CALCULATION/PROBLEM COVER SHEET

Calculation/Problem No: 1040-001-027

Title: Primary Pressure Control System 2.24

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
PRIMARY PRESSURE CONTROL SYSTEM

Index No: 224M-001
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		REMARKS
				Inside Primary Containment	Outside Primary Containment	
224H-004	2	LTRC14-2	Level Transmitter	El. 3		
224H-004	2	LTRC14-2	Level Transmitter	El. 3		
224H-005	2	MV02000	Valve Motor Operator	Containment		
224H-006	2	MV0239A	Valve Motor Operator	Containment		
224H-007	2	MV0239B	Valve Motor Operator	Containment		
224H-008	2	MV27350	Valve Motor Operator	Containment		
224H-009	2	MV27360	Valve Motor Operator		Rm. 314	
224H-010	2	MVRC020	Valve Motor Operator	Relief Vl Rm.		
224H-011	2	MVRC100	Valve Motor Operator	Relief Vl Rm.		
224H-012	2	MVRC110	Valve Motor Operator	Relief Vl Rm.		
224H-013	2	Deleted				
224H-014	2	ZSDH11A	Limit Switch	Rm. 220		
224H-015	2	ZSDH12A	Limit Switch	Rm. 220		
	2	BE11A	Motor Control Center		Rm. 209	See 2.21
	2	BE11B	Motor Control Center		Rm. 304	See 2.21
	2	BF11A	Motor Control Center		Rm. 427	See 2.21
	2	CDE11A	Disconnect Switch Cabinet		Rm. 304	See 2.21
	2	CDE11B-1	Disconnect Switch Cabinet		Rm. 304	See 2.21
	2	CDF11A-1	Disconnect Switch Cabinet		Rm. 427	See 2.21
	2	CDF11A-2	Disconnect Switch Cabinet		Rm. 427	See 2.21
	2	EV27360	Terminal Block Box		Rm. 314	See 2.21
	2	JT3953	Terminal Block Box	Rm. 410		See 2.21
	2	JT3954	Terminal Block Box	Rm. 410		See 2.21
	2	NV27360	Push Button Switch		Rm. 314	See 2.21
	2	PTRC2A1	Pressure Transmitter	Rm. 410		See 2.18
	2	PTRC2A2	Pressure Transmitter	Rm. 410		See 2.18
	2	RC4601	Relay Cabinet		Rm. 427	See 2.21
	2	RC4602	Relay Cabinet		Rm. 427	See 2.21

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MASTER LIST
NON-HARSH ENVIRONMENT
PRIMARY PRESSURE CONTROL SYSTEM

Index No: 224M-002
Rev.: 2

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

Worksheet Index No.	Rev.	Plant ID Number	Generic Name	LOCATION		REMARKS
				Inside Primary Containment	Outside Primary Containment	
	0	BE12A	Motor Control Center		Rm. 429	
	0	BF12A	Motor Control Center		Rm. 428	
	0	BF12B	Motor Control Center		Rm. 319	
	0	BF21A	Motor Control Center		Rm. 310	
	0	C3630	Auxiliary Shutdown Cabinet		Rm. 324	
	0	C5705	Console Cabinet		Rm. 505	
	0	C5759B	Non-Nuclear Instrumentation Cabinet		Rm. 505	
	0	CDE12A-2	Disconnect Switch Cabinet		Rm. 429	
	0	CDF12A-1	Disconnect Switch Cabinet		Rm. 428	
	0	CDF12B	Disconnect Switch Cabinet		Rm. 319	
	0	LYRC14	Level Relay		Rm. 505	
	0	RC3716	Relay Cabinet		Rm. 310	
	0	RC4604	Relay Cabinet		Rm. 429	
	0	RC4605	Relay Cabinet		Rm. 428	

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MASTER LIST

PRIMARY PRESSURE CONTROL SYSTEM

Prepared by: [illegible] Date: 10/10/83
Checked by: [illegible] Date: [illegible]

Index No: 224M-003
Rev.: 2

Worksheet Index No.	Rev.	Plant ID Number	Generic Name	LOCATION		REMARKS
				Inside Primary Containment	Outside Primary Containment	

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 224H-004
Rev.: 2

Prepared by: G. V. Calhoun Date: 7-8-91
Checked by: J. T. Kister Date: 7-8-91

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Primary Pressure Control Plant ID No. LTRC14-2 Component: Level Transmitter Manufacturer: Bailey Meter Model Number: BY3B40X-A Function: Transmits Level Signals Accuracy: Spec: ± .5% Demon: ± .23% Service: Reactor Coolant Pressurizer Level Location: Containment El. 3 Flood Level Elev: 572'-2" Above Flood Level: Yes Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	1.1 Years	Note 2	J-1 Note 3	Analysis	None
	Temperature (°F)	283.0	300.0	H, X	J-1	Simultaneous Test	None
	Pressure (PSIA)	52.0	74.7	G, X	J-1	Simultaneous Test	None
	Relative Humidity (%)	100.0	100.0	A	J-1	Simultaneous Test	None
	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	CAL-42	Analysis	None
	Radiation	1.7×10^7 RADS	4.0×10^7 RADS	CAL-44	AG	Sequential Test	None
	Aging	40 Years	10.83 Years Note 1	I	CAL-38	Analysis	None
	Submergence	572' - 2"	585' - 0"	B	J-29	N/A	None

acility: Davis Besse Unit 1
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SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 224H-004A
Rev.: 2

NOTES

repared by: W. L. Bellamy Date 7/15/91
hecked by: T. J. Kelly Date 7/15/91

- This component is scheduled for replacement during the first refueling outage subsequent to component on-site availability. Interim operation will not be affected due to the time margin provided.

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

- According to profiles G and H, containment conditions will nearly return to ambient (2.5 psig, 104°F) within 24 hours, with a complete return to ambient within seven days. Ambient conditions will remain for the duration of the accident and ensuing cooldown. The 24-hour LOCA simulation test exposed the transmitter to a more severe environment than that which would results from the postulated loss of coolant accident. Since the transmitter remained operable throughout the test, it can be concluded that it will also maintain functional operability during the short-term accident environment and the long-term cooldown at ambient conditions.

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SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 224H-004
Rev.: 2

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

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Primary Pressure Control Plant ID No. LTRC14-2 Component: Level Transmitter Manufacturer: Rosemount Model Number: 1153 Function: Monitors Containment Water Level Accuracy: Spec: 5.0% Demon: .42% Service: Reactor Coolant Pressurizer Level Location: Containment El. 3' Flood Level Elev: 572'-2" Above Flood Level: Yes Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	1.1 Years	Notes 1 and 3	J-36	Simultaneous Test	None
	Temperature (°F)	283.0	350.0	H, X	J-36	Simultaneous Test	None
	Pressure (PSIA)	52.0	85.0	G, X	J-36	Simultaneous Test	None
	Relative Humidity (%)	100.0	100.0	A	J-36	Simultaneous Test	None
	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 8.5 to 11	A	J-36 CAL-40 Note 2	Simultaneous Test	None
	Radiation	1.7×10^7 RADS	5.0×10^7 RADS	CAL-44	J-36	Sequential Test	None
	Aging	40 Years	10 Years Note 4	I	CAL-66 J-36	Sequential Test	None
	Submergence	572' - 2"	585' - 0"	B	J-29	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 224H-004A
Rev.: 2

NOTES

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

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1. The Rosemount replaces the Bailey Meter in accordance with FCR 78-525.

2. CAL-40 qualifies components tested in a high pH Boric Acid spray to a pH value of 5.0.

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

4. Materials and/or components sensitive to thermal aging will be replaced as per maintenance and replacement schedules to assure that associated component will maintain functional operability in harsh environments.

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SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 224H-005
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: Primary Pressure Control System Plant ID No. MV02000 Component: Valve Motor Operator Manufacturer: Limitorque Model Number: O/N: 375060D Function: Operates PRZR Sample Isolation Valve Containment Vent Header Accuracy: Spec: N/A Demon: N/A Service: PRZR Sample Isolation Valve Containment Vent Header Location: Containment Flood Level Elev: 572'-2" Above Flood Level: Yes Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	1.1 Years	F	M-26 V-24G Note 1	Simultaneous Test	None
	Temperature (°F)	283.0	300.0 2	H, X	M-26 V-24G	Simultaneous Test	None
	Pressure (PSIA)	52.0	84.7	G, X	M-26 V-24G	Simultaneous Test	None
	Relative Humidity (%)	100.0	100.0	A	M-26 V-24G	Simultaneous Test	None
	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	M-26 V-24G CAL-40 Note 2	Simultaneous Test, Analysis	None
	Radiation	1.7×10^8 RADS	2.0×10^8 RADS	CAL-44	M-26 V-24G	Sequential Test	None
	Aging	40 Years	40 Years	I	CAL-93	Sequential Test Analysis	None
	Submergence	572'-2"	588'-6"	B	M-10	N/A	None

Facility: Davis-Besse Unit 1
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SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 224H-005A
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 valve motor operator to a transient of 300°F and 84.7 psia for 32 minutes, followed by a cooldown to 120°F in 3.2 hours. The valve motor operator was then subjected to a second transient of 300°F and 44.7 psia, which was maintained for 92 hours, then a cooldown to 200°F and 24.7 psia, which was maintained for 24 days. The temperature and pressure inside containment peak at 283°F and 52.0 psia in 17 and 50 seconds, respectively. At 1 hour the conditions are 214.7°F and 32.2 psia; 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; and at 24 hours the conditions are 143°F and 18.03 psia. The conditions return to ambient in 7 days.

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

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

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SYSTEM COMPONENT EVALUATION WORKSHEET

Index No. 224H-006
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: Primary Pressure Control System Plant ID No. MV0239A Component: Valve Motor Operator Manufacturer: Limitorque Model Number: O/N: 375060D S/N: 195652 Function: Operates PRZR Vapor Sample Isolation Valve Accuracy: Spec: N/A Demon: N/A Service: PRZR Vapor Sample Isolation Valve Location: Containment Flood Level Elev: 572'-2" Above Flood Level: Yes Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	1.1 Years	F	M-26 V-24E, V-24G Note 1	Simultaneous Test	None
	Temperature (°F)	283.0	300.0	H, X	M-26 V-24E, V-24G	Simultaneous Test	None
	Pressure (PSIA)	52.0	84.7	G, X	M-26 V-24E, V-24G	Simultaneous Test	None
	Relative Humidity (%)	100.0	100.0	A	M-26 V-24E, V-24G	Simultaneous Test	None
	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	M-26 V-24E, V-24G CAL-40 Note 2	Simultaneous Test, Analysis	None
	Radiation	1.7×10^7 RADS	2.0×10^8 RADS	CAL-44	M-26 V-24E, V-24G	Sequential Test	None
	Aging	40 Years	40 Years	I	CAL-93	Sequential Test Analysis	None
	Submergence	572'-2"	589'-0"	B	M-10	N/A	None

cility: Davis-Besse Unit 1
cket: 50-346

SYSTEM COMPONENT EVALUATION WORKSHEET

epared by: N Lewis Date 11/1/83
ecked by: [signature] Date 11/2/83

NOTES

Index No.: 224H-006A
Rev.: 2

The test subjected the valve motor operator to a transient of 300°F and 84.7 psia for 32 minutes, followed by a cooldown to 120°F in 3.2 hours. The valve motor operator was then subjected to a second transient of 300°F and 44.7 psia, which was maintained for 92 hours, then a cooldown to 200°F and 24.7 psia, which was maintained for 24 days. The temperature and pressure inside containment peak at 283°F and 52.0 psia in 17 and 50 seconds, respectively. At 1 hour the conditions are 214.7°F and 32.2 psia; 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; and at 24 hours the conditions are 143°F and 18.03 psia. The conditions return to ambient in 7 days.

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

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

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Docket: 50-346

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 224H-007
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: Primary Pressure Control System Plant ID No. MV0239B Component: Valve Motor Operator Manufacturer: Limitorque Model Number: O/N: 375060D S/N: 195653 Function: Operates PRZR Liquid Sample Isolation Valve Accuracy: Spec: N/A Demon: N/A Service: PRZR Liquid Sample Isolation Valve Location: Containment Flood Level Elev: 572'-2" Above Flood Level: Yes Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	1.1 Years	F	M-26 V-24E, V-24G Note 1	Simultaneous Test	None
	Temperature (°F)	283.0	300.0	H, X	M-26 V-24E, V-24G	Simultaneous Test	None
	Pressure (PSIA)	52.0	84.7	G, X	M-26 V-24E, V-24G	Simultaneous Test	None
	Relative Humidity (%)	100.0	100.0	A	M-26 V-24E, V-24G	Simultaneous Test	None
	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	M-26 V-24E, V-24G CAL-40 Note 2	Simultaneous Test, Analysis	None
	Radiation	1.7×10^7 RADS	2.0×10^8 RADS	CAL-44	M-26 V-24E, V-24G	Sequential Test	None
	Aging	40 Years	40 Years	I	CAL-93	Sequential Test Analysis	None
	Submergence	572'-2"	586'-0"	B	M-10	N/A	None

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SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 224H-007A
Rev.: 2

NOTES

epared by N Lewis Date 11/1/83
ecked by: [signature] Date 11/2/83

The test subjected the valve motor operator to a transient of 300°F and 84.7 psia for 32 minutes, followed by a cooldown to 120°F in 3.2 hours. The valve motor operator was then subjected to a second transient of 300°F and 44.7 psia, which was maintained for 92 hours, then a cooldown to 200°F and 24.7 psia, which was maintained for 24 days. The temperature and pressure inside containment peak at 283°F and 52.0 psia in 17 and 50 seconds, respectively. At 1 hour the conditions are 214.7°F and 32.2 psia; 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; and at 24 hours the conditions are 143°F and 18.03 psia. The conditions return to ambient in 7 days.

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

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

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SYSTEM COMPONENT EVALUATION WORKSHEET

Index No. 224H-008
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: Primary Pressure Control System Plant ID No. MV27350 Component: Valve Motor Operator Manufacturer: Limitorque Model Number: SMB-000-2 O/N: 375060B Function: Operates PRZR Spray Line Isolation Valve Accuracy: Spec: N/A Demon: N/A Service: Pressurizer Spray Line Isolation Valve Location: Containment Flood Level Elev: 572'-2" Above Flood Level: Yes Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	1.1 Years	F	M-26 V-24E Note 1	Simultaneous Test	None
	Temperature (°F)	283.0	300.0	H, X	M-26 V-24E	Simultaneous Test	None
	Pressure (PSIA)	52.0	84.7	G, X	M-26 V-24E	Simultaneous Test	None
	Relative Humidity (%)	100.0	100.0	A	M-26 V-24E	Simultaneous Test	None
	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	M-26 V-24E CAL-40 Note 2	Simultaneous Test, Analysis	None
	Radiation	1.7×10^7 RADS	2.0×10^8 RADS	CAL-44	M-26 V-24E	Sequential Test	None
	Aging	40 Years	40 Years	I	CAL-93	Sequential Test Analysis	None
	Submergence	572'-2"	605'	B	M-6	N/A	None

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SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 224H-008A
Rev.: 2

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

NOTES

- The test subjected the valve motor operator to a transient of 300°F and 84.7 psia for 32 minutes, followed by a cooldown to 120°F in 3.2 hours. The valve motor operator was then subjected to a second transient of 300°F and 44.7 psia, which was maintained for 92 hours, then a cooldown to 200°F and 24.7 psia, which was maintained for 24 days. The temperature and pressure inside containment peak at 283°F and 52.0 psia in 17 and 50 seconds, respectively. At 1 hour the conditions are 214.7°F and 32.2 psia; 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; and at 24 hours the conditions are 143°F and 18.03 psia. The conditions return to ambient in 7 days.

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

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 224H-009
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: Primary Pressure Control System Plant ID No. MV27360 Component: Valve Motor Operator Manufacturer: Limitorque Model Number: O/N: 373845A S/N: 186674 Function: Operates PRZR Spray Line Isolation Valve Accuracy: Spec: N/A Demon: N/A Service: Pressurizer Spray Line Isolation Valve 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	F	M-26 V-24G Note 1	Simultaneous Test	None
	Temperature (°F)	221.0	300.0	C-314	M-26 V-24G	Simultaneous Test	None
	Pressure (PSIA)	19.76	84.7	C-314	M-26 V-24G	Simultaneous Test	None
	Relative Humidity (%)	100.0	100.0	A	M-26 V-24G	Simultaneous Test	None
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
	Radiation	1.0×10^6 RADS	2.0×10^8 RADS	T	M-26 V-24G	Sequential Test	None
	Aging	40 Years	40 Years	I	CAL-93	Sequential Test Analysis	None
	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

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

NOTES

Index No.: 224H-009A
Rev.: 2

- The test subjected the valve motor operator to a transient of 300°F and 84.7 psia for 32 minutes, followed by a cooldown to 120°F in 3.2 hours. The valve motor operator was then subjected to a second transient of 300°F and 44.7 psia, which was maintained for 92 hours, then a cooldown to 200°F and 24.7 psia, which was maintained for 24 days. The temperature in Room 314 peaks at 221°F in 1.55 seconds. The pressure in Room 314 peaks at 19.76 psia in .086 seconds. The conditions in Room 314 return to ambient after 8 minutes.

  Based on this information, it can be concluded that the laboratory test subjected the valve motor operator to an overall more severe environment than that which would result from a postulated HELB. Since the valve motor operator remained operable throughout the test and functional after the test, it can be concluded that the valve motor operator will remain functional during and after exposure to the accident environment which would result from the postulated HELB. (Reference C-314)

Facility: Davis-Besse Unit 1
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SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 224H-010
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: Primary Pressure Control System Plant ID No. MVRC020 Component: Valve Motor Operator Manufacturer: Limitorque Model Number: SMB-00 O/N: 350190A S/N: 150027 Function: Operates Valve RC020 Accuracy: Spec: N/A Demon: N/A Service: Pressurizer 1 Spray Valve Location: Containment Rm. 580 Flood Level Elev: 572'-2" Above Flood Level: Yes Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	1.1 Years	F	M-24 V-24A Note 1	Simultaneous Test	None
	Temperature (°F)	283.0	329.0	H, X	M-24 V-24A	Simultaneous Test	None
	Pressure (PSIA)	52.0	104.7	G, X	M-24 V-24A	Simultaneous Test	None
	Relative Humidity (%)	100.0	100.0	A	M-24 V-24A	Simultaneous Test	None
	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	M-24 V-24A CAL-40 Note 2	Simultaneous Test, Analysis	None
	Radiation	1.7×10^7 RADS	2.0×10^8 RADS	CAL-44	M-25 V-24A	Sequential Test	None
	Aging	40 Years	40 Years	I	CAL-93	Sequential Test Analysis	None
	Submergence	572'-2"	624'	B	M-5	N/A	None

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SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 224H-010A
Rev.: 2

epared by: N Lewis Date 11/1/83
ecked by: [signature] Date 11/2/83

NOTES

The test subjected the valve motor operator to 1 hour at 329°F and 104.7 psia, then 2 hours at 312°F and 84.7 psia, then 2 hours at 287°F and 54.7 psia, then 19 hours at 256°F and 34.7 psia, and 250°F and 29.7 psia for 6 days. The temperature and pressure inside containment peak at 283°F and 52.0 psia in 17 and 50 seconds, respectively. At 1 hour the conditions are 214.7°F and 32.32 psia; 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; and at 24 hours the conditions are 143°F and 18.03 psia. The containment returns to ambient conditions in 7 days.

Based on this information, it can be concluded that the laboratory test subjected the valve motor operator to an overall more severe environment than that which would result from a postulated LOCA. Since the valve motor operator remained operable throughout the test and functional after the test, it can be concluded that the valve motor operator will remain functional during and after exposure to the accident environment which would result from the postulated LOCA. (Reference G, H, and X). This brake/coil is scheduled for replacement in accordance with FCR 83-067.

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 224H-011
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: Primary Pressure Control System Plant ID No. MVRC100 Component: Valve Motor Operator Manufacturer: Limitorque Model Number: SMB-00 O/N: 360191A S/N: 150305 Function: Operates Valve RC100 Accuracy: Spec: N/A Demon: N/A Service: Pressurizer 1 Spray Valve Location: Containment Rm. 580 Flood Level Elev: 572'-2" Above Flood Level: Yes Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	1.1 Years	F	M-24 V-24A Note 1	Simultaneous Test	None
	Temperature (°F)	283.0	329.0	H, X	M-24 V-24A	Simultaneous Test	None
	Pressure (PSIA)	52.0	104.7	G, X	M-24 V-24A	Simultaneous Test	None
	Relative Humidity (%)	100.0	100.0	A	M-24 V-24A	Simultaneous Test	None
	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	M-24 V-24A CAL-40 Note 2	Simultaneous Test, Analysis	None
	Radiation	1.7×10^8 RADS	2.0×10^8 RADS	CAL-44	M-25 V-24A	Sequential Test	None
	Aging	40 Years	40 Years	I	CAL-93	Sequential Test Analysis	None
	Submergence	572'-2"	624'	B	M-5	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 224H-011A
Rev.: 2

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

NOTES

1. The test subjected the valve motor operator to 1 hour at 329°F and 104.7 psia, then 2 hours at 312°F and 84.7 psia, then 2 hours at 287°F and 54.7 psia, then 19 hours at 256°F and 34.7 psia, and 250°F and 29.7 psia for 6 days. The temperature and pressure inside containment peak at 283°F and 52.0 psia in 17 and 50 seconds, respectively. At 1 hour the conditions are 214.7°F and 32.32 psia; 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; and at 24 hours the conditions are 143°F and 18.03 psia. The containment returns to ambient conditions in 7 days.

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

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 224H-012
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: Primary Pressure Control System Plant ID No. MVRC110 Component: Valve Motor Operator Manufacturer: Limitorque Model Number: SMB-00 O/N: 360191B S/N: 152633 Function: Operates Valve RC110 Accuracy: Spec: N/A Demon: N/A Service: Pressurizer 1 Spray Valve Location: Containment Rm. 580 Flood Level Elev: 572'-2" Above Flood Level: Yes Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	1.1 Years	F	M-24 V-24A Note 1	Simultaneous Test	None
	Temperature (°F)	283.0	329.0	H, X	M-24 V-24A	Simultaneous Test	None
	Pressure (PSIA)	52.0	104.7	G, X	M-24 V-24A	Simultaneous Test	None
	Relative Humidity (%)	100.0	100.0	A	M-24 V-24A	Simultaneous Test	None
	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	M-24 V-24A CAL-40 Note 2	Simultaneous Test, Analysis	None
	Radiation	1.7×10^7 RADS	2.0×10^8 RADS	CAL-44	M-25 V-24A	Sequential Test	None
	Aging	40 Years	40 Years	I	CAL-93	Sequential Test Analysis	None
	Submergence	572'-2"	624'	B	M-5	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 224H-012A
Rev.: 2

NOTES

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

1. The test subjected the valve motor operator to 1 hour at 329°F and 104.7 psia, then 2 hours at 312°F and 84.7 psia, then 2 hours at 287°F and 54.7 psia, then 19 hours at 256°F and 34.7 psia, and 250°F and 29.7 psia for 6 days. The temperature and pressure inside containment peak at 283°F and 52.0 psia in 17 and 50 seconds, respectively. At 1 hour the conditions are 214.7°F and 32.32 psia; 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; and at 24 hours the conditions are 143°F and 18.03 psia. The containment returns to ambient conditions in 7 days.

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

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

Facility: [redacted]s-Besse Unit 1 SYSTEM COMPONENT [redacted]LUATION WORKSHEET Index N[redacted] 224H-014
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: Primary Pressure Control Plant ID No. ZSDH11A Component: Limit Switch Manufacturer: NAMCO Model Number: EA740-50100 Function: Valve Position Indication Accuracy: Spec: N/A Demon: N/A Service: Normal Decay Heat Suction Isolation Valve Decay Heat 11 Location: Containment Rm. 220 Flood Level Elev: 572'-2" Above Flood Level: No Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	1.1 Years	O	J-24 Note 4	Simultaneous Test	None
	Temperature (°F)	283.0	354.0	H, X	J-9	Simultaneous Test	None
	Pressure (PSIA)	52.0	134.7	G, X	J-9	Simultaneous Test	None
	Relative Humidity (%)	100.0	100.0	A	J-9	Simultaneous Test	None
	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	J-9 CAL-40 Note 1	Simultaneous Test, Analysis	None
	Radiation	1.7×10^7 RADS	2.0×10^8 RADS	CAL-44	J-9	Sequential Test	None
	Aging	40 Years	4 Years Note 2	I	J-24	Analysis	None
	Submergence	572' - 2"	565' - 0" Note 3	B	AD	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Prepared by: [signature] Date: 11/93
Checked by: [signature] Date: 11/04/93

NOTES

Index No.: 224H-014A
Rev.: 2

1. CAL-40 qualifies components tested in a high pH boric acid spray to a pH value of 5. 104°F service temperature is used for this component. (Reference AY)

2. Materials and/or components sensitive to thermal aging will be replaced as per maintenance and replacement schedules to assure that associated component will maintain functional operability in harsh environments.

3. The limit switch is inside a sealed enclosure and is thus not affected by submergence (Ref. Surveillance Test ST5051-07 & 5051-08).

4. The test subjected the limit switch to a transient of 354°F and 134.7 psia for 3 1/2 hours followed by a cooldown to 120°F in 2 hours. The limit switch was then subjected to a second transient of 340°F and 117.7 psia which was maintained for 3 hours. The conditions were then reduced from 334°F and 107.7 psia to 250°F and 39.7 psia over a 3 hour period. The temperature was then maintained at 250°F and 39.7 psia for 36 hours. The limit switch was then removed and placed in a low pressure chamber where it was subjected to a temperature of 200°F and pressure of 24.7 psia for 26 days. The temperature and pressure inside containment peak at 283°F and 52.0 psia in 17 and 50 seconds respectively. At 1 hour the conditions are 214.7°F and 32.2 psia; 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 24 hours, the conditions are 143°F and 18.03 psia. The conditions return to ambient in 7 days.

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 224H-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: Primary Pressure Control Plant ID No. ZSDH12A Component: Limit Switch Manufacturer: NAMCO Model Number: EA740-50100 Function: Valve Position Indication Accuracy: Spec: N/A Demon: N/A Service: Normal Decay Heat Suction Isolation Valve Decay Heat 11 Location: Containment Rm. 220 Flood Level Elev: 572'-2" Above Flood Level: No Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	1.1 Years	O	J-24 Note 4	Simultaneous Test	None
	Temperature (°F)	283.0	354.0	H, X	J-9	Simultaneous Test	None
	Pressure (PSIA)	52.0	134.7	G, X	J-9	Simultaneous Test	None
	Relative Humidity (%)	100.0	100.0	A	J-9	Simultaneous Test	None
	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	J-9 CAL-40 Note 1	Simultaneous Test, Analysis	None
	Radiation	1.7×10^7 RADS	2.0×10^8 RADS	CAL-44	J-9	Sequential Test	None
	Aging	40 Years	4 Years Note 2	I	J-24	Analysis	None
	Submergence	572' - 2"	565' - 0" Note 3	B	AD	N/A	None

Date: 4/4/83

1. CAL-40 qualifies components tested in a high pH boric acid spray to a pH value of 5. 104°F service temperature is used for this component. (Reference AY)

2. Materials and/or components sensitive to thermal aging will be replaced as per maintenance and replacement schedules to assure that associated component will maintain functional operability in harsh environments.

3. The limit switch is inside a sealed enclosure and is thus not affected by submergence (Ref. Surveillance Test ST5051-07 & 5051-08).

4. The test subjected the limit switch to a transient of 354°F and 134.7 psia for 3 1/2 hours followed by a cooldown to 120°F in 2 hours. The limit switch was then subjected to a second transient of 340°F and 117.7 psia which was maintained for 3 hours. The conditions were then reduced from 334°F and 107.7 psia to 250°F and 39.7 psia over a 3 hour period. The temperature was then maintained at 250°F and 39.7 psia for 36 hours. The limit switch was then removed and placed in a low pressure chamber where it was subjected to a temperature of 200°F and pressure of 24.7 psia for 26 days. The temperature and pressure inside containment peak at 283°F and 52.0 psia in 17 and 50 seconds respectively. At 1 hour the conditions are 214.7°F and 32.2 psia; 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 24 hours, the conditions are 143°F and 18.03 psia. The conditions return to ambient in 7 days.

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