service: Electrical Control	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 236	Radiation	1.97×10^6 RADS	1.6×10^8 RADS	T	CAL-79 Note 4	Analysis	None
Flood Level Elev: N/A Above Flood Level: N/A	Aging	40 Years	40 Years	I	CAL-79 Note 4	Analysis	None
Needed for:							
Hot Shutdown [X]	Submergence	N/A	N/A	N/A	N/A	N/A	None
Cold Shutdown [X]							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No. [illegible]21H-094A
Rev.: 2

NOTES

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

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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.

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

COMPONENT MATERIAL EVALUATION SHEET

Index No.: 221H-094B
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

Plant I.D. No.: EV13830
Manufacturer: Stanwick

Component: Terminal Block
Model No.: Type G

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Terminal Block Links	Brass	Not Sensitive		Not Affected	
Mounting Rods	Metallic	Not Sensitive		Not Affected	
Bolts	Silicone Bronze	Not Sensitive		Not Affected	
Insert	Brass	Not Sensitive		Not Affected	
Nuts	Brass	Not Sensitive		Not Affected	
Terminal Block Base	Durez #791 Phenolic	40 Years @ 230°F	CAL-79	3.0×10^8 RADS	CAL-79
Terminal Block Barrier	Glass - Melamine	Greater than 40 Years @ 122°F	CAL-79	1.6×10^8 RADS	CAL-79

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-095
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components	Operating Time	1 Year	1.1 Years	Note 2	Note 1 Note 3	Simultaneous Test	None
Plant ID No.: EV1407B Component: Terminal Block	Temperature (°F)	221.0	345.0	C-314	Note 3	Simultaneous Test	None
Manufacturer: Stanwick Model Number: Type G	Pressure (PSIA)	19.76	74.7	C-314	Note 3	Simultaneous Test	None
Function: Electrical Circuit Termination	Relative Humidity (%)	100.0	100.0	A	Note 3	Simultaneous Test	None
Accuracy: Spec: N/A Demon: N/A Service: Electrical Control	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 314	Radiation	1.0×10^6 RADS	1.6×10^8 RADS	T	CAL-79 Note 4	Analysis	None
Flood Level Elev: N/A Above Flood Level: N/A	Aging	40 Years	40 Years	I	CAL-79 Note 4	Analysis	None
Needed for: Hot Shutdown [X] 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-095A
Docket: 50-346 Rev.: 2

NOTES

Prepared by: N Lewis Date: 11/1/9[illegible]
Checked by: [illegible] Date: 11/2/9[illegible]

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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.

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 COMPONENT MATERIAL EVALUATION SHEET Index No.: 221H-095B
Docket: 50-346 Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

Plant I.D. No.: EV1407B Component: Terminal Block
Manufacturer: Stanwick Model No.: Type G

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Terminal Block Links	Brass	Not Sensitive		Not Affected	
Mounting Rods	Metallic	Not Sensitive		Not Affected	
Bolts	Silicone Bronze	Not Sensitive		Not Affected	
Insert	Brass	Not Sensitive		Not Affected	
Nuts	Brass	Not Sensitive		Not Affected	
Terminal Block Base	Durez #791 Phenolic	40 Years @ 230°F	CAL-79	3.0×10^8 RADS	CAL-79
Terminal Block Barrier	Glass - Melamine	Greater than 40 Years @ 122°F	CAL-79	1.6×10^8 RADS	CAL-79

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-096
Rev. 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components	Operating Time	1 Year	1.1 Years	Note 2	Note 1 Note 3	Simultaneous Test	None
Plant ID No.: EV1411B	Temperature (°F)	221.0	345.0	C-314	Note 3	Simultaneous Test	None
Component: Terminal Block							
Manufacturer: Stanwick	Pressure (PSIA)	19.76	74.7	C-314	Note 3	Simultaneous Test	None
Model Number: Type G							
Function: Electrical Circuit Termination	Relative Humidity (%)	100.0	100.0	A	Note 3	Simultaneous Test	None
Accuracy: Spec: N/A Demon: N/A	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Service: Electrical Control							
Location: Auxiliary Bldg. Rm. 314	Radiation	1.0×10^6 RADS	1.6×10^8 RADS	T	CAL-79 Note 4	Analysis	None
Flood Level Elev: N/A Above Flood Level: N/A	Aging	40 Years	40 Years	I	CAL-79 Note 4	Analysis	None
Needed for: Hot Shutdown [X] Cold Shutdown [X]	Submergence	N/A	N/A	N/A	N/A	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No. 221H-096A
Rev. 2

NOTES

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/3/83

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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: Davis-Besse Unit 1
Docket: 50-346

COMPONENT MATERIAL EVALUATION SHEET

Index No.: 221H-096B
Rev. 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

Plant I.D. No.: EV1411B
Component: Terminal Block
Manufacturer: Stanwick
Model No.: Type G

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Terminal Block Links	Brass	Not Sensitive		Not Affected	
Mounting Rods	Metallic	Not Sensitive		Not Affected	
Bolts	Silicone Bronze	Not Sensitive		Not Affected	
Insert	Brass	Not Sensitive		Not Affected	
Nuts	Brass	Not Sensitive		Not Affected	
Terminal Block Base	Durez #791 Phenolic	40 Years @ 230°F	CAL-79	3.0×10^8 RADS	CAL-79
Terminal Block Barrier	Glass - Melamine	Greater than 40 Years @ 122°F	CAL-79	1.6×10^8 RADS	CAL-79

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-097
Rev. 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components	Operating Time	1 Year	1.1 Years	Note 2	Note 1 Note 3	Simultaneous Test	None
Plant ID No.: EV1467 Component: Terminal Block	Temperature (°F)	155.0	345.0	C-113	Note 3	Simultaneous Test	None
Manufacturer: Stanwick Model Number: Type G	Pressure (PSIA)	16.06	74.7	C-113	Note 3	Simultaneous Test	None
Function: Electrical Circuit Termination	Relative Humidity (%)	100.0	100.0	A	Note 3	Simultaneous Test	None
Accuracy: Spec: N/A Demon: N/A Service: Electrical Control	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 113	Radiation	7.1×10^6 RADS	1.6×10^8 RADS	T	CAL-79 Note 4	Analysis	None
Flood Level Elev: N/A Above Flood Level: N/A	Aging	40 Years	40 Years	I	CAL-79 Note 4	Analysis	None
Needed for: Hot Shutdown [X] 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-097A
Docket: 50-346 Rev. 2

NOTES

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

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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°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

COMPONENT MATERIALS EVALUATION SHEET

Index No.: 221H-097B
Rev. 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

Plant I.D. No.: EV1467 Component: Terminal Block

Manufacturer: Stanwick Model No.: Type G

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Terminal Block Links	Brass	Not Sensitive		Not Affected	
Mounting Rods	Metallic	Not Sensitive		Not Affected	
Bolts	Silicone Bronze	Not Sensitive		Not Affected	
Insert	Brass	Not Sensitive		Not Affected	
Nuts	Brass	Not Sensitive		Not Affected	
Terminal Block Base	Durez #791 Phenolic	40 Years @ 230°F	CAL-79	3.0×10^8 RADS	CAL-79
Terminal Block Barrier	Glass - Melamine	Greater than 40 Years @ 122°F	CAL-79	1.6×10^8 RADS	CAL-79

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-098
Rev. 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/3/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components Plant ID No.: EV1469 Component: Terminal Block Manufacturer: Stanwick Model Number: Type G Function: Electrical Circuit Termination Accuracy: Spec: N/A Demon: N/A Service: Electrical Control Location: Auxiliary Bldg. Rm. 113 Flood Level Elev: N/A Above Flood Level: N/A Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	1.1 Years	Note 2	Note 1 Note 3	Simultaneous Test	None
	Temperature (°F)	155.0	345.0	C-113	Note 3	Simultaneous Test	None
	Pressure (PSIA)	16.06	74.7	C-113	Note 3	Simultaneous Test	None
	Relative Humidity (%)	100.0	100.0	A	Note 3	Simultaneous Test	None
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
	Radiation	7.1×10^6 RADS	1.6×10^8 RADS	T	CAL-79 Note 4	Analysis	None
	Aging	40 Years	40 Years	I	CAL-79 Note 4	Analysis	None
	Submergence	N/A	N/A	N/A	N/A	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-098A
Rev. 2

NOTES

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

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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°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 COMPONENT MATERIAL EVALUATION SHEET Index No. 221H-098B
Docket: 50-346 Rev. 2

Prepared by: N Lewis Date: 11/1/87
Checked by: [signature] Date: 11/4/87

Plant I.D. No.: EV1469 Component: Terminal Block
Manufacturer: Stanwick Model No.: Type G

Parts List	Materials List	THERMAL AGING Qualification	Reference	RADIATION Qualification	Reference
Terminal Block Links	Brass	Not Sensitive		Not Affected	
Mounting Rods	Metallic	Not Sensitive		Not Affected	
Bolts	Silicone Bronze	Not Sensitive		Not Affected	
Insert	Brass	Not Sensitive		Not Affected	
Nuts	Brass	Not Sensitive		Not Affected	
Terminal Block Base	Durez #791 Phenolic	40 Years @ 230°F	CAL-79	3.0×10^8 RADS	CAL-79
Terminal Block Barrier	Glass - Melamine	Greater than 40 Years @ 122°F	CAL-79	1.6×10^8 RADS	CAL-79

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-099
Rev. 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

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

Facility: D[redacted] Besse Unit 1 SYSTEM COMPONENT [redacted]UATION WORKSHEET Index [redacted]21H-099A
Docket: 50[redacted]6 Rev.: [redacted]2

NOTES

Prepared by: N Lewis Date: 11/1/93
Checked by: [signature] Date: 11/2/93

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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% $\pm$ 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 MATERIAL EVALUATION SHEET

Index No.: 221H-0908
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

Plant I.D. No.: EV1517O
Manufacturer: Stanwick

Component: Terminal Block
Model No.: Type G

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Terminal Block Links	Brass	Not Sensitive		Not Affected	
Mounting Rods	Metallic	Not Sensitive		Not Affected	
Bolts	Silicone Bronze	Not Sensitive		Not Affected	
Insert	Brass	Not Sensitive		Not Affected	
Nuts	Brass	Not Sensitive		Not Affected	
Terminal Block Base	Durez #791 Phenolic	40 Years @ 230°F	CAL-79	3.0×10^8 RADS	CAL-79
Terminal Block Barrier	Glass - Melamine	Greater than 40 Years @ 122°F	CAL-79	1.6×10^8 RADS	CAL-79

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-100
Rev. 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/4/83

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

Facility: D[redacted] Besse Unit 1 SYSTEM COMPONENT [redacted]UATION WORKSHEET Index ! [redacted]21H-100A
Docket: 5[redacted] Rev.: [redacted]2

NOTES

Prepared by: N Lewis Date: 11/1/83
Checked by: [illegible] Date: 11/1/83

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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.

Facility: Davis-Besse Unit 1 — COMPONENT MATERIAL EVALUATION SHEET — Index: 221H-1008
Docket: 50-346 — Rev.: 2

Prepared by: N Lewis — Date: 11/1/83
Checked by: [signature] — Date: 11/2/83

Plant I.D. No.: EV15180 — Component: Terminal Block
Manufacturer: Stanwick — Model No.: Type G

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Terminal Block Links	Brass	Not Sensitive		Not Affected	
Mounting Rods	Metallic	Not Sensitive		Not Affected	
Bolts	Silicone Bronze	Not Sensitive		Not Affected	
Insert	Brass	Not Sensitive		Not Affected	
Nuts	Brass	Not Sensitive		Not Affected	
Terminal Block Base	Durez #791 Phenolic	40 Years @ 230°F	CAL-79	3.0×10^8 RADS	CAL-79
Terminal Block Barrier	Glass - Melamine	Greater than 40 Years @ 122°F	CAL-79	1.6×10^8 RADS	CAL-79

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-101
Rev. 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

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

Facility: D[redacted]-Besse Unit 1
Docket: 50[redacted]6

SYSTEM COMPONENT [redacted]UATION WORKSHEET

NOTES

Index [redacted]21H-101A
Rev.: [redacted]2

Prepared by: N Lewis Date: 11/1/85
Checked by: [illegible] Date: 11/2/85

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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.

Facility: [redacted]is-Besse Unit 1 COMPONENT MATERI[redacted] EVALUATION SHEET Index [redacted] 221H-1018
Docket: 50-346 Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

Plant I.D. No.: EV15300 Component: Terminal Block
Manufacturer: Stanwick Model No.: Type G

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Terminal Block Links	Brass	Not Sensitive		Not Affected	
Mounting Rods	Metallic	Not Sensitive		Not Affected	
Bolts	Silicone Bronze	Not Sensitive		Not Affected	
Insert	Brass	Not Sensitive		Not Affected	
Nuts	Brass	Not Sensitive		Not Affected	
Terminal Block Base	Durez #791 Phenolic	40 Years @ 230°F	CAL-79	3.0×10^8 RADS	CAL-79
Terminal Block Barrier	Glass - Melamine	Greater than 40 Years @ 122°F	CAL-79	1.6×10^8 RADS	CAL-79

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-102
Rev. 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components	Operating Time	1 Year	1.1 Years	Note 2	Note 1 Note 3	Simultaneous Test	None
Plant ID No.: EV15310 Component: Terminal Block	Temperature (°F)	221.0	345.0	C-314	Note 3	Simultaneous Test	None
Manufacturer: Stanwick Model Number: Type G	Pressure (PSIA)	19.76	74.7	C-314	Note 3	Simultaneous Test	None
Function: Electrical Circuit Termination	Relative Humidity (%)	100.0	100.0	A	Note 3	Simultaneous Test	None
Accuracy: Spec: N/A Demon: N/A Service: Electrical Control	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 314	Radiation	1.0×10^6 RADS	1.6×10^8 RADS	T	CAL-79 Note 4	Analysis	None
Flood Level Elev: N/A Above Flood Level: N/A	Aging	40 Years	40 Years	I	CAL-79 Note 4	Analysis	None
Needed for: Hot Shutdown [X] Cold Shutdown [X]	Submergence	N/A	N/A	N/A	N/A	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-102A
Rev.: 2

NOTES

Prepared by: N Lewis Date: 11-1-82
Checked by: [illegible] Date: 11-2-82

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.

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: [redacted]is-Besse Unit 1 COMPONENT MATERI[redacted] EVALUATION SHEET Index [redacted] 221H-1028
Docket: 50-346 Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

Plant I.D. No.: EV1530 Component: Terminal Block
Manufacturer: Stanwick Model No.: Type G

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Terminal Block Links	Brass	Not Sensitive		Not Affected	
Mounting Rods	Metallic	Not Sensitive		Not Affected	
Bolts	Silicone Bronze	Not Sensitive		Not Affected	
Insert	Brass	Not Sensitive		Not Affected	
Nuts	Brass	Not Sensitive		Not Affected	
Terminal Block Base	Durez #791 Phenolic	40 Years @ 230°F	CAL-79	3.0×10^8 RADS	CAL-79
Terminal Block Barrier	Glass - Melamine	Greater than 40 Years @ 122°F	CAL-79	1.6×10^8 RADS	CAL-79

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-103
Rev. 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components	Operating Time	1 Year	1.1 Years	Note 2	Note 1 Note 3	Simultaneous Test	None
Plant ID No.: EV1544 Component: Terminal Block	Temperature (°F)	218.0	345.0	C-303	Note 3	Simultaneous Test	None
Manufacturer: Stanwick Model Number: Type G	Pressure (PSIA)	17.16	74.7	C-303	Note 3	Simultaneous Test	None
Function: Electrical Circuit Termination	Relative Humidity (%)	100.0	100.0	A	Note 3	Simultaneous Test	None
Accuracy: Spec: N/A Demon: N/A Service: Electrical Control	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 303	Radiation	1.16×10^6 RADS	1.6×10^8 RADS	T	CAL-79 Note 4	Analysis	None
Flood Level Elev: N/A Above Flood Level: N/A	Aging	40 Years	40 Years	I	CAL-79 Note 4	Analysis	None
Needed for: Hot Shutdown [X] Cold Shutdown [X]	Submergence	N/A	N/A	N/A	N/A	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No: 221H-103A
Rev.: 2

NOTES

Prepared by: N Lewis Date: 11/1/
Checked by: [illegible] Date: 11/3/

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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% $\pm$ 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 COMPONENT MATERIAL EVALUATION SHEET Index 221H-103B
Docket: 50-346 Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

Plant I.D. No.: EV1544 Component: Terminal Block
Manufacturer: Stanwick Model No.: Type G

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Terminal Block Links	Brass	Not Sensitive		Not Affected	
Mounting Rods	Metallic	Not Sensitive		Not Affected	
Bolts	Silicone Bronze	Not Sensitive		Not Affected	
Insert	Brass	Not Sensitive		Not Affected	
Nuts	Brass	Not Sensitive		Not Affected	
Terminal Block Base	Durez #791 Phenolic	40 Years @ 230°F	CAL-79	3.0×10^8 RADS	CAL-79
Terminal Block Barrier	Glass - Melamine	Greater than 40 Years @ 122°F	CAL-79	1.6×10^8 RADS	CAL-79

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-104
Rev. 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components Plant ID No.: EV1545 Component: Terminal Block Manufacturer: Stanwick Model Number: Type G Function: Electrical Circuit Termination Accuracy: Spec: N/A Demon: N/A Service: Electrical Control Location: Auxiliary Bldg. Rm. 314 Flood Level Elev: N/A Above Flood Level: N/A Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	1.1 Years	Note 2	Note 1 Note 3	Simultaneous Test	None
	Temperature (°F)	221.0	345.0	C-314	Note 3	Simultaneous Test	None
	Pressure (PSIA)	19.76	74.7	C-314	Note 3	Simultaneous Test	None
	Relative Humidity (%)	100.0	100.0	A	Note 3	Simultaneous Test	None
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
	Radiation	1.0×10^6 RADS	1.6×10^8 RADS	T	CAL-79 Note 4	Analysis	None
	Aging	40 Years	40 Years	I	CAL-79 Note 4	Analysis	None
	Submergence	N/A	N/A	N/A	N/A	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No. 221H-104A
Rev.: 2

NOTES

Prepared by: N Lewis Date: 11/1/93
Checked by: [signature] Date: 11/2/93

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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.

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 MATERIAL EVALUATION SHEET

Index No.: 2211-1048
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

Plant I.D. No.: EV1545
Manufacturer: Stanwick

Component: Terminal Block
Model No.: Type G

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Terminal Block Links	Brass	Not Sensitive		Not Affected	
Mounting Rods	Metallic	Not Sensitive		Not Affected	
Bolts	Silicone Bronze	Not Sensitive		Not Affected	
Insert	Brass	Not Sensitive		Not Affected	
Nuts	Brass	Not Sensitive		Not Affected	
Terminal Block Base	Durez #791 Phenolic	40 Years @ 230°F	CAL-79	3.0×10^8 RADS	CAL-79
Terminal Block Barrier	Glass - Melamine	Greater than 40 Years @ 122°F	CAL-79	1.6×10^8 RADS	CAL-79

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-105
Rev. 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components	Operating Time	1 Year	1.1 Years	Note 2	Note 1 Note 3	Simultaneous Test	None
Plant ID No.: EV1567B Component: Terminal Block	Temperature (°F)	221.0	345.0	C-314	Note 3	Simultaneous Test	None
Manufacturer: Stanwick Model Number: Type G	Pressure (PSIA)	19.76	74.7	C-314	Note 3	Simultaneous Test	None
Function: Electrical Circuit Termination	Relative Humidity (%)	100.0	100.0	A	Note 3	Simultaneous Test	None
Accuracy: Spec: N/A Demon: N/A Service: Electrical Control	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 314	Radiation	1.0×10^6 RADS	1.6×10^8 RADS	T	CAL-79 Note 4	Analysis	None
Flood Level Elev: N/A Above Flood Level: N/A	Aging	40 Years	40 Years	I	CAL-79 Note 4	Analysis	None
Needed for: Hot Shutdown [X] 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-105A
Docket: 50-346 Rev.: 2

NOTES

Prepared by: N Lewis Date: 11/10/82
Checked by: [illegible] Date: 11/12/82

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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.

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 MATERIAL EVALUATION SHEET

Index No. 221H-105B
Rev.: 2

Prepared by: N Lewis Date: 11/11/83
Checked by: [signature] Date: 11/2/10

Plant I.D. No.: EV1537B
Component: Terminal Block
Manufacturer: Stanwick
Model No.: Type G

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Terminal Block Links	Brass	Not Sensitive		Not Affected	
Mounting Rods	Metallic	Not Sensitive		Not Affected	
Bolts	Silicone Bronze	Not Sensitive		Not Affected	
Insert	Brass	Not Sensitive		Not Affected	
Nuts	Brass	Not Sensitive		Not Affected	
Terminal Block Base	Durez #791 Phenolic	40 Years @ 230°F	CAL-79	3.0×10^8 RADS	CAL-79
Terminal Block Barrier	Glass - Melamine	Greater than 40 Years @ 122°F	CAL-79	1.6×10^8 RADS	CAL-79

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-106
Rev.: 2

'repared by: N Lewis Date: 11/1/83
:hecked by: [signature] Date: 11/4/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components Plant ID No.: EV1719B Component: Terminal Block Manufacturer: Stanwick Model Number: Type G Function: Electrical Circuit Termination Accuracy: Spec: N/A Demon: N/A Service: Electrical Control Location: Auxiliary Bldg. Rm. 236 Flood Level Elev: N/A Above Flood Level: N/A Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	1.1 Years	Note 2	Note 1 Note 3	Simultaneous Test	None
	Temperature (°F)	198.0	345.0	C-236	Note 3	Simultaneous Test	None
	Pressure (PSIA)	15.51	74.7	C-236	Note 3	Simultaneous Test	None
	Relative Humidity (%)	100.0	100.0	A	Note 3	Simultaneous Test	None
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
	Radiation	1.97×10^6 RADS	1.6×10^8 RADS	T	CAL-79 Note 4	Analysis	None
	Aging	40 Years	40 Years	I	CAL-79 Note 4	Analysis	None
	Submergence	N/A	N/A	N/A	N/A	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-106A
Rev.: 2

NOTES

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

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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% $\pm$ 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.: 221H-106B
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

Plant I.D. No.: EV1719B
Manufacturer: Stanwick

Component: Terminal Block
Model No.: Type G

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Terminal Block Links	Brass	Not Sensitive		Not Affected	
Mounting Rods	Metallic	Not Sensitive		Not Affected	
Bolts	Silicone Bronze	Not Sensitive		Not Affected	
Insert	Brass	Not Sensitive		Not Affected	
Nuts	Brass	Not Sensitive		Not Affected	
Terminal Block Base	Durez #791 Phenolic	40 Years @ 230°F	CAL-79	3.0×10^8 RADS	CAL-79
Terminal Block Barrier	Glass - Melamine	Greater than 40 Years @ 122°F	CAL-79	1.6×10^8 RADS	CAL-79

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-107
Rev.: 2

Prepared by: A. Levis Date: 11/1/83
Checked by: [illegible] Date: 11/2/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components Plant ID No.: EV20000 Component: Terminal Block Manufacturer: Stanwick Model Number: Type G Function: Electrical Circuit Termination Accuracy: Spec: N/A Demon: N/A Service: Electrical Control Location: Auxiliary Bldg. Rm. 303 Flood Level Elev: N/A Above Flood Level: N/A Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	1.1 Years	Note 2	Note 1 Note 3	Simultaneous Test	None
	Temperature (°F)	218.0	345.0	C-303	Note 3	Simultaneous Test	None
	Pressure (PSIA)	17.16	74.7	C-303	Note 3	Simultaneous Test	None
	Relative Humidity (%)	100.0	100.0	A	Note 3	Simultaneous Test	None
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
	Radiation	1.16×10^6 RADS	1.6×10^8 RADS	T	CAL-79 Note 4	Analysis	None
	Aging	40 Years	40 Years	I	CAL-79 Note 4	Analysis	None
	Submergence	N/A	N/A	N/A	N/A	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

NOTES

Index No.: 221H-107A
Rev.: 2

Prepared by: N. Levi Date: 11/1/83
Checked by: [illegible] Date: 11/2/83

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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.

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

COMPONENT MATERIALS EVALUATION SHEET

Index No.: 221H-107B
Rev.: 2

Prepared by: N. Levi Date: 11/4/13
Checked by: [signature] Date: 11/5/13

Plant I.D. No.: EV20000
Manufacturer: Stanwick

Component: Terminal Block
Model No.: Type G

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Terminal Block Links	Brass	Not Sensitive		Not Affected	
Mounting Rods	Metallic	Not Sensitive		Not Affected	
Bolts	Silicone Bronze	Not Sensitive		Not Affected	
Insert	Brass	Not Sensitive		Not Affected	
Nuts	Brass	Not Sensitive		Not Affected	
Terminal Block Base	Durez #791 Phenolic	40 Years @ 230°F	CAL-79	3.0×10^8 RADS	CAL-79
Terminal Block Barrier	Glass - Melamine	Greater than 40 Years @ 122°F	CAL-79	1.6×10^8 RADS	CAL-79

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-108
Rev.: 2

Prepared by: N. Lewis Date: 11/6/13
Checked by: [signature] Date: 11/7/13

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components Plant ID No.: EV20010 Component: Terminal Block Manufacturer: Stanwick Model Number: Type G Function: Electrical Circuit Termination Accuracy: Spec: N/A Demon: N/A Service: Electrical Control Location: Auxiliary Bldg. Rm. 427 Flood Level Elev: N/A Above Flood Level: N/A Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	40 Years	Note 1	Note 2	Analysis	None
	Temperature (°F)	N/A	N/A	Note 3	N/A	N/A	None
	Pressure (PSIA)	N/A	N/A	Note 3	N/A	N/A	None
	Relative Humidity (%)	N/A	N/A	Note 3	N/A	N/A	None
	Chemical Spray	N/A	N/A	Note 3	N/A	N/A	None
	Radiation	3.12×10^5 RADS	1.6×10^8 RADS	T	CAL-79 Note 2	Analysis	None
	Aging	40 Years	40 Years	I	CAL-79 Note 2	Analysis	None
	Submergence	N/A	N/A	N/A	N/A	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index NO.: 221H-108A
Rev.: 2

NOTES

)repared by: N. Lewis Date: 11/1/93
:hecked by: [signature] Date: 11/2/93

.. 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

Index No.: 221H-108B
Rev.: 2

Prepared by: N. Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

Plant I.D. No.: EV20010 Component: Terminal Block
Manufacturer: Stanwick Model No.: Type G

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Terminal Block Links	Brass	Not Sensitive		Not Affected	
Mounting Rods	Metallic	Not Sensitive		Not Affected	
Bolts	Silicone Bronze	Not Sensitive		Not Affected	
Insert	Brass	Not Sensitive		Not Affected	
Nuts	Brass	Not Sensitive		Not Affected	
Terminal Block Base	Durez #791 Phenolic	40 Years @ 230°F	CAL-79	3.0×10^8 RADS	CAL-79
Terminal Block Barrier	Glass - Melamine	Greater than 40 Years @ 122°F	CAL-79	1.6×10^8 RADS	CAL-79

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-109
Rev.: 2

Prepared by: N. Ferris Date: 11/1/83
Checked by: [signature] Date: 11/2/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components Plant ID No.: EV20030 Component: Terminal Block Manufacturer: Stanwick Model Number: Type G Function: Electrical Circuit Termination Accuracy: Spec: N/A Demon: N/A Service: Electrical Control Location: Auxiliary Bldg. Rm. 314 Flood Level Elev: N/A Above Flood Level: N/A Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	1.1 Years	Note 2	Note 1 Note 3	Simultaneous Test	None
	Temperature (°F)	221.0	345.0	C-314	Note 3	Simultaneous Test	None
	Pressure (PSIA)	19.76	74.7	C-314	Note 3	Simultaneous Test	None
	Relative Humidity (%)	100.0	100.0	A	Note 3	Simultaneous Test	None
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
	Radiation	1.0×10^6 RADS	1.6×10^8 RADS	T	CAL-79 Note 4	Analysis	None
	Aging	40 Years	40 Years	I	CAL-79 Note 4	Analysis	None
	Submergence	N/A	N/A	N/A	N/A	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-109A
Rev.: 2

NOTES

Prepared by: N. Fenn Date: 11/1/93
Checked by: [illegible] Date: 11/2/93

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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.

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-109B
Rev.: 2

Prepared by: N. Kevin Date: 11/1/83
Checked by: [signature] Date: 11/5/83

Plant I.D. No.: EV20030 Component: Terminal Block

Manufacturer: Stanwick Model No.: Type G

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Terminal Block Links	Brass	Not Sensitive		Not Affected	
Mounting Rods	Metallic	Not Sensitive		Not Affected	
Bolts	Silicone Bronze	Not Sensitive		Not Affected	
Insert	Brass	Not Sensitive		Not Affected	
Nuts	Brass	Not Sensitive		Not Affected	
Terminal Block Base	Durez #791 Phenolic	40 Years @ 230°F	CAL-79	3.0×10^8 RADS	CAL-79
Terminal Block Barrier	Glass - Melamine	Greater than 40 Years @ 122°F	CAL-79	1.6×10^8 RADS	CAL-79

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-110
Rev.: 2

Prepared by: W. Lewis Date: 11/1/83
Checked by: [illegible] Date: 11/2/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components Plant ID No.: EV2010 Component: Terminal Block Manufacturer: Stanwick Model Number: Type G Function: Electrical Circuit Termination Accuracy: Spec: N/A Demon: N/A Service: Electrical Control Location: Auxiliary Bldg. Rm. 314 Flood Level Elev: N/A Above Flood Level: N/A Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	1.1 Years	Note 2	Note 1 Note 3	Simultaneous Test	None
	Temperature (°F)	221.0	345.0	C-314	Note 3	Simultaneous Test	None
	Pressure (PSIA)	19.76	74.7	C-314	Note 3	Simultaneous Test	None
	Relative Humidity (%)	100.0	100.0	A	Note 3	Simultaneous Test	None
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
	Radiation	1.0×10^6 RADS	1.6×10^8 RADS	T	CAL-79 Note 4	Analysis	None
	Aging	40 Years	40 Years	I	CAL-79 Note 4	Analysis	None
	Submergence	N/A	N/A	N/A	N/A	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

NOTES

Index No.: 221H-110A
Rev.: 2

Prepared by: H. Lewis Date: 11/1/83
Checked by: [illegible] Date: 11/3/83

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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.

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-110B
Rev.: 2

Prepared by: N. Lewis Date: 11/6/83
Checked by: [signature] Date: 11/7/83

Plant I.D. No.: EV2010 Component: Terminal Block
Manufacturer: Stanwick Model No.: Type G

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Terminal Block Links	Brass	Not Sensitive		Not Affected	
Mounting Rods	Metallic	Not Sensitive		Not Affected	
Bolts	Silicone Bronze	Not Sensitive		Not Affected	
Insert	Brass	Not Sensitive		Not Affected	
Nuts	Brass	Not Sensitive		Not Affected	
Terminal Block Base	Durez #791 Phenolic	40 Years @ 230°F	CAL-79	3.0×10^8 RADS	CAL-79
Terminal Block Barrier	Glass - Melamine	Greater than 40 Years @ 122°F	CAL-79	1.6×10^8 RADS	CAL-79

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-111
Rev.: 2

Prepared by: R. Lenz Date: 11/1/83
Checked by: [signature] Date: 11/1/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components Plant ID No.: EV2012B Component: Terminal Block Manufacturer: Stanwick Model Number: Type G Function: Electrical Circuit Termination Accuracy: Spec: N/A Demon: N/A Service: Electrical Control Location: Auxiliary Bldg. Rm. 236 Flood Level Elev: N/A Above Flood Level: N/A Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	1.1 Years	Note 2	Note 1 Note 3	Simultaneous Test	None
	Temperature (°F)	198.0	345.0	C-236	Note 3	Simultaneous Test	None
	Pressure (PSIA)	15.51	74.7	C-236	Note 3	Simultaneous Test	None
	Relative Humidity (%)	100.0	100.0	A	Note 3	Simultaneous Test	None
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
	Radiation	1.97×10^6 RADS	1.6×10^8 RADS	T	CAL-79 Note 4	Analysis	None
	Aging	40 Years	40 Years	I	CAL-79 Note 4	Analysis	None
	Submergence	N/A	N/A	N/A	N/A	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-111A
Rev.: 2

NOTES

'repared by: N. Levi Date: 11/1/03
:hecked by: [illegible] Date: 11/2/03

.. 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% $\pm$ 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
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COMPONENT MATERIALS EVALUATION SHEET

Index No.: 221H-111B
Rev.: 2

Prepared by: N. Kemp Date: 11/6/03
Checked by: [illegible] Date: 11/7/03

Plant I.D. No.: EV2010B
Manufacturer: Stanwick

Component: Terminal Block
Model No.: Type G

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Terminal Block Links	Brass	Not Sensitive		Not Affected	
Mounting Rods	Metallic	Not Sensitive		Not Affected	
Bolts	Silicone Bronze	Not Sensitive		Not Affected	
Insert	Brass	Not Sensitive		Not Affected	
Nuts	Brass	Not Sensitive		Not Affected	
Terminal Block Base	Durez #791 Phenolic	40 Years @ 230°F	CAL-79	3.0×10^8 RADS	CAL-79
Terminal Block Barrier	Glass - Melamine	Greater than 40 Years @ 122°F	CAL-79	1.6×10^8 RADS	CAL-79

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-112
Rev.: 2

Prepared by: N. Lewis Date: 11/6/03
Checked by: [signature] Date: 11/26/03

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components Plant ID No.: EV27330 Component: Terminal Block Manufacturer: Stanwick Model Number: Type G Function: Electrical Circuit Termination Accuracy: Spec: N/A Demon: N/A Service: Electrical Control Location: Auxiliary Bldg. Rm. 105 Flood Level Elev: N/A Above Flood Level: N/A Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	1.1 Years	Note 2	Note 1 Note 3	Simultaneous Test	None
	Temperature (°F)	130.0	345.0	C-105	Note 3	Simultaneous Test	None
	Pressure (PSIA)	16.06	74.7	C-105	Note 3	Simultaneous Test	None
	Relative Humidity (%)	100.0	100.0	A	Note 3	Simultaneous Test	None
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
	Radiation	1.9×10^6 RADS	1.6×10^8 RADS	T	CAL-79 Note 4	Analysis	None
	Aging	40 Years	40 Years	I	CAL-79 Note 4	Analysis	None
	Submergence	N/A	N/A	N/A	N/A	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

NOTES

Index No.: 221H-112A
Rev.: 2

Prepared by: N. Lewis Date: 11/1/83
Checked by: [signature] Date: 11/3/83

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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.

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-112B
Rev.: 2

Prepared by: R. Levi Date: 11/6/83
Checked by: [illegible] Date: 11/7/83

Plant I.D. No.: EV27330
Manufacturer: Stanwick

Component: Terminal Block
Model No.: Type G

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Terminal Block Links	Brass	Not Sensitive		Not Affected	
Mounting Rods	Metallic	Not Sensitive		Not Affected	
Bolts	Silicone Bronze	Not Sensitive		Not Affected	
Insert	Brass	Not Sensitive		Not Affected	
Nuts	Brass	Not Sensitive		Not Affected	
Terminal Block Base	Durez #791 Phenolic	40 Years @ 230°F	CAL-79	3.0×10^8 RADS	CAL-79
Terminal Block Barrier	Glass - Melamine	Greater than 40 Years @ 122°F	CAL-79	1.6×10^8 RADS	CAL-79

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-113
Rev.: 2

Prepared by: N. Kenz Date: 11/1/83
Checked by: [signature] Date: 11/2/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components Plant ID No.: EV27340 Component: Terminal Block Manufacturer: Stanwick Model Number: Type G Function: Electrical Circuit Termination Accuracy: Spec: N/A Demon: N/A Service: Electrical Control Location: Auxiliary Bldg. Rm. 113 Flood Level Elev: N/A Above Flood Level: N/A Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	1.1 Years	Note 2	Note 1 Note 3	Simultaneous Test	None
	Temperature (°F)	155.0	345.0	C-113	Note 3	Simultaneous Test	None
	Pressure (PSIA)	16.06	74.7	C-113	Note 3	Simultaneous Test	None
	Relative Humidity (%)	100.0	100.0	A	Note 3	Simultaneous Test	None
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
	Radiation	7.1×10^6 RADS	1.6×10^8 RADS	T	CAL-79 Note 4	Analysis	None
	Aging	40 Years	40 Years	I	CAL-79 Note 4	Analysis	None
	Submergence	N/A	N/A	N/A	N/A	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-113A
Rev.: 2

NOTES

Prepared by: N. Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

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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°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.: 221H-113B
Rev.: 2

Prepared by: N. Lewis Date: 11/6/85
Checked by: [illegible] Date: 11/6/85

Plant I.D. No.: EV27340
Manufacturer: Stanwick

Component: Terminal Block
Model No.: Type G

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Terminal Block Links	Brass	Not Sensitive		Not Affected	
Mounting Rods	Metallic	Not Sensitive		Not Affected	
Bolts	Silicone Bronze	Not Sensitive		Not Affected	
Insert	Brass	Not Sensitive		Not Affected	
Nuts	Brass	Not Sensitive		Not Affected	
Terminal Block Base	Durez #791 Phenolic	40 Years @ 230°F	CAL-79	3.0×10^8 RADS	CAL-79
Terminal Block Barrier	Glass - Melamine	Greater than 40 Years @ 122°F	CAL-79	1.6×10^8 RADS	CAL-79

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-114
Rev.: 2

Prepared by: M. Jones Date: 11/1/83
Checked by: [signature] Date: 11/3/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components Plant ID No.: EV27360 Component: Terminal Block Manufacturer: Stanwick Model Number: Type G Function: Electrical Circuit Termination Accuracy: Spec: N/A Demon: N/A Service: Electrical Control Location: Auxiliary Bldg. Rm. 314 Flood Level Elev: N/A Above Flood Level: N/A Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	1.1 Years	Note 2	Note 1 Note 3	Simultaneous Test	None
	Temperature (°F)	221.0	345.0	C-314	Note 3	Simultaneous Test	None
	Pressure (PSIA)	19.76	74.7	C-314	Note 3	Simultaneous Test	None
	Relative Humidity (%)	100.0	100.0	A	Note 3	Simultaneous Test	None
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
	Radiation	1.0×10^6 RADS	1.6×10^8 RADS	T	CAL-79 Note 4	Analysis	None
	Aging	40 Years	40 Years	I	CAL-79 Note 4	Analysis	None
	Submergence	N/A	N/A	N/A	N/A	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

NOTES

Index No.: 221H-114A
Rev.: 2

Prepared by: R. Jones Date: 11/1/83
Checked by: Dan Bradt Date: 11/2/83

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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.

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-114B
Rev.: 2

Prepared by: N. Ferris Date: 11/1/83
Checked by: [illegible] Date: 11/1/83

Plant I.D. No.: EV27360 Component: Terminal Block
Manufacturer: Stanwick Model No.: Type G

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Terminal Block Links	Brass	Not Sensitive		Not Affected	
Mounting Rods	Metallic	Not Sensitive		Not Affected	
Bolts	Silicone Bronze	Not Sensitive		Not Affected	
Insert	Brass	Not Sensitive		Not Affected	
Nuts	Brass	Not Sensitive		Not Affected	
Terminal Block Base	Durez #791 Phenolic	40 Years @ 230°F	CAL-79	3.0×10^8 RADS	CAL-79
Terminal Block Barrier	Glass - Melamine	Greater than 40 Years @ 122°F	CAL-79	1.6×10^8 RADS	CAL-79

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-115
Rev.: 2

Prepared by: K. Lewis Date: 11/1/83
Checked by: [signature] Date: 11/3/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components Plant ID No.: EV5005 Component: Terminal Block Manufacturer: Stanwick Model Number: Type G Function: Electrical Circuit Termination Accuracy: Spec: N/A Demon: N/A Service: Electrical Control Location: Auxiliary Bldg. Rm. 601 Flood Level Elev: N/A Above Flood Level: N/A Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	1.1 Years	Note 2	Note 1 Note 3	Simultaneous Test	None
	Temperature (°F)	282.0	345.0	C-601	Note 3	Simultaneous Test	None
	Pressure (PSIA)	17.0	74.7	C-601	Note 3	Simultaneous Test	None
	Relative Humidity (%)	100.0	100.0	A	Note 3	Simultaneous Test	None
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
	Radiation	1.86×10^4 RADS	1.6×10^8 RADS	T	CAL-79 Note 4	Analysis	None
	Aging	40 Years	40 Years	I	CAL-79 Note 4	Analysis	None
	Submergence	N/A	N/A	N/A	N/A	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-115A
Rev.: 2

NOTES

Prepared by: N. Lewis Date: 11/1/83
Checked by: L. McAndrew Date: 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 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°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.: 221H-115B
Rev.: 2

Prepared by: N. Lewis Date: 11/1/83
Checked by: [illegible] Date: 11/3/83

Plant I.D. No.: EV5005
Manufacturer: Stanwick

Component: Terminal Block
Model No.: Type G

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Terminal Block Links	Brass	Not Sensitive		Not Affected	
Mounting Rods	Metallic	Not Sensitive		Not Affected	
Bolts	Silicone Bronze	Not Sensitive		Not Affected	
Insert	Brass	Not Sensitive		Not Affected	
Nuts	Brass	Not Sensitive		Not Affected	
Terminal Block Base	Durez #791 Phenolic	40 Years @ 230°F	CAL-79	3.0×10^8 RADS	CAL-79
Terminal Block Barrier	Glass - Melamine	Greater than 40 Years @ 122°F	CAL-79	1.6×10^8 RADS	CAL-79

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-116
Rev. 2

Prepared by: M. Lewis Date: 11/1/93
Checked by: [illegible] Date: 4/4/03

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components Plant ID No.: EV5008 Component: Terminal Block Manufacturer: Stanwick Model Number: Type G Function: Electrical Circuit Termination Accuracy: Spec: N/A Demon: N/A Service: Electrical Control Location: Auxiliary Bldg. Rm. 427 Flood Level Elev: N/A Above Flood Level: N/A Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	40 Years	Note 1	Note 2	Analysis	None
	Temperature (°F)	N/A	N/A	Note 3	N/A	N/A	None
	Pressure (PSIA)	N/A	N/A	Note 3	N/A	N/A	None
	Relative Humidity (%)	N/A	N/A	Note 3	N/A	N/A	None
	Chemical Spray	N/A	N/A	Note 3	N/A	N/A	None
	Radiation	3.12×10^5 RADS	1.6×10^8 RADS	T	CAL-79 Note 2	Analysis	None
	Aging	40 Years	40 Years	I	CAL-79 Note 2	Analysis	None
	Submergence	N/A	N/A	N/A	N/A	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-116A
Rev. 2

NOTES

Prepared by: N. Lewis Date: 11/1/83
Checked by: [illegible] Date: 11/2/83

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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

Index No.: 221H-116B
Rev. 2

Prepared by: N. Levin Date: 11/1/83
Checked by: [illegible] Date: 11/2/83

Plant I.D. No.: EV5008 Component: Terminal Block

Manufacturer: Stanwick Model No.: Type G

Parts List	Materials List	THERMAL AGING Qualification	Reference	RADIATION Qualification	Reference
Terminal Block Links	Brass	Not Sensitive		Not Affected	
Mounting Rods	Metallic	Not Sensitive		Not Affected	
Bolts	Silicone Bronze	Not Sensitive		Not Affected	
Insert	Brass	Not Sensitive		Not Affected	
Nuts	Brass	Not Sensitive		Not Affected	
Terminal Block Base	Durez #791 Phenolic	40 Years @ 230°F	CAL-79	3.0×10^8 RADS	CAL-79
Terminal Block Barrier	Glass - Melamine	Greater than 40 Years @ 122°F	CAL-79	1.6×10^8 RADS	CAL-79

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

Facility: Davis-Besse Unit 1
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SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-117
Rev. 2

Prepared by: N. Lewis Date: 11/1/83
Checked by: [illegible] Date: 11/2/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components	Operating Time	1 Year	1.1 Years	Note 2	Note 1 Note 3	Simultaneous Test	None
Plant ID No.: EV5010B Component: Terminal Block	Temperature (°F)	221.0	345.0	C-314	Note 3	Simultaneous Test	None
Manufacturer: Stanwick Model Number: Type G	Pressure (PSIA)	19.76	74.7	C-314	Note 3	Simultaneous Test	None
Function: Electrical Circuit Termination	Relative Humidity (%)	100.0	100.0	A	Note 3	Simultaneous Test	None
Accuracy: Spec: N/A Demon: N/A Service: Electrical Control	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 314	Radiation	1.0×10^6 RADS	1.6×10^8 RADS	T	CAL-79 Note 4	Analysis	None
Flood Level Elev: N/A Above Flood Level: N/A	Aging	40 Years	40 Years	I	CAL-79 Note 4	Analysis	None
Needed for: Hot Shutdown [X] Cold Shutdown [X]	Submergence	N/A	N/A	N/A	N/A	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-117A
Rev. 2

NOTES

Prepared by: D. Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

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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.

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Docket: 50-346 Rev. 2

Prepared by: N. Lewis Date: 11/10/83
Checked by: [signature] Date: 11/2/83

Plant I.D. No.: EV5010B Component: Terminal Block

Manufacturer: Stanwick Model No.: Type G

Parts List	Materials List	THERMAL AGING Qualification	Reference	RADIATION Qualification	Reference
Terminal Block Links	Brass	Not Sensitive		Not Affected	
Mounting Rods	Metallic	Not Sensitive		Not Affected	
Bolts	Silicone Bronze	Not Sensitive		Not Affected	
Insert	Brass	Not Sensitive		Not Affected	
Nuts	Brass	Not Sensitive		Not Affected	
Terminal Block Base	Durez #791 Phenolic	40 Years @ 230°F	CAL-79	3.0×10^8 RADS	CAL-79
Terminal Block Barrier	Glass - Melamine	Greater than 40 Years @ 122°F	CAL-79	1.6×10^8 RADS	CAL-79

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-118
Rev. 2

Prepared by: R. Lam Date: 11/1/83
Checked by: [illegible] Date: 11/2/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components	Operating Time	1 Year	1.1 Years	Note 2	Note 1 Note 3	Simultaneous Test	None
Plant ID No.: EV5010D Component: Terminal Block	Temperature (°F)	221.0	345.0	C-314	Note 3	Simultaneous Test	None
Manufacturer: Stanwick Model Number: Type G	Pressure (PSIA)	19.76	74.7	C-314	Note 3	Simultaneous Test	None
Function: Electrical Circuit Termination	Relative Humidity (%)	100.0	100.0	A	Note 3	Simultaneous Test	None
Accuracy: Spec: N/A Demon: N/A Service: Electrical Control	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 314	Radiation	1.0×10^6 RADS	1.6×10^8 RADS	T	CAL-79 Note 4	Analysis	None
Flood Level Elev: N/A Above Flood Level: N/A	Aging	40 Years	40 Years	I	CAL-79 Note 4	Analysis	None
Needed for: Hot Shutdown [X] Cold Shutdown [X]	Submergence	N/A	N/A	N/A	N/A	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-118A
Rev. 2

NOTES

Prepared by: N. Lewis Date: 11/1/83
Checked by: [illegible] Date: 11/2/83

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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: Davis-Besse Unit 1
Docket: 50-346

COMPONENT MATERIALS EVALUATION SHEET

Index No.: 221H-118B
Rev. 2

Prepared by: N. Lewis Date: 11/1/83
Checked by: [illegible] Date: 11/2/83

Plant I.D. No.: EV5010D
Component: Terminal Block
Manufacturer: Stanwick
Model No.: Type G

Parts List	Materials List	THERMAL AGING Qualification	THERMAL AGING Reference	RADIATION Qualification	RADIATION Reference
Terminal Block Links	Brass	Not Sensitive		Not Affected	
Mounting Rods	Metallic	Not Sensitive		Not Affected	
Bolts	Silicone Bronze	Not Sensitive		Not Affected	
Insert	Brass	Not Sensitive		Not Affected	
Nuts	Brass	Not Sensitive		Not Affected	
Terminal Block Base	Durez #791 Phenolic	40 Years @ 230°F	CAL-79	3.0×10^8 RADS	CAL-79
Terminal Block Barrier	Glass - Melamine	Greater than 40 Years @ 122°F	CAL-79	1.6×10^8 RADS	CAL-79

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-119
Rev. 2

Prepared by: N. Lewis Date: 11/6/83
Checked by: [illegible] Date: 11/7/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components	Operating Time	1 Year	1.1 Years	Note 2	Note 1 Note 3	Simultaneous Test	None
Plant ID No.: EV50240	Temperature (°F)	203.0	345.0	C-515	Note 3	Simultaneous Test	None
Component: Terminal Block							
Manufacturer: Stanwick	Pressure (PSIA)	15.60	74.7	C-515	Note 3	Simultaneous Test	None
Model Number: Type G							
Function: Electrical Circuit Termination	Relative Humidity (%)	100.0	100.0	A	Note 3	Simultaneous Test	None
Accuracy: Spec: N/A Demon: N/A							
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Service: Electrical Control							
Location: Auxiliary Bldg. Rm. 515	Radiation	N/A	N/A	N/A	N/A	N/A	None
Flood Level Elev: N/A Above Flood Level: N/A	Aging	40 Years	40 Years	I	CAL-79 Note 4	Analysis	None
Needed for:							
Hot Shutdown [X]	Submergence	N/A	N/A	N/A	N/A	N/A	None
Cold Shutdown [X]							

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Docket: 50-346

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-119A
Rev. 2

NOTES

Prepared by: M. Lewis Date: 11/6/03
Checked by: [illegible] Date: 11/7/03

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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.

Facility: Davis-Besse Unit 1
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COMPONENT MATERIALS EVALUATION SHEET

Index No.: 221H-119B
Rev. 2

Prepared by: [signature] Date: 11/1/83
Checked by: [signature] Date: 11/2/83

Plant I.D. No.: EV50240 Component: Terminal Block

Manufacturer: Stanwick Model No.: Type G

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Terminal Block Links	Brass	Not Sensitive		Not Affected	
Mounting Rods	Metallic	Not Sensitive		Not Affected	
Bolts	Silicone Bronze	Not Sensitive		Not Affected	
Insert	Brass	Not Sensitive		Not Affected	
Nuts	Brass	Not Sensitive		Not Affected	
Terminal Block Base	Durez #791 Phenolic	40 Years @ 230°F	CAL-79	3.0×10^8 RADS	CAL-79
Terminal Block Barrier	Glass - Melamine	Greater than 40 Years @ 122°F	CAL-79	1.6×10^8 RADS	CAL-79

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

Facility: Davis-Besse Unit 1 SYSTEM COMPONENT EVALUATION WORKSHEET Index No.: 221H-120
Docket: 50-346 Rev. 2

Prepared by: T. Lewis Date: 11/1/83
Checked by: [illegible] Date: 11/2/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components	Operating Time	1 Year	1.1 Years	Note 2	Note 1 Note 3	Simultaneous Test	None
Plant ID No.: EV50250	Temperature (°F)	203.0	345.0	C-515	Note 3	Simultaneous Test	None
Component: Terminal Block							
Manufacturer: Stanwick	Pressure (PSIA)	15.60	74.7	C-515	Note 3	Simultaneous Test	None
Model Number: Type G							
Function: Electrical Circuit Termination	Relative Humidity (%)	100.0	100.0	A	Note 3	Simultaneous Test	None
Accuracy: Spec: N/A Demon: N/A	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Service: Electrical Control							
Location: Auxiliary Bldg. Rm. 213	Radiation	N/A	N/A	N/A	N/A	N/A	None
Flood Level Elev: N/A Above Flood Level: N/A	Aging	40 Years	40 Years	I	CAL-79 Note 4	Analysis	None
Needed for:							
Hot Shutdown [X]	Submergence	N/A	N/A	N/A	N/A	N/A	None
Cold Shutdown [X]							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-120A
Rev. 2

NOTES

Prepared by: H. Fenn Date: 11/1/83
Checked by: [illegible] Date: 11/2/83

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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.

Facility: Davis-Besse Unit 1
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COMPONENT MATERIALS EVALUATION SHEET

Index No.: 221H-120B
Rev. 2

Prepared by: M. Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

Plant I.D. No.: EV50250 Component: Terminal Block

Manufacturer: Stanwick Model No.: Type G

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Terminal Block Links	Brass	Not Sensitive		Not Affected	
Mounting Rods	Metallic	Not Sensitive		Not Affected	
Bolts	Silicone Bronze	Not Sensitive		Not Affected	
Insert	Brass	Not Sensitive		Not Affected	
Nuts	Brass	Not Sensitive		Not Affected	
Terminal Block Base	Durez #791 Phenolic	40 Years @ 230°F	CAL-79	3.0×10^8 RADS	CAL-79
Terminal Block Barrier	Glass - Melamine	Greater than 40 Years @ 122°F	CAL-79	1.6×10^8 RADS	CAL-79

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-121
Rev. 2

Prepared by: R. Lenz Date: 11/1/83
Checked by: [illegible] Date: 11/2/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components	Operating Time	1 Year	1.1 Years	Note 2	Note 1 Note 3	Simultaneous Test	None
Plant ID No.: EV50370 Component: Terminal Block	Temperature (°F)	198.0	345.0	C-236	Note 3	Simultaneous Test	None
Manufacturer: Stanwick Model Number: Type G	Pressure (PSIA)	15.51	74.7	C-236	Note 3	Simultaneous Test	None
Function: Electrical Circuit Termination	Relative Humidity (%)	100.0	100.0	A	Note 3	Simultaneous Test	None
Accuracy: Spec: N/A Demon: N/A Service: Electrical Control	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 236	Radiation	1.97×10^6 RADS	1.6×10^8 RADS	T	CAL-79 Note 4	Analysis	None
Flood Level Elev: N/A Above Flood Level: N/A	Aging	40 Years	40 Years	I	CAL-79 Note 4	Analysis	None
Needed for: Hot Shutdown [X] 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-121A
Docket: 50-346 Rev. 2

NOTES

Prepared by: N. Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

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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.

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

COMPONENT MATERIALS EVALUATION SHEET

Index No.: 221H-121B
Rev. 2

Prepared by: N. Lewis Date: 11/1/83
Checked by: [illegible] Date: 11/3/83

Plant I.D. No.: EV50370 Component: Terminal Block

Manufacturer: Stanwick Model No.: Type G

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Terminal Block Links	Brass	Not Sensitive		Not Affected	
Mounting Rods	Metallic	Not Sensitive		Not Affected	
Bolts	Silicone Bronze	Not Sensitive		Not Affected	
Insert	Brass	Not Sensitive		Not Affected	
Nuts	Brass	Not Sensitive		Not Affected	
Terminal Block Base	Durez #791 Phenolic	40 Years @ 230°F	CAL-79	3.0×10^8 RADS	CAL-79
Terminal Block Barrier	Glass - Melamine	Greater than 40 Years @ 122°F	CAL-79	1.6×10^8 RADS	CAL-79

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-122
Rev. 2

Prepared by: D. Lenz Date: 11/1/83
Checked by: [signature] Date: 11/4/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components	Operating Time	1 Year	1.1 Years	Note 2	Note 1 Note 3	Simultaneous Test	None
Plant ID No.: EV50380 Component: Terminal Block	Temperature (°F)	198.0	345.0	C-236	Note 3	Simultaneous Test	None
Manufacturer: Stanwick Model Number: Type G	Pressure (PSIA)	15.51	74.7	C-236	Note 3	Simultaneous Test	None
Function: Electrical Circuit Termination	Relative Humidity (%)	100.0	100.0	A	Note 3	Simultaneous Test	None
Accuracy: Spec: N/A Demon: N/A Service: Electrical Control	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 236	Radiation	1.97×10^6 RADS	1.6×10^8 RADS	T	CAL-79 Note 4	Analysis	None
Flood Level Elev: N/A Above Flood Level: N/A	Aging	40 Years	40 Years	I	CAL-79 Note 4	Analysis	None
Needed for: Hot Shutdown [X] Cold Shutdown [X]	Submergence	N/A	N/A	N/A	N/A	N/A	None

Facility: Davis-Besse Unit 1
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SYSTEM COMPONENT EVALUATION WORKSHEET

NOTES

Index No.: 221H-122A
Rev. 2

Prepared by: M. Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

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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% $\pm$ 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.: 221H-122B
Rev. 2

Prepared by: R. Lewis Date: 11/1/83
Checked by: [illegible] Date: 11/2/83

Plant I.D. No.: EV50380 Component: Terminal Block

Manufacturer: Stanwick Model No.: Type G

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Terminal Block Links	Brass	Not Sensitive		Not Affected	
Mounting Rods	Metallic	Not Sensitive		Not Affected	
Bolts	Silicone Bronze	Not Sensitive		Not Affected	
Insert	Brass	Not Sensitive		Not Affected	
Nuts	Brass	Not Sensitive		Not Affected	
Terminal Block Base	Durez #791 Phenolic	40 Years @ 230°F	CAL-79	3.0×10^8 RADS	CAL-79
Terminal Block Barrier	Glass - Melamine	Greater than 40 Years @ 122°F	CAL-79	1.6×10^8 RADS	CAL-79

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-123
Rev. 2

Prepared by: N. Lewis Date: 11/1/83
Checked by: [illegible] Date: 11/2/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components	Operating Time	1 Year	1.1 Years	Note 2	Note 1 Note 3	Simultaneous Test	None
Plant ID No.: EV50650 Component: Terminal Block	Temperature (°F)	192.0	345.0	C-208	Note 3	Simultaneous Test	None
Manufacturer: Stanwick Model Number: Type G	Pressure (PSIA)	16.25	74.7	C-208	Note 3	Simultaneous Test	None
Function: Electrical Circuit Termination	Relative Humidity (%)	100.0	100.0	A	Note 3	Simultaneous Test	None
Accuracy: Spec: N/A Demon: N/A Service: Electrical Control	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 208	Radiation	1.97×10^6 RADS	1.6×10^8 RADS	T	CAL-79 Note 4	Analysis	None
Flood Level Elev: N/A Above Flood Level: N/A	Aging	40 Years	40 Years	I	CAL-79 Note 4	Analysis	None
Needed for: Hot Shutdown [X] Cold Shutdown [X]	Submergence	N/A	N/A	N/A	N/A	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-123A
Rev. 2

NOTES

Prepared by: N. Levin Date: 11/1/83
Checked by: [signature] Date: 11-1-83

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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 wa. 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 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°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

COMPONENT MATERIALS EVALUATION SHEET

Index No.: 221H-123B
Rev. 2

Prepared by: D. Lewis Date: 11/1/83
Checked by: [illegible] Date: 11/3/83

Plant I.D. No.: EV50650 Component: Terminal Block

Manufacturer: Stanwick Model No.: Type G

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Terminal Block Links	Brass	Not Sensitive		Not Affected	
Mounting Rods	Metallic	Not Sensitive		Not Affected	
Bolts	Silicone Bronze	Not Sensitive		Not Affected	
Insert	Brass	Not Sensitive		Not Affected	
Nuts	Brass	Not Sensitive		Not Affected	
Terminal Block Base	Durez #791 Phenolic	40 Years @ 230°F	CAL-79	3.0×10^8 RADS	CAL-79
Terminal Block Barrier	Glass - Melamine	Greater than 40 Years @ 122°F	CAL-79	1.6×10^8 RADS	CAL-79

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-124
Rev. 2

Prepared by: N. Lewis Date: 11/1/83
Checked by: [illegible] Date: 11/2/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components	Operating Time	1 Year	1.1 Years	Note 2	Note 1 Note 3	Simultaneous Test	None
Plant ID No.: EV50670 Component: Terminal Block	Temperature (°F)	221.0	345.0	C-314	Note 3	Simultaneous Test	None
Manufacturer: Stanwick Model Number: Type G	Pressure (PSIA)	19.76	74.7	C-314	Note 3	Simultaneous Test	None
Function: Electrical Circuit Termination	Relative Humidity (%)	100.0	100.0	A	Note 3	Simultaneous Test	None
Accuracy: Spec: N/A Demon: N/A Service: Electrical Control	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 314	Radiation	1.0×10^6 RADS	1.6×10^8 RADS	T	CAL-79 Note 4	Analysis	None
Flood Level Elev: N/A Above Flood Level: N/A	Aging	40 Years	40 Years	I	CAL-79 Note 4	Analysis	None
Needed for: Hot Shutdown [X] 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-124A
Docket: 50-346 Rev. 2

NOTES

Prepared by: R. Lewis Date: 11/1/83
Checked by: [signature] Date: 11/3/83

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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.

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
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COMPONENT MATERIALS EVALUATION SHEET

Index No.: 221H-124B
Rev. 2

Prepared by: N. Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

Plant I.D. No.: EV50670 Component: Terminal Block

Manufacturer: Stanwick Model No.: Type G

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Terminal Block Links	Brass	Not Sensitive		Not Affected	
Mounting Rods	Metallic	Not Sensitive		Not Affected	
Bolts	Silicone Bronze	Not Sensitive		Not Affected	
Insert	Brass	Not Sensitive		Not Affected	
Nuts	Brass	Not Sensitive		Not Affected	
Terminal Block Base	Durez #791 Phenolic	40 Years @ 230°F	CAL-79	3.0×10^8 RADS	CAL-79
Terminal Block Barrier	Glass - Melamine	Greater than 40 Years @ 122°F	CAL-79	1.6×10^8 RADS	CAL-79

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

Facility: Davis-Besse Unit 1 SYSTEM COMPONENT EVALUATION WORKSHEET Index No. 221H-125
Docket: 50-346 Rev. 2

Prepared by: N. Levi Date: 11/4/83
Checked by: Bardell Date: 11/4/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components Plant ID No.: EV50700 Component: Terminal Block Manufacturer: Stanwick Model Number: Type G Function: Electrical Circuit Termination Accuracy: Spec: N/A Demon: N/A Service: Electrical Control Location: Auxiliary Bldg. Rm. 500 Flood Level Elev: N/A Above Flood Level: N/A Needed for: Hot Shutdown | X | Cold Shutdown | X |	Operating Time	1 Year	1.1 Years	Note 2	Note 1 Note 3	Simultaneous Test	None
	Temperature (°F)	249.0	345.0	C-500	Note 3	Simultaneous Test	None
	Pressure (PSIA)	15.61	74.7	C-500	Note 3	Simultaneous Test	None
	Relative Humidity (%)	100.0	100.0	A	Note 3	Simultaneous Test	None
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
	Radiation	N/A	N/A	N/A	N/A	N/A	None
	Aging	40 Years	40 Years	I	CAL-79 Note 4	Analysis	None
	Submergence	N/A	N/A	N/A	N/A	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-125A
Rev. 2

NOTES

Prepared by: N. Kowb Date: 11/1/83
Checked by: [signature] Date: 11/2/83

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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 tempe ature 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
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COMPONENT MATERIALS EVALUATION SHEET

Index No.: 221H-125B
Rev. 2

Prepared by: N. Lenni Date: 11/18/83
Checked by: [illegible] Date: 11/5/83

Plant I.D. No.: EV50700 Component: Terminal Block

Manufacturer: Stanwick Model No.: Type G

Parts List	Materials List	THERMAL AGING Qualification	Reference	RADIATION Qualification	Reference
Terminal Block Links	Brass	Not Sensitive		Not Affected	
Mounting Rods	Metallic	Not Sensitive		Not Affected	
Bolts	Silicone Bronze	Not Sensitive		Not Affected	
Insert	Brass	Not Sensitive		Not Affected	
Nuts	Brass	Not Sensitive		Not Affected	
Terminal Block Base	Durez #791 Phenolic	40 Years @ 230°F	CAL-79	3.0×10^8 RADS	CAL-79
Terminal Block Barrier	Glass - Melamine	Greater than 40 Years @ 122°F	CAL-79	1.6×10^8 RADS	CAL-79

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

Facility: Davis-Besse Unit 1
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SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-126
Rev.: 2

Prepared by: N. Levin Date: 11/1/83
Checked by: [signature] Date: 11/2/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components Plant ID No.: EV50730 Component: Terminal Block Manufacturer: Stanwick Model Number: Type G Function: Electrical Circuit Termination Accuracy: Spec: N/A Demon: N/A Service: Electrical Control Location: Auxiliary Bldg. Rm. 500 Flood Level Elev: N/A Above Flood Level: N/A Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	1.1 Years	Note 2	Note 1 Note 3	Simultaneous Test	None
	Temperature (°F)	249.0	345.0	C-500	Note 3	Simultaneous Test	None
	Pressure (PSIA)	15.61	74.7	C-500	Note 3	Simultaneous Test	None
	Relative Humidity (%)	100.0	100.0	A	Note 3	Simultaneous Test	None
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
	Radiation	N/A	N/A	N/A	N/A	N/A	None
	Aging	40 Years	40 Years	I	CAL-79 Note 4	Analysis	None
	Submergence	N/A	N/A	N/A	N/A	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

NOTES

Index No.: 221H-126A
Rev.: 2

'repared by: N. Lewis Date: 11/1/83
:hecked by: [signature] Date: 11/2/83

.. 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°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.

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COMPONENT MATERIALS EVALUATION SHEET

Index No.: 221H-126B
Rev.: 2

Prepared by: N. Lewis Date: 4/4/83
Checked by: [signature] Date: 4/6/83

Plant I.D. No.: EV50730
Component: Terminal Block
Manufacturer: Stanwick
Model No.: Type G

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Terminal Block Links	Brass	Not Sensitive		Not Affected	
Mounting Rods	Metallic	Not Sensitive		Not Affected	
Bolts	Silicone Bronze	Not Sensitive		Not Affected	
Insert	Brass	Not Sensitive		Not Affected	
Nuts	Brass	Not Sensitive		Not Affected	
Terminal Block Base	Durez #791 Phenolic	40 Years @ 230°F	CAL-79	3.0×10^8 RADS	CAL-79
Terminal Block Barrier	Glass - Melamine	Greater than 40 Years @ 122°F	CAL-79	1.6×10^8 RADS	CAL-79

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

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SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-127
Rev.: 2

Prepared by: N. Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components Plant ID No.: EV50750 Component: Terminal Block Manufacturer: Stanwick Model Number: Type G Function: Electrical Circuit Termination Accuracy: Spec: N/A Demon: N/A Service: Electrical Control Location: Auxiliary Bldg. Rm. 501 Flood Level Elev: N/A Above Flood Level: N/A Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	1.1 Years	Note 2	Note 1 Note 3	Simultaneous Test	None
	Temperature (°F)	267.0	345.0	C-501	Note 3	Simultaneous Test	None
	Pressure (PSIA)	15.61	74.7	C-501	Note 3	Simultaneous Test	None
	Relative Humidity (%)	100.0	100.0	A	Note 3	Simultaneous Test	None
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
	Radiation	N/A	N/A	N/A	N/A	N/A	None
	Aging	40 Years	40 Years	I	CAL-79 Note 4	Analysis	None
	Submergence	N/A	N/A	N/A	N/A	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-127A
Rev.: 2

NOTES

Prepared by: N. Lewis Date: 11/1/83
Checked by: [signature] Date: 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 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).

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-127B
Rev.: 2

Prepared by: N. Ford Date: 11/1/83
Checked by: [illegible] Date: 11/2/83

Plant I.D. No.: EV50750
Manufacturer: Stanwick

Component: Terminal Block
Model No.: Type G

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Terminal Block Links	Brass	Not Sensitive		Not Affected	
Mounting Rods	Metallic	Not Sensitive		Not Affected	
Bolts	Silicone Bronze	Not Sensitive		Not Affected	
Insert	Brass	Not Sensitive		Not Affected	
Nuts	Brass	Not Sensitive		Not Affected	
Terminal Block Base	Durez #791 Phenolic	40 Years @ 230°F	CAL-79	3.0×10^8 RADS	CAL-79
Terminal Block Barrier	Glass - Melamine	Greater than 40 Years @ 122°F	CAL-79	1.6×10^8 RADS	CAL-79

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-128
Rev.: 2

Prepared by: T. Levi Date: 11/1/83
Checked by: [illegible] Date: 11/2/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components Plant ID No.: EV50780 Component: Terminal Block Manufacturer: Stanwick Model Number: Type G Function: Electrical Circuit Termination Accuracy: Spec: N/A Demon: N/A Service: Electrical Control Location: Auxiliary Bldg. Rm. 501 Flood Level Elev: N/A Above Flood Level: N/A Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	1.1 Years	Note 2	Note 1 Note 3	Simultaneous Test	None
	Temperature (°F)	267.0	345.0	C-501	Note 3	Simultaneous Test	None
	Pressure (PSIA)	15.61	74.7	C-501	Note 3	Simultaneous Test	None
	Relative Humidity (%)	100.0	100.0	A	Note 3	Simultaneous Test	None
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
	Radiation	N/A	N/A	N/A	N/A	N/A	None
	Aging	40 Years	40 Years	I	CAL-79 Note 4	Analysis	None
	Submergence	N/A	N/A	N/A	N/A	N/A	None

Facility: Davis-Besse Unit 1
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SYSTEM COMPONENT EVALUATION WORKSHEET

NOTES

Index No.: 221H-128A
Rev.: 2

Prepared by: T. Lewis Date: 11/1/83
Checked by: [signature] Date: 11/3/83

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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°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.: 221H-128B
Rev.: 2

Prepared by: N. Fenn Date: 11/1/83
Checked by: [signature] Date: 11/4/83

Plant I.D. No.: EV50780
Manufacturer: Stanwick

Component: Terminal Block
Model No.: Type G

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Terminal Block Links	Brass	Not Sensitive		Not Affected	
Mounting Rods	Metallic	Not Sensitive		Not Affected	
Bolts	Silicone Bronze	Not Sensitive		Not Affected	
Insert	Brass	Not Sensitive		Not Affected	
Nuts	Brass	Not Sensitive		Not Affected	
Terminal Block Base	Durez #791 Phenolic	40 Years @ 230°F	CAL-79	3.0×10^8 RADS	CAL-79
Terminal Block Barrier	Glass - Melamine	Greater than 40 Years @ 122°F	CAL-79	1.6×10^8 RADS	CAL-79

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-129
Rev.: 2

Prepared by: N. Levi Date: 11/1/83
Checked by: [illegible] Date: 11/1/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components Plant ID No.: EV50900 Component: Terminal Block Manufacturer: Stanwick Model Number: Type G Function: Electrical Circuit Termination Accuracy: Spec: N/A Demon: N/A Service: Electrical Control Location: Auxiliary Bldg. Rm. 314 Flood Level Elev: N/A Above Flood Level: N/A Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	1.1 Years	Note 2	Note 1 Note 3	Simultaneous Test	None
	Temperature (°F)	221.0	345.0	C-314	Note 3	Simultaneous Test	None
	Pressure (PSIA)	19.76	74.7	C-314	Note 3	Simultaneous Test	None
	Relative Humidity (%)	100.0	100.0	A	Note 3	Simultaneous Test	None
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
	Radiation	1.0×10^6 RADS	1.6×10^8 RADS	T	CAL-79 Note 4	Analysis	None
	Aging	40 Years	40 Years	I	CAL-79 Note 4	Analysis	None
	Submergence	N/A	N/A	N/A	N/A	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-129A
Rev.: 2

NOTES

Prepared by: N. Lewis Date: 11/1/83
Checked by: [illegible] Date: 11/2/83

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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.

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-129B
Rev.: 2

Prepared by: D. Lewis Date: 11/1/83
Checked by: [illegible] Date: 11/2/83

Plant I.D. No.: EV50900
Manufacturer: Stanwick

Component: Terminal Block
Model No.: Type G

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Terminal Block Links	Brass	Not Sensitive		Not Affected	
Mounting Rods	Metallic	Not Sensitive		Not Affected	
Bolts	Silicone Bronze	Not Sensitive		Not Affected	
Insert	Brass	Not Sensitive		Not Affected	
Nuts	Brass	Not Sensitive		Not Affected	
Terminal Block Base	Durez #791 Phenolic	40 Years @ 230°F	CAL-79	3.0×10^8 RADS	CAL-79
Terminal Block Barrier	Glass - Melamine	Greater than 40 Years @ 122°F	CAL-79	1.6×10^8 RADS	CAL-79

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-130
Rev.: 2

Prepared by: N. Lewis Date: 11/1/83
Checked by: [illegible] Date: 11/2/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components Plant ID No.: EV54210 Component: Terminal Block Manufacturer: Stanwick Model Number: Type G Function: Electrical Circuit Termination Accuracy: Spec: N/A Demon: N/A Service: Electrical Control Location: Auxiliary Bldg. Rm. 105 Flood Level Elev: N/A Above Flood Level: N/A Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	1.1 Years	Note 2	Note 1 Note 3	Simultaneous Test	None
	Temperature (°F)	130.0	345.0	C-105	Note 3	Simultaneous Test	None
	Pressure (PSIA)	16.06	74.7	C-105	Note 3	Simultaneous Test	None
	Relative Humidity (%)	100.0	100.0	A	Note 3	Simultaneous Test	None
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
	Radiation	1.9×10^6 RADS	1.6×10^8 RADS	T	CAL-79 Note 4	Analysis	None
	Aging	40 Years	40 Years	I	CAL-79 Note 4	Analysis	None
	Submergence	N/A	N/A	N/A	N/A	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

NOTES

Index No.: 221H-130A
Rev.: 2

Prepared by: R. Lewis Date: 11/1/83
Checked by: [illegible] Date: 11/2/83

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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.

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-130B
Rev.: 2

Prepared by: N. Stein Date: 4/1/83
Checked by: [illegible] Date: 11/5/83

Plant I.D. No.: EV54210
Component: Terminal Block
Manufacturer: Stanwick
Model No.: Type G

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Terminal Block Links	Brass	Not Sensitive		Not Affected	
Mounting Rods	Metallic	Not Sensitive		Not Affected	
Bolts	Silicone Bronze	Not Sensitive		Not Affected	
Insert	Brass	Not Sensitive		Not Affected	
Nuts	Brass	Not Sensitive		Not Affected	
Terminal Block Base	Durez #791 Phenolic	40 Years @ 230°F	CAL-79	3.0×10^8 RADS	CAL-79
Terminal Block Barrier	Glass - Melamine	Greater than 40 Years @ 122°F	CAL-79	1.6×10^8 RADS	CAL-79

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-131
Rev.: 2

repared by: N. Lewis Date: 11/1/83
hecked by: Lynn Bond Date: 11/1/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components Plant ID No.: EV54220 Component: Terminal Block Manufacturer: Stanwick Model Number: Type G Function: Electrical Circuit Termination Accuracy: Spec: N/A Demon: N/A Service: Electrical Control Location: Auxiliary Bldg. Rm. 105 Flood Level Elev: N/A Above Flood Level: N/A Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	1.1 Years	Note 2	Note 1 Note 3	Simultaneous Test	None
	Temperature (°F)	130.0	345.0	C-105	Note 3	Simultaneous Test	None
	Pressure (PSIA)	16.06	74.7	C-105	Note 3	Simultaneous Test	None
	Relative Humidity (%)	100.0	100.0	A	Note 3	Simultaneous Test	None
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
	Radiation	1.9×10^6 RADS	1.6×10^8 RADS	T	CAL-79 Note 4	Analysis	None
	Aging	40 Years	40 Years	I	CAL-79 Note 4	Analysis	None
	Submergence	N/A	N/A	N/A	N/A	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

NOTES

Index No.: 221H-131A
Rev.: 2

Prepared by: N. Lewis Date: 11/18/81
Checked by: [illegible] Date: 11/18/81

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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% $\pm$ 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.: 221H-131B
Rev.: 2

Prepared by: N. Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

Plant I.D. No.: EV54220 Component: Terminal Block

Manufacturer: Stanwick Model No.: Type G

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Terminal Block Links	Brass	Not Sensitive		Not Affected	
Mounting Rods	Metallic	Not Sensitive		Not Affected	
Bolts	Silicone Bronze	Not Sensitive		Not Affected	
Insert	Brass	Not Sensitive		Not Affected	
Nuts	Brass	Not Sensitive		Not Affected	
Terminal Block Base	Durez #791 Phenolic	40 Years @ 230°F	CAL-79	3.0×10^8 RADS	CAL-79
Terminal Block Barrier	Glass - Melamine	Greater than 40 Years @ 122°F	CAL-79	1.6×10^8 RADS	CAL-79

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

Facility: Davis-Besse Unit 1
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SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-132
Rev.: 2

Prepared by: R. Ferris Date: 11/6/83
Checked by: [illegible] Date: 11/7/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components Plant ID No.: EV54230 Component: Terminal Block Manufacturer: Stanwick Model Number: Type G Function: Electrical Circuit Termination Accuracy: Spec: N/A Demon: N/A Service: Electrical Control Location: Auxiliary Bldg. Rm. 113 Flood Level Elev: N/A Above Flood Level: N/A Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	1.1 Years	Note 2	Note 1 Note 3	Simultaneous Test	None
	Temperature (°F)	155.0	345.0	C-113	Note 3	Simultaneous Test	None
	Pressure (PSIA)	16.06	74.7	C-113	Note 3	Simultaneous Test	None
	Relative Humidity (%)	100.0	100.0	A	Note 3	Simultaneous Test	None
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
	Radiation	7.1×10^6 RADS	1.6×10^8 RADS	T	CAL-79 Note 4	Analysis	None
	Aging	40 Years	40 Years	I	CAL-79 Note 4	Analysis	None
	Submergence	N/A	N/A	N/A	N/A	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

NOTES

Index No.: 221H-132A
Rev.: 2

Prepared by: [signature] Date: 11/1/03
Checked by: [signature] Date: 11/4/03

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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°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.: 221H-132B
Rev.: 2

Prepared by: D. Lewis Date: 11/1/83
Checked by: [illegible] Date: 11/3/83

Plant I.D. No.: EV54230
Manufacturer: Stanwick

Component: Terminal Block
Model No.: Type G

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Terminal Block Links	Brass	Not Sensitive		Not Affected	
Mounting Rods	Metallic	Not Sensitive		Not Affected	
Bolts	Silicone Bronze	Not Sensitive		Not Affected	
Insert	Brass	Not Sensitive		Not Affected	
Nuts	Brass	Not Sensitive		Not Affected	
Terminal Block Base	Durez #791 Phenolic	40 Years @ 230°F	CAL-79	3.0×10^8 RADS	CAL-79
Terminal Block Barrier	Glass - Melamine	Greater than 40 Years @ 122°F	CAL-79	1.6×10^8 RADS	CAL-79

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-133
Rev.: 2

Prepared by: M. Lewis Date: 11/1/83
Checked by: [illegible] Date: 11/2/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components Plant ID No.: EV54240 Component: Terminal Block Manufacturer: Stanwick Model Number: Type G Function: Electrical Circuit Termination Accuracy: Spec: N/A Demon: N/A Service: Electrical Control Location: Auxiliary Bldg. Rm. 115 Flood Level Elev: N/A Above Flood Level: N/A Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	1.1 Years	Note 2	Note 1 Note 3	Simultaneous Test	None
	Temperature (°F)	177.0	345.0	C-115	Note 3	Simultaneous Test	None
	Pressure (PSIA)	15.60	74.7	C-115	Note 3	Simultaneous Test	None
	Relative Humidity (%)	100.0	100.0	A	Note 3	Simultaneous Test	None
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
	Radiation	2.67×10^6 RADS	1.6×10^8 RADS	T	CAL-79 Note 4	Analysis	None
	Aging	40 Years	40 Years	I	CAL-79 Note 4	Analysis	None
	Submergence	N/A	N/A	N/A	N/A	N/A	None

Facility: Davis-Besse Unit 1
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SYSTEM COMPONENT EVALUATION WORKSHEET

NOTES

Index No. 221H-133A
Rev.: 2

Prepared by: D. Lewis Date: 11/4/83
Checked by: [illegible] Date: 11/8/83

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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°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
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COMPONENT MATERIALS EVALUATION SHEET

Index No.: 221H-133B
Rev.: 2

Prepared by: N. Ferris Date: 11/1/83
Checked by: [signature] Date: 11/2/83

Plant I.D. No.: EV54240
Manufacturer: Stanwick

Component: Terminal Block
Model No.: Type G

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Terminal Block Links	Brass	Not Sensitive		Not Affected	
Mounting Rods	Metallic	Not Sensitive		Not Affected	
Bolts	Silicone Bronze	Not Sensitive		Not Affected	
Insert	Brass	Not Sensitive		Not Affected	
Nuts	Brass	Not Sensitive		Not Affected	
Terminal Block Base	Durez #791 Phenolic	40 Years @ 230°F	CAL-79	3.0×10^8 RADS	CAL-79
Terminal Block Barrier	Glass - Melamine	Greater than 40 Years @ 122°F	CAL-79	1.6×10^8 RADS	CAL-79

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-134
Rev.: 2

Prepared by: N. Levi Date: 11/1/83
Checked by: [illegible] Date: 11/2/83

EQUIPMENT DESCRIPTION	ENVIRONMENT		DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components Plant ID No.: EV54250 Component: Terminal Block Manufacturer: Stanwick Model Number: Type G Function: Electrical Circuit Termination Accuracy: Spec: N/A Demon: N/A Service: Electrical Control Location: Auxiliary Bldg. Rm. 115 Flood Level Elev: N/A Above Flood Level: N/A Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	1.1 Years	Note 2	Note 1 Note 3	Simultaneous Test	None
	Temperature (°F)	177.0	345.0	C-115	Note 3	Simultaneous Test	None
	Pressure (PSIA)	15.60	74.7	C-115	Note 3	Simultaneous Test	None
	Relative Humidity (%)	100.0	100.0	A	Note 3	Simultaneous Test	None
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
	Radiation	2.67×10^6 RADS	1.6×10^8 RADS	T	CAL-79 Note 4	Analysis	None
	Aging	40 Years	40 Years	I	CAL-79 Note 4	Analysis	None
	Submergence	N/A	N/A	N/A	N/A	N/A	None

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SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 221H-134A
Rev.: 2

NOTES

Prepared by: M. Lewis Date: 9/1/83
Checked by: [illegible] Date: 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 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% ± 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.

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COMPONENT MATERIALS EVALUATION SHEET

Index No.: 221H-134B
Rev.: 2

Prepared by: N. Lewis Date: 11/1/83
Checked by: [illegible] Date: 11/1/83

Plant I.D. No.: EV54250 Component: Terminal Block
Manufacturer: Stanwick Model No.: Type G

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Terminal Block Links	Brass	Not Sensitive		Not Affected	
Mounting Rods	Metallic	Not Sensitive		Not Affected	
Bolts	Silicone Bronze	Not Sensitive		Not Affected	
Insert	Brass	Not Sensitive		Not Affected	
Nuts	Brass	Not Sensitive		Not Affected	
Terminal Block Base	Durez #791 Phenolic	40 Years @ 230°F	CAL-79	3.0×10^8 RADS	CAL-79
Terminal Block Barrier	Glass - Melamine	Greater than 40 Years @ 122°F	CAL-79	1.6×10^8 RADS	CAL-79

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

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Index No.: 2214-135
Rev.: 2

Prepared by: M. Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components Plant ID No.: EV54390 Component: Terminal Block Manufacturer: Stanwick Model Number: Type G Function: Electrical Circuit Termination Accuracy: Spec: N/A Demon: N/A Service: Electrical Control Location: Auxiliary Bldg. Rm. 105 Flood Level Elev: N/A Above Flood Level: N/A Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	1.1 Years	Note 2	Note 1 Note 3	Simultaneous Test	None
	Temperature (°F)	130.0	345.0	C-105	Note 3	Simultaneous Test	None
	Pressure (PSIA)	16.06	74.7	C-105	Note 3	Simultaneous Test	None
	Relative Humidity (%)	100.0	100.0	A	Note 3	Simultaneous Test	None
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
	Radiation	1.9×10^6 RADS	1.6×10^8 RADS	T	CAL-79 Note 4	Analysis	None
	Aging	40 Years	40 Years	I	CAL-79 Note 4	Analysis	None
	Submergence	N/A	N/A	N/A	N/A	N/A	None

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Index No.: 221H-135A
Rev.: 2

NOTES

Prepared by: N. Lewis Date: 11/1/83
Checked by: [signature] Date: 11/2/83

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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% $\pm$ 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.

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COMPONENT MATERIALS EVALUATION SHEET

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Rev.: 2

Prepared by: N. Fenix Date: 11/1/83
Checked by: [signature] Date: 11/2/83

Plant I.D. No.: EV54390
Manufacturer: Stanwick

Component: Terminal Block
Model No.: Type G

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Terminal Block Links	Brass	Not Sensitive		Not Affected	
Mounting Rods	Metallic	Not Sensitive		Not Affected	
Bolts	Silicone Bronze	Not Sensitive		Not Affected	
Insert	Brass	Not Sensitive		Not Affected	
Nuts	Brass	Not Sensitive		Not Affected	
Terminal Block Base	Durez #791 Phenolic	40 Years @ 230°F	CAL-79	3.0×10^8 RADS	CAL-79
Terminal Block Barrier	Glass - Melamine	Greater than 40 Years @ 122°F	CAL-79	1.6×10^8 RADS	CAL-79

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

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Index No.: 221H-136
Rev.: 2

Prepared by: N. Levi Date: 11/6/83
Checked by: [illegible] Date: 11/8/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Generic 1E Electrical Components	Operating Time	1 Year	1.1 Years	Note 2	Note 1 Note 3	Simultaneous Test	None
Plant ID No.: EV54400 Component: Terminal Block	Temperature (°F)	130.0	345.0	C-105	Note 3	Simultaneous Test	None
Manufacturer: Stanwick Model Number: Type G	Pressure (PSIA)	16.06	74.7	C-105	Note 3	Simultaneous Test	None
Function: Electrical Circuit Termination	Relative Humidity (%)	100.0	100.0	A	Note 3	Simultaneous Test	None
Accuracy: Spec: N/A Demon: N/A Service: Electrical Control	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 1C5	Radiation	1.9×10^6 RADS	1.6×10^8 RADS	T	CAL-79 Note 4	Analysis	None
Flood Level Elev: N/A Above Flood Level: N/A	Aging	40 Years	40 Years	I	CAL-79 Note 4	Analysis	None
Needed for: Hot Shutdown [X] Cold Shutdown [X]	Submergence	N/A	N/A	N/A	N/A	N/A	None

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Index No. 221H-136A
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NOTES

Prepared by: N. Lewis Date: 11/1/83
Checked by: [illegible] Date: 11/2/83

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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% $\pm$ 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.

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COMPONENT MATERIALS EVALUATION SHEET

Index No.: 121H-136B
Rev.: 2

Prepared by: N. Levis Date: 11/1/83
Checked by: [illegible] Date: 11/2/83

Plant I.D. No.: EV54400 Component: Terminal Block

Manufacturer: Stanwick Model No.: Type G

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Terminal Block Links	Brass	Not Sensitive		Not Affected	
Mounting Rods	Metallic	Not Sensitive		Not Affected	
Bolts	Silicone Bronze	Not Sensitive		Not Affected	
Insert	Brass	Not Sensitive		Not Affected	
Nuts	Brass	Not Sensitive		Not Affected	
Terminal Block Base	Durez #791 Phenolic	40 Years @ 230°F	CAL-79	3.0×10^8 RADS	CAL-79
Terminal Block Barrier	Glass - Melamine	Greater than 40 Years @ 122°F	CAL-79	1.6×10^8 RADS	CAL-79

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