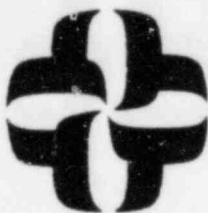


# CALCULATION/PROBLEM COVER SHEET



Calculation/Problem No: 1040-001-013

Title: Low Pressure Injection System 2.10

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	Nk Woodward	1/3/83
2	GENERAL MANUAL REVISIONS	Nk Woodward	11/2/83

8312200227 831129  
PDR ADOCK 05000346  
PDR

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

MASTER LIST  
HARSH ENVIRONMENT

Index No: 710M-001  
Rev.: 2

LOW PRESSURE INJECTION SYSTEM

Prepared by:

*N. Lewis*

Date:

*11/1/83*

Checked by:

*W. Malone*

Date:

*11/2/83*

Worksheet Index No.	Rev.	Plant ID Number	Generic Name	LOCATION		REMARKS
				Inside Primary Containment	Outside Primary Containment	
210H-006	2	MP0421	Decay Heat Pump Motor		Rm. 105	
210H-007	2	MP0422	Decay Heat Pump Motor		Rm. 115	
210H-008	2	MV08300	Valve Motor Operator		Rm. 113	
210H-009	2	MV08310	Valve Motor Operator		Rm. 113	
210H-010	2	MV15170	Valve Motor Operator		Rm. 236	
210H-011	2	MV15180	Valve Motor Operator		Rm. 236	
210H-012	2	MV27330	Valve Motor Operator		Rm. 105	
210H-013	2	MV27340	Valve Motor Operator		Rm. 113	
210H-014	2	MVDH01A	Valve Motor Operator		Rm. 236	
210H-015	2	MVDH01B	Valve Motor Operator		Rm. 208	
210H-016	2	MVDH110	Valve Motor Operator	Rm. 220		
210H-017	2	MVDH120	Valve Motor Operator	Rm. 220		
210H-018	2	MVDH63	Valve Motor Operator		Rm. 115	
210H-019	2	MVDH64	Valve Motor Operator		Rm. 105	
210H-020	2	PSHRC2B4	Pressure Switch	Containment		
210H-021	0	SV1467	Solenoid Valve		Rm. 113	
210H-021	1	SV1467	Solenoid Valve		Rm. 113	
210H-022	0	SV1469	Solenoid Valve		Rm. 113	
210H-022	1	SV1469	Solenoid Valve		Rm. 113	
210H-023	0	SVDH13A	Solenoid Valve		Rm. 113	
210H-023	1	SVDH13A	Solenoid Valve		Rm. 113	
210H-024	0	SVDH13B	Solenoid Valve		Rm. 113	
210H-024	1	SVDH13B	Solenoid Valve		Rm. 113	
210H-025	0	SVDH14A	Solenoid Valve		Rm. 113	
210H-025	1	SVDH14A	Solenoid Valve		Rm. 113	
210H-026	0	SVDH14B	Solenoid Valve		Rm. 113	
210H-026	1	SDVH14B	Solenoid Valve		Rm. 113	

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MASTER LIST  
HARSH ENVIRONMENT  
LOW PRESSURE INJECTION SYSTEM

Index No: 210M-002  
Rev.: 2

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

Worksheet Index No.	Rev.	Plant ID Number	Generic Name	LOCATION		REMARKS
				Inside Primary Containment	Outside Primary Containment	
210H-026	1	SVDH14B	Solenoid Valve		Rm. 113	
	2	BELL1A	Motor Control Center		Rm. 209	See 2.21
	2	BELL1B	Motor Control Center		Rm. 304	See 2.21
	2	BELL1D	Motor Control Center		Rm. 227	See 2.21
	2	BF11A	Motor Control Center		Rm. 427	See 2.21
	2	BF11C	Motor Control Center		Rm. 236	See 2.21
	2	BF11D	Motor Control Center		Rm. 227	See 2.21
	2	CDE11A	Disconnect Switch Cabinet		Rm. 304	See 2.21
	2	CDE11B-2	Disconnect Switch Cabinet		Rm. 304	See 2.21
	2	CDE11D	Disconnect Switch Cabinet		Rm. 227	See 2.21
	2	CDF11A-1	Disconnect Switch Cabinet		Rm. 427	See 2.21
	2	CDF11C	Disconnect Switch Cabinet		Rm. 236	See 2.21
	2	CDF11D	Disconnect Switch Cabinet		Rm. 227	See 2.21
	2	EV08300	Terminal Block Box		Rm. 113	See 2.21
	2	EV08310	Terminal Block Box		Rm. 113	See 2.21
	2	EV1467	Terminal Block Box		Rm. 113	See 2.21
	2	EV1469	Terminal Block Box		Rm. 113	See 2.21
	2	EV15170	Terminal Block Box		Rm. 236	See 2.21
	2	EV15180	Terminal Block Box		Rm. 236	See 2.21
	2	EV27330	Terminal Block Box		Rm. 105	See 2.21
	2	EV27340	Terminal Block Box		Rm. 113	See 2.21
	2	EVDH01A	Terminal Block Box		Rm. 236	See 2.21
	2	EVDH63	Terminal Block Box		Rm. 115	See 2.21
	2	EVDH64	Terminal Block Box		Rm. 105	See 2.21
	2	EVDH01B	Terminal Block Box		Rm. 208	See 2.21
	2	NP0421	Push Button Switch		Rm. 105	See 2.21
	2	NP0422	Push Button Switch		Rm. 113	See 2.21
	2	NV08300	Push Button Switch		Rm. 113	See 2.21
	2	NV08310	Push Button Switch		Rm. 113	See 2.21
	2	NV1467	Push Button Switch		Rm. 113	See 2.21
	2	NV1469	Push Button Switch		Rm. 113	See 2.21
	2	NV15170	Push Button Switch		Rm. 236	See 2.21

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

MASTER LIST  
HARSH ENVIRONMENT  
LOW PRESSURE INJECTION SYSTEM

Index No: 210M-093  
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	
	2	NV15180	Push Button Switch		Rm. 236	See 2.21
	2	NVDH01A	Push Button Switch		Rm. 236	See 2.21
	2	NVDH01B	Push Button Switch		Rm. 208	See 2.21
	2	NVDH13A	Push Button Switch		Rm. 113	See 2.21
	2	NVDH13B	Push Button Switch		Rm. 113	See 2.21
	2	NVDH14A	Push Button Switch		Rm. 113	See 2.21
	2	NVDH14B	Push Button Switch		Rm. 113	See 2.21
	2	NVDH63	Push Button Switch		Rm. 115	See 2.21
	2	NVDH64	Push Button Switch		Rm. 105	See 2.21
	2	RC2701	Relay Cabinet		Rm. 227	See 2.21
	2	RC3704	Relay Cabinet		Rm. 314	See 2.21



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

MASTER LIST  
NON-HARSH ENVIRONMENT  
LOW PRESSURE INJECTION SYSTEM

Index No. OM-004  
Rev.: 2

Prepared by:

*F. Lewis*

Date:

*9/30/83*

Checked by:

*F. Lewis*

Date:

*9/30/83*

Worksheet Index No.	Rev.	Plant ID Number	Generic Name	LOCATION		REMARKS
				Inside Primary Containment	Outside Primary Containment	
	0	AC112	4.16 Switchgear Breaker		Rm. 325	
	0	AD112	4.16 Switchgear Breaker		Rm. 323	
	0	BE11E	Motor Control Center		Rm. 402	
	0	BE12A	Motor Control Center		Rm. 429	
	0	BF11E	Motor Control Center		Rm. 100	
	0	IC5704	Console Cabinet		Rm. 505	
	0	IC5716	Engineering Safety Feature Panel		Rm. 505	
	0	IC5717	Engineering Safety Feature Panel		Rm. 505	
	0	ICDE11E	Disconnect Switch Cabinet		Rm. 402	
	0	IEVDH09A	Terminal Block Box		Rm. 225	
	0	IEVDH09B	Terminal Block Box		Rm. 225	
	0	IMVDH09A	Valve Motor Operator		Rm. 225	
	0	IMVDH09B	Valve Motor Operator		Rm. 225	

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

MASTER LIST

Index No: FORM-005  
Rev.: 2

## LOW PRESSURE INJECTION SYSTEM

Prepared by:

3 Lewis

Date:

9/3/87

Checked by:

20/10/1914

Date:

23/11/19

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

Facility: Davis-Besse Unit 1  
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SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 210H-006  
Rev.: 2

Prepared by:

J. Lewis

Date:

9/30/83

Checked by:

J. M. Connelley

Date:

9/30/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Low Pressure Injection	Operating Time	1 Year	1.1 Years	F	E-9 V-41C	Simultaneous Test	None
Plant ID No. MP0421	Temperature (°F)	130.0	Exempt	C-105	E-9 E-16 Note 1	Simultaneous Test	None
Component: Decay Heat Pump Motor	Pressure (PSIA)	16.06	Exempt	C-105	E-9 E-16 Note 1	Simultaneous Test	None
Manufacturer: Westinghouse	Relative Humidity (%)	100.0	Exempt	A	E-9 E-16 Note 1	Simultaneous Test	None
Style Number: 71F19325	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Drives Decay Heat Pump	Radiation	$1.9 \times 10^6$ RADS	$5.0 \times 10^7$ RADS	T	E-9 CAL-60	Sequential Test	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	40 Years	I	CAL-59	Sequential Test	None
Service: Decay Heat Pump P42-1	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Room 105							
Flood Level Elev: N/A							
Above Flood Level: N/A							
Needed for: Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input checked="" type="checkbox"/>							

Facility: Davis-Besse Unit 1  
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SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 210H-006A  
Rev.: 2

NOTES

Prepared by: J Lewis Date 9/30/83  
Checked by: H Mac Donald Date 9/30/83

1. An entire Westinghouse Large Motor Division thermalastic epoxy insulation system prototype stator was thermally cycled. Temperature ranged from  $-30^{\circ}\text{C}$  (in dry ice for 6 hours and rapidly raised to  $150^{\circ}\text{C}$ ). This was repeated 4 times. The stator was then immersed in water and the insulation resistance was checked. Insulation resistance prior to test was  $9 \times 10^4$  Meg ohms and post test the resistance was  $2 \times 10^4$  Meg ohms while submerged. (Reference E-9)

In another test, an entire thermalastic epoxy insulation system stator was submerged while energized in both tap water and salt water. Satisfactory performance was demonstrated for 1,000 days in tap water and 200 days in salt water. (Reference E-16)

Thermalastic epoxy insulation system can simultaneously withstand harsh steam environments as demonstrated by a 58.3 day exposure to 100% relative humidity at  $122^{\circ}\text{F}$ . The resulting insulation resistance was 4,000 Meg ohms. Additionally, a thermalastic epoxy insulation system has satisfactorily passed a 48-hour exposure to  $500^{\circ}\text{C}$ . (Reference E-16)

Based on the above tests, it can be concluded that motors constructed utilizing thermalastic epoxy insulation system would satisfactorily withstand the postulated steam exposure. The postulated exposure reaches peak values of  $145^{\circ}\text{F}$  ( $130^{\circ}\text{F}$  plus  $15^{\circ}\text{F}$  margin) and 17.66 psia (16.06 psia plus 10% margin). The transient has a duration of 1450 seconds.

Although we feel this motor is qualified, it is exempt because the harsh environment seen by this component is due to a main steam to auxiliary feed pump turbine line break. This ventilation fan, MC0712, is a backup ventilation system for Room 428 located in Room 515. Cooling of the 1E Switchgear Room 428 is normally supplied by equipment located in Room 516. Both of these rooms are non-harsh and would not be affected by this high energy line break. The component is exempted from qualification since its failure would not affect normal ventilation. It does not perform essential safety functions and its failure in the harsh environment would not mislead the operator.

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Docket: 50-346

## SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 210H-007  
Rev.: 2

Prepared by: J Lewis Date: 9/30/83  
Checked by: S. Markland Date: 9/30/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification	Outstanding
	Parameter	Specification	Qualification	Specification	Qualification	Method	Items
System: Low Pressure Injection	Operating Time	1 Year	40 Years	F	E-9 V-41C	Simultaneous Test	None
Plant ID No. MP0422	Temperature (°F)	177.0	Exempt	C-115	E-9 E-16 Note 1	Simultaneous Test	None
Component: Decay Heat Pump Motor	Pressure (PSIA)	15.60	Exempt	C-115	E-9 E-16 Note 1	Simultaneous Test	None
Manufacturer: Westinghouse	Relative Humidity (%)	100.0	Exempt	A	E-9 E-16 Note 1	Simultaneous Test	None
Style Number: 71F19325	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Drives Decay Heat Pump	Radiation	2.67 x 10 <sup>6</sup> RADS	5.0 x 10 <sup>7</sup> RADS	T	E-9 CAL-60	Sequential Test	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	40 Years Note 3	I	CAL-59	Sequential Test	None
Service: Decay Heat Pump P42-2	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Room 115							
Flood Level Elev: N/A							
Above Flood Level: N/A							
Needed for: Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input checked="" type="checkbox"/>							



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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 210H-007A  
Rev.: 2

NOTES

Prepared by: F. Lewis Date: 9/30/83  
Checked by: W. McDonald Date: 9/30/83

1. An entire Westinghouse Large Motor Division thermalastic epoxy insulation system prototype stator was thermally cycled. Temperature ranged from  $-30^{\circ}\text{C}$  (in dry ice for 6 hours and rapidly raised to  $150^{\circ}\text{C}$ ). This was repeated 4 times. The stator was then immersed in water and the insulation resistance was checked. Insulation resistance prior to test was  $9 \times 10^4$  Meg ohms and post test the resistance was  $2 \times 10^4$  Meg ohms while submerged. (Reference E-9)

In another test, an entire thermalastic epoxy insulation system stator was submerged while energized in both tap water and salt water. Satisfactory performance was demonstrated for 1,000 days in tap water and 200 days in salt water. (Reference E-16)

Thermalastic epoxy insulation system can simultaneously withstand harsh steam environments as demonstrated by a 58.3 day exposure to 100% relative humidity at  $122^{\circ}\text{F}$ . The resulting insulation resistance was 4,000 Meg ohms. Additionally, a thermalastic epoxy insulation system has satisfactorily passed a 48-hour exposure to  $500^{\circ}\text{C}$ . (Reference E-16)

Based on the above tests, it can be concluded that motors constructed utilizing thermalastic epoxy insulation system would satisfactorily withstand the postulated steam exposure. The postulated exposure reaches peak values of  $192^{\circ}\text{F}$  ( $177^{\circ}\text{F}$  plus  $15^{\circ}\text{F}$  margin) and 17.16 psia (15.6 psia plus 10% margin). The transient has a duration of 400 seconds.

Although we feel this motor is qualified, it is exempt because the harsh environment seen by this component is due to a main steam to auxiliary feed pump turbine line break. This ventilation fan, MC0712, is a backup ventilation system for Room 428 located in Room 515. Cooling of the 1E Switchgear Room 428 is normally supplied by equipment located in Room 516. Both of these rooms are non-harsh and would not be affected by this high energy line break. The component is exempted from qualification since its failure would not affect normal ventilation. It does not perform essential safety functions and its failure in the harsh environment would not mislead the operator.



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SYSTEM COMPONENT EVALUATION WORKSHEET

Index 210H-008  
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: Low Pressure Injection System	Operating Time	1 Year	1.1 Years	F	M-28 V-24C Note 1	Simultaneous Test	None
Plant ID No. MV08300	Temperature (°F)	155.0	250.0	C-113	M-28 V-24C	Simultaneous Test	None
Component: Valve Motor Operator							
Manufacturer: Limitorque	Pressure (PSIA)	16.06	39.7	C-113	M-28 V-24C	Simultaneous Test	None
Model Number: SMB-00							
O/N: 378321D							
S/N: 193354							
Function: Operates Decay Heat Cooler Cross-Connect Valve	Relative Humidity (%)	100.0	100.0	A	M-28 V-24C	Simultaneous Test	None
Accuracy: Spec: N/A Demon: N/A							
Service: Decay Heat Cooler Cross-Connect Valve	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 113							
	Radiation	$7.1 \times 10^6$ RADS	$2.0 \times 10^7$ RADS	T	M-28 V-24C	Sequential Test	None
Flood Level Elev: N/A							
Above Flood Level: N/A	Aging	40 Years	40 Years	I	CAL-93	Sequential Test Analysis	None
Needed for:							
Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input checked="" type="checkbox"/>	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.: 210H-008A

Rev.: 2

NOTES

Prepared by: H. Lewis  
Checked by: J. Rickard

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

1. The test subjected the valve motor operator to a transient of 250°F and 39.7 psia for 30 minutes, followed by a cooldown to 120°F in 1.5 hours. The valve motor operator was then exposed to a second transient of 250°F and 39.7 psia for 22 hours, then a cooldown to 200°F and 24.7 psia which was maintained for 15 days. The temperature in Room 113 peaks at 155°F in 19.0 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 after 6.7 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 the postulated HELB. Since the valve motor operator remained operable throughout 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-113)

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# SYSTEM COMPONENT EVALUATION WORKSHEET

Index No. 210H-009  
Rev.: 2

Prepared by: N Lewis Date: 11/1/93  
Checked by: L. J. Caldwell Date: 11/2/93

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Low Pressure Injection System	Operating Time	1 Year	1.1 Years	F	M-28 V-24C Note 1	Simultaneous Test	None
Plant ID No. MV08310	Temperature (°F)	155.0	250.0	C-113	M-28 V-24C	Simultaneous Test	None
Component: Valve Motor Operator	Pressure (PSIA)	16.06	39.7	C-113	M-28 V-24C	Simultaneous Test	None
Manufacturer: Limitorque	Relative Humidity (%)	100.0	100.0	A	M-28 V-24C	Simultaneous Test	None
Model Number: SMB-00	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
O/N: 378321D	Radiation	$7.1 \times 10^6$ RADS	$2.0 \times 10^7$ RADS	T	M-28 V-24C	Sequential Test	None
S/N: 193355	Aging	40 Years	40 Years	I	CAL-93	Sequential Test Analysis	None
Function: Operates Decay Heat Cooler Cross-Connect Valve	Submergence	N/A	N/A	N/A	N/A	N/A	None
Accuracy: Spec: N/A Demon: N/A							
Service: Decay Heat Cooler Cross-Connect Valve							
Location: Auxiliary Bldg. Rm. 113							
Flood Level Elev: N/A							
Above Flood Level: N/A							
Needed for: Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input checked="" type="checkbox"/>							

Facility: Davis-Besse Unit 1  
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SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 210H-009A  
Rev.: 2

NOTES

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

1. The test subjected the valve motor operator to a transient of 250°F and 39.7 psia for 30 minutes, followed by a cooldown to 120°F in 1.5 hours. The valve motor operator was then exposed to a second transient of 250°F and 39.7 psia for 22 hours, then a cooldown to 200°F and 24.7 psia which was maintained for 15 days. The temperature in Room 113 peaks at 155°F in 19.0 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 after 6.7 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 the postulated HELB. Since the valve motor operator remained operable throughout 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-113)

Facility: Davis-Besse Unit 1  
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# SYSTEM COMPONENT EVALUATION WORKSHEET

Index # 210H-010  
Rev.: 2

Prepared by: AL Lewis Date: 11/6/83  
Checked by: PH Mendenhall Date: 11/8/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Low Pressure Injection	Operating Time	1 Year	12 HOURS	F	M-27 V-24C Note 1	Simultaneous Test	None
Plant ID No. MV15170	Temperature (°F)	198.0	212.0 Note 1	C-236	M-27 V-24C	Simultaneous Test	None
Component: Valve Motor Operator	Pressure (PSIA)	15.51	14.95 Note 1	C-236	M-27, V-24C	Simultaneous Test	None
Manufacturer: Limatorque	Relative Humidity (%)	100.0	100.0	A	M-27 V-24C	Simultaneous Test	None
Model Number: SMB-2 O/N: 366321G	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Operates Normal Decay Heat Suction Line Isolation Valve	Radiation	1.97 x 10 <sup>6</sup> RADS	Note 1	T	Note 1	Note 1	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	Note 1	I	CAL-93	Note 1 Analysis	None
Service: DH Norm Suction Line 1 Isolation Valve	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Room 236							
Flood Level Elev: N/A Above Flood Level: N/A							
Needed for: Hot Shutdown <input checked="" type="checkbox"/> Cold Shutdown <input checked="" type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 210H-010A

Rev.: 2

NOTES

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

1. The test subjected the valve motor operator to a peak temperature of 212°F and 14.95 psia for 6 hours, then 6 hours at 155°F and 14.95 psia. The temperature peaks at 198°F in 19.0 seconds in Room 236. The pressure peaks at 15.51 psia in 1.60 seconds. The temperature and pressure in Room 236 return to ambient conditions in 6.7 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 the 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.

For 6 seconds of the 6.7-minute postulated HELB steam transient in Room 236, the 15°F required temperature margin is not available. The peak pressure in Room 236 exceeds the test temperature for the first 10 seconds of the 6.7-minute steam transient.

This valve operator is a fast acting valve equipped with a motor brake. No aging or radiation qualification information is given in the test report which was performed to demonstrate the equipment's steam environment qualification. Currently, an investigation is in progress to determine how to resolve the issue of the motor brake so that better and more complete qualification can be obtained for the existing valve motor operator, or equipment modification, or replacement with a qualified component is performed.

There will be some thermal lag time for a component's surface temperature to reach the postulated condition. Since the postulated HELB steam transient is so rapid and of such a short duration, and since the time which the postulated HELB conditions exceed the test report conditions is so short, good engineering judgement allows us to state that the valve motor operator will be able to withstand the harsh environment. Based on this analysis, and the fact that continuing investigation is under way to further qualify, modify, or replace the valve motor operator, it is felt that qualification is justified for the valve motor operator. (Reference C-236)

The brake coil of this valve motor actuator is scheduled for replacement in accordance with FCR 83-067.



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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index # 210H-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: Low Pressure Injection	Operating Time	1 Year	12 Hours	F	M-27 V-24C Note 1	Simultaneous Test	None
Plant ID No. MV15180	Temperature (°F)	198.0	212.0 Note 1	C-236	M-27 V-24C	Simultaneous Test	None
Component: Valve Motor Operator							
Manufacturer: Limitorque	Pressure (PSIA)	15.51	14.95 Note 1	C-236	M-27 V-24C	Simultaneous Test	None
Model Number: SMB-2	Relative Humidity (%)	100.0	100.0	A	M-27 V-24C	Simultaneous Test	None
O/N: 366321G							
Function: Operates Normal Decay Heat Suction Line Isolation Valve	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Accuracy: Spec: N/A Demon: N/A							
Service: Decay Heat Normal Suction Line Isolation Valve	Radiation	1.97 x 10 <sup>6</sup> RADS	Note 1	T	Note 1	Note 1	None
Location: Auxiliary Bldg. Rm. 236							
Flood Level Elev: N/A	Aging	40 yrs.	Note 1	I	CAL-93	Note 1 Analysis	None
Above Flood Level: N/A							
Needed for:	Submergence	N/A	N/A	N/A	N/A	N/A	None
Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input checked="" type="checkbox"/>							

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Index No.: 210H-011A  
Rev.: 2

NOTES

Prepared by: N. Lewis Date: 11/1/83  
Checked by: John A. Gend Date: 11/2/83

1. The test subjected the valve motor operator to a peak temperature of 212°F and 14.95 psia for 6 hours, then 6 hours at 155°F and 14.95 psia. The temperature peaks at 198°F in 19.0 seconds in Room 236. The pressure peaks at 15.51 psia in 1.60 seconds. The temperature and pressure in Room 236 return to ambient conditions in 6.7 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 the 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.

For 6 seconds of the 6.7-minute postulated HELB steam transient in Room 236, the 15°F required temperature margin is not available. The peak pressure in Room 236 exceeds the test temperature for the first 10 seconds of the 6.7-minute steam transient.

This valve operator is a fast acting valve equipped with a motor brake. No aging or radiation qualification information is given in the test report which was performed to demonstrate the equipment's steam environment qualification. Currently, an investigation is in progress to determine how to resolve the issue of the motor brake so that better and more complete qualification can be obtained for the existing valve motor operator, or equipment modification, or replacement with a qualified component is performed.

There will be some thermal lag time for a component's surface temperature to reach the postulated condition. Since the postulated HELB steam transient is so rapid and of such a short duration, and since the time which the postulated HELB conditions exceed the test report conditions is so short, good engineering judgement allows us to state that the valve motor operator will be able to withstand the harsh environment. Based on this analysis, and the fact that continuing investigation is under way to further qualify, modify, or replace the valve motor operator, it is felt that qualification is justified for the valve motor operator. (Reference C-236)

The brake coil of this valve motor actuator is scheduled for replacement in accordance with FCR 83-067.

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Index no. 10H-012  
Rev.: 2

Prepared by: N Lewis Date: 11/1/83  
Checked by: G. J. Donald Date: 11/4/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Low Pressure Injection System	Operating Time	1 Year	1.1 Years	F	M-28 V-24C Note 1	Simultaneous Test	None
Plant ID No. MV27330	Temperature (°F)	130.0	250.0	C-105	M-28 V-24C	Simultaneous Test	None
Component: Valve Motor Operator							
Manufacturer: Limitorque	Pressure (PSIA)	16.06	39.7	C-105	M-28 V-24C	Simultaneous Test	None
Model Number: SMB-1							
O/N: 366321J	Relative Humidity (%)	100.0	100.0	A	M-28 V-24C	Simultaneous Test	None
Function: Operates LPI Pump 1-1 Suction Valve							
Accuracy: Spec: N/A Demon: N/A	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Service: LPI Pump Suction Valve							
Location: Auxiliary Bldg. Rm. 105	Radiation	$1.9 \times 10^6$ RADS	$2.0 \times 10^7$ RADS	T	M-28 V-24C	Sequential Test	None
Flood Level Elev: N/A Above Flood Level: N/A	Aging	40 Years	40 Years	I	CAL-93	Sequential Test Analysis	None
Needed for: Hot Shutdown <input checked="" type="checkbox"/> Cold Shutdown <input checked="" type="checkbox"/>	Submergence	N/A	N/A	N/A	N/A	N/A	None

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NOTES

Prepared by: N. Lewis Date 11/1/83  
Checked by: A. McLean Date 11/2/83

1. The test subjected the valve motor operator to a transient of 250°F and 39.7 psia for 30 minutes, followed by a cooldown to 120°F in 1.5 hours. The valve motor operator was then exposed to a second transient of 250°F and 39.7 psia for 22 hours, then a cooldown to 200°F and 24.7 psia which was maintained for 15 days. The temperature in Room 105 peaks at 130°F in 19.0 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 after 24 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 the postulated HELB. Since the valve motor operator remained operable throughout 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-105)

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# SYSTEM COMPONENT EVALUATION WORKSHEET

Index: 210H-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: Low Pressure Injection System	Operating Time	1 Year	1.1 Years	F	M-28 V-24C Note 1	Simultaneous Test	None
Plant ID No. MV27340	Temperature (°F)	155.0	250.0	C-113	M-28 V-24C	Simultaneous Test	None
Component: Valve Motor Operator	Pressure (PSIA)	16.06	39.7	C-113	M-28 V-24C	Simultaneous Test	None
Manufacturer: Limitorque	Relative Humidity (%)	100.0	100.0	A	M-28 V-24C	Simultaneous Test	None
Model Number: SMB-1 O/N: 366321J	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Operates LPI Pump 1-2 Suction Valve	Radiation	$7.1 \times 10^6$ RADS	$2.0 \times 10^7$ RADS	T	M-28 V-24C	Sequential Test	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	40 Years	I	CAL-93	Sequential Test Analysis	None
Service: LPI Pump Suction Valve	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 113							
Flood Level Elev: N/A Above Flood Level: N/A							
Needed for: Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input checked="" type="checkbox"/>							



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Index No.: 210H-013A  
Rev.: 2

Prepared by: H. Lewis Date 11/1/83  
Checked by: [Signature] Date 11/2/83

NOTES

1. The test subjected the valve motor operator to a transient of 250°F and 39.7 psia for 30 minutes, followed by a cooldown to 120°F in 1.5 hours. The valve motor operator was then exposed to a second transient of 250°F and 39.7 psia for 22 hours, then a cooldown to 200°F and 24.7 psia which was maintained for 15 days. The temperature in Room 113 peaks at 155°F in 6.7 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 after 6.7 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 the postulated HELB. Since the valve motor operator remained operable throughout 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-113)



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# SYSTEM COMPONENT EVALUATION WORKSHEET

Index: 210H-014  
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: Low Pressure Injection	Operating Time	1 Year	12 Hours	F	M-27 V-24B Note 1	Simultaneous Test	None
Plant ID No. MVDH01A	Temperature (°F)	198.0	Exempt 212.0	C-236	M-27 V-24B Note 1	Simultaneous Test/ Analysis	None
Component: Valve Motor Operator	Pressure (PSIA)	15.51	Exempt 14.95	C-236	M-27 V-24B Note 2	Simultaneous Test/ Analysis	None
Manufacturer: Limitorque	Relative Humidity (%)	100.0	Exempt 100.0	A	M-27 V-24B Note 2	Simultaneous Test/ Analysis	None
Model Number: SMB-3 O/N: 360199A S/N: 148883	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Operates Valve DH01A	Radiation	1.97 x 10 <sup>6</sup> RADS	Exempt	T	Note 2	Analysis	None
Accuracy: Spec: N/A Accuracy: Demon: N/A	Aging	40 Years	Exempt	I	CAL-93	Analysis	None
Service: Low Pressure Injection Isolation Valve	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 236							
Flood Level Elev: N/A Above Flood Level: N/A							
Needed for: Hot Shutdown <input checked="" type="checkbox"/> Cold Shutdown <input checked="" type="checkbox"/>							

Facility: Davis-Besse Unit 1  
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SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 110H-014A  
Rev.: 2

NOTES

Prepared by: 3 Lewis Date 9/30/83  
Checked by: [Signature] Date 10/1/83

1. The test subjected the valve motor operator to a peak temperature of 212°F and 14.95 psia for 6 hours, then 6 hours at 155°F and 14.95 psia. The temperature peaks at 198°F in 19.0 seconds in Room 236. The pressure peaks at 15.51 psia in 1.60 seconds. The temperature and pressure in Room 236 return to ambient conditions in 6.7 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 the 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.

For 6 seconds of the 6.7-minute postulated HELB steam transient in Room 236, the 15°F required temperature margin is not available. The peak pressure in Room 236 exceeds the test temperature for the first 10 seconds of the 6.7-minute steam transient.

There will be some thermal lag time for a component's surface temperature to reach the postulated condition. Since the postulated HELB steam transient is so rapid and of such a short duration, and since the time which the postulated HELB conditions exceed the test report conditions is so short, good engineering judgement allows us to state that the valve motor operator will be able to withstand the harsh environment. Based on this analysis, and the fact that continuing investigation is under way to further qualify, modify, or replace the valve motor operator, it is felt that qualification is justified for the valve motor operator. (Reference C-236)

2. Although a test report is applicable to this valve motor operator, the valve motor operator is exempt from qualification. The valve is opened and its control power is then disconnected preventing further operation. The valve does not have to function; and with control power disconnected, there is no way that the harsh environment could cause spurious valve closure because even if the valve motor were shorted due to the HELB, the motor could not operate because it would be deenergized at the MCC (main line contacts) open due to the control circuit being deenergized. (Reference FSAR Table 6-16)



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Index No. 210H-015A

Rev.: 2

Prepared by: J Lewis

Date

9/30/83

NOTES

Checked by: [Signature]

Date

10/1/83

1. The test subjected the valve motor operator to a peak temperature of 212°F and 14.95 psia for 6 hours, then 6 hours at 155°F and 14.95 psia. The temperature peaks at 192°F in 7.1 seconds in Room 208. The pressure peaks at 16.25 psia in 1.55 seconds. The temperature and pressure in Room 208 return to ambient conditions in 20 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 the 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. The peak pressure in Room 208 exceeds the test pressure for the first 8.0 seconds of the 20-minute postulated HELB steam transient.

There will be some thermal lag time for a component's surface temperature to reach the postulated condition. Since the postulated HELB steam transient is so rapid and of such a short duration, and since the time which the postulated HELB conditions exceed the test report conditions is so short, good engineering judgement allows us to state that the valve motor operator will be able to withstand the harsh environment. Based on this analysis, and the fact that continuing investigation is under way to further qualify, modify, or replace the valve motor operator, it is felt that qualification is justified for the valve motor operator. (Reference C-208)

2. Although a test report is applicable to this valve motor operator, the valve motor operator is exempt from qualification. The valve is opened and its control power is then disconnected preventing further operation. The valve does not have to function; and with control power disconnected, there is no way that the harsh environment could cause spurious valve closure because even if the valve motor were shorted due to the HELB, the motor could not operate because it would be deenergized at the MCC (main line contacts) open due to the control circuit being deenergized. (Reference FSAR Table 6-16)



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## SYSTEM COMPONENT EVALUATION WORKSHEET

Index: 210H-016  
Rev.: 2

Prepared by: N Lewis Date: 11/1/93  
Checked by: L. McDonald Date: 11/4/93

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Low Pressure Injection	Operating Time	1 Year	1.1 Years	F	M-24 V-24A Note 1	Simultaneous Test	None
Plant ID No. MVDH110	Temperature (°F)	283.0	329.0	H, X	M-24 V-24A	Simultaneous Test	None
Component: Valve Motor Operator	Pressure (PSIA)	52.0	104.7	G, X	M-24 V-24A	Simultaneous Test	None
Manufacturer: Limitorque	Relative Humidity (%)	100.0	100.0	A	M-24 V-24A	Simultaneous Test	None
Model Number: SMB-3-150 O/N: 360197A S/N: 148662	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
Function: Operates Valve DH110	Radiation	$1.7 \times 10^7$ RADS	$2.0 \times 10^8$ RADS	CAL-44	M-25 V-24A	Sequential Test	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 yrs.	40 yrs.	I	CAL-93	Sequential Test Analysis	None
Service: Decay Heat Removal Suction Line Valve	Submergence	572' -2"	Note 3	B	M-13	N/A	None
Location: Containment							
Flood Level Elev: 572'-2"							
Above Flood Level: No							
Needed for: Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input checked="" type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 210H-016A  
Rev.: 2

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

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.
3. Valve is inside sealed enclosure and thus is not affected by submergence. (Reference Surveillance test ST5051-07/5051-08)



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# SYSTEM COMPONENT EVALUATION WORKSHEET

Index # 210H-017  
Rev.: 2

Prepared by: N Lewis  
Checked by: J McDonald

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

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Low Pressure Injection	Operating Time	1 Year	1.1 Years	F	M-24 V-24A Note 1	Simultaneous Test	None
Plant ID No. MVDH120	Temperature (°F)	283.0	329.0	H, X	M-24 V-24A	Simultaneous Test	None
Component: Valve Motor Operator	Pressure (PSIA)	52.0	104.7	G, X	M-24 V-24A	Simultaneous Test	None
Manufacturer: Limitorque	Relative Humidity (%)	100.0	100.0	A	M-24 V-24A	Simultaneous Test	None
Model Number: SMB-3-150 O/N: 360197A S/N: 148663	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
Function: Operates Valve DH120	Radiation	$1.7 \times 10^7$ RADS	$2.0 \times 10^8$ RADS	CAL-44	M-25 V-24A	Sequential Test	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 yrs.	40 yrs.	I	CAL-93	Sequential Test Analysis	None
Service: Decay Heat Removal Suction Line Valve	Submergence	572' -2"	Note 3	B	M-13	N/A	None
Location: Containment							
Flood Level Elev: 572'-2"							
Above Flood Level: No							
Needed for:							
Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input checked="" type="checkbox"/>							

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SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 210H-017A

Rev.: 2

NOTES

Prepared by M. Levin  
Checked by: [Signature]

Date 11/1/83  
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 27.03 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.
3. Valve is inside sealed enclosure and thus is not affected by submergence. (Reference Surveillance test ST5051-07/5051-08)

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# SYSTEM COMPONENT EVALUATION WORK SHEET

Index: 210H-018  
Rev.: 2

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

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Low Pressure Injection System	Operating Time	1 Year	1.1 Years	F	M-26 V-24G Note 1	Simultaneous Test	None
Plant ID No. MVDH63	Temperature (°F)	177.0	300.0	C-115	M-26 V-24G	Simultaneous Test	None
Component: Valve Motor Operator	Pressure (PSIA)	15.60	84.7	C-115	M-26 V-24G	Simultaneous Test	None
Manufacturer: Limitorque	Relative Humidity (%)	100.0	100.0	A	M-26 V-24G	Simultaneous Test	None
Model Number: SMB-000-5 O/N: 3B2188A S/N: 266472	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Operates LPI HPI Cross-Connect Valve	Radiation	2.67 x 10 <sup>6</sup> RADS	2.0 x 10 <sup>8</sup> RADS	T	M-26 V-24G	Sequential Test	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	40 Years	I	CAL-93	Sequential Test Analysis	None
Service: HPI-LPI Cross-Connect Valve	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 115							
Flood Level Elev: N/A Above Flood Level: N/A							
Needed for: Hot Shutdown <input checked="" type="checkbox"/> Cold Shutdown <input checked="" type="checkbox"/>							

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SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 210H-018A  
Rev.: 2

NOTES

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

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 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 conditions in Room 115 return to ambient after 6.7 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-115)

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SYSTEM COMPONENT EVALUATION WORKSHEET

Index 210H-019  
Rev.: 2

Prepared by: N. Lewis  
Checked by: [Signature]

Date: 11/1/93  
Date: 11/4/93

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Low Pressure Injection System	Operating Time	1 Year	1.1 Years	F	M-26 V-24G Note I	Simultaneous Test	None
Plant ID No. MVDH64	Temperature (°F)	130.0	300.0	C-105	M-26 V-24G	Simultaneous Test	None
Component: Valve Motor Operator	Pressure (PSIA)	16.06	84.7	C-105	M-26 V-24G	Simultaneous Test	None
Manufacturer: Limitorque	Relative Humidity (%)	100.0	100.0	A	M-26 V-24G	Simultaneous Test	None
Model Number: SMB-000-5 O/N: 3B2188A S/N: 266473	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Operates LPI HPI Cross-Connect Valve	Radiation	$1.9 \times 10^6$ RADS	$2.0 \times 10^8$ RADS	T	M-26 V-24G	Sequential Test	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	40 Years	I	CAL-93	Sequential Test Analysis	None
Service: HPI-LPI Cross-Connect Valve	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 105							
Flood Level Elev: N/A Above Flood Level: N/A							
Needed for: Hot Shutdown <input checked="" type="checkbox"/> Cold Shutdown <input checked="" type="checkbox"/>							



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Index No.: 210H-019A  
Rev.: 2

NOTES

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

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 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 conditions in Room 105 return to ambient after 24 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-105)

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Docket: 50-346

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 210H-020  
Rev.: 2

Prepared by: J Lewis Date: 9/30/83  
Checked by: [Signature] Date: 10/13

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Low Pressure Injection	Operating Time	1 Year	Note 1	F	N/A	N/A	Note 2
Plant ID No. PSHRC2B4	Temperature (°F)	283.0	Note 1	H, X	N/A	N/A	Note 2
Component: Pressure Switch	Pressure (PSIA)	52.0	Note 1	G, X	N/A	N/A	Note 2
Manufacturer: Static-O-Ring	Relative Humidity (%)	100.0	Note 1	A	N/A	N/A	Note 2
Model Number: 8V2E45M2C	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Note 1	A	N/A	N/A	Note 2
Function: Permissive Interlock	Radiation	3.87 x 10 <sup>7</sup> RADS	Note 1	CAL-44	N/A	N/A	Note 2
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	Note 1	I	N/A	N/A	Note 2
Service: Decay Heat Removal Suction Valve	Submergence	572'-2"	603'-0"	B	AD	N/A	None
Location: Containment El. 4							
Flood Level Elev: 572'-2"							
Above Flood Level: Yes							
Needed for: Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input checked="" type="checkbox"/>							

Facility: Davis-Besse Unit 1  
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SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 210H-020A  
Rev.: 2

Prepared by: J. Lewis Date: 9/30/83  
Checked by: [Signature] Date: 10/1/83

NOTES

1. This pressure switch is part of the control circuit for DH12 (a motor-operated decay heat removal system normal suction valve). The switch provides a permissive interlock to prevent the overpressurization of the decay heat removal system. The operation of DH12 is only needed during normal plant cooldown.

In the event of a loss of coolant accident or a high energy line break inside containment, the switch would be exposed to a harsh environment. A switch short failure will not affect the normal operation of DH12 by its control room switch. This failure will only prevent the interlock from performing its function. The operator is aware of this and he will not open DH12 when the reactor coolant pressure is too great.

Switch failure causing an open condition in its circuit would prevent the operator from opening DH12. During a loss of coolant accident, the operation of DH12 is not necessary because plant cooldown is accomplished via sump recirculation to the decay heat removal system. Following a high energy line break accident, the operation of DH12 is necessary for plant cooldown. To allow opening of the valve, the switch can be jumpered at motor control center BE11B or its auxiliary contacts in the valve's opening circuit can be jumpered at disconnect switch cabinet CDE11B-2.

2. This component will be scheduled for replacement when it is determined by test that a qualified replacement component is available.

Facility: Davis-Besse Unit 1  
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SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 210H-021  
Rev.: 2

Prepared by: A. Lewis Date: 11/1/83  
Checked by: W. Donald Date: 11/2/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Low Pressure Injection	Operating Time	1 Year	Note 2, 4	O	N/A	N/A	Note 1
Plant ID No. SV1467	Temperature (°F)	155.0	Exempt	C-113	Note 3, 4	N/A	None
Component: Solenoid Valve	Pressure (PSIA)	16.06	Exempt	C-113	Note 3, 4	N/A	None
Manufacturer: ASCO	Relative Humidity (%)	100.0	Exempt	A	Note 3, 4	N/A	None
Model Number: HT8320A8V	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Valve Control	Radiation	7.1 x 10 <sup>6</sup> RADS	1.2 x 10 <sup>6</sup> RADS Note 2, 4	T	CAL-80 Note 5	Analysis	Note 1
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	9 Years Note 6	I	CAL-80 Note 5	Analysis	None
Service: Decay Heat Removal Cooler 1 Component Cooling Outlet Valve	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Room 113	Hot Shutdown	<input checked="" type="checkbox"/>					
Flood Level Elev: N/A Above Flood Level: N/A	Cold Shutdown	<input checked="" type="checkbox"/>					
Needed for:							

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SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 210H-G21A  
Rev.: 2

NOTES

Prepared by: W. Lewis Date 11/1/83  
Checked by: W. Lewis Date 11/2/83

1. This component is scheduled for replacement during the first refueling outage subsequent to component on-site availability.
2. This solenoid valve controls the air supply to CCl467 (the air-operated decay heat removal cooler 1 component cooling water outlet valve). Upon receipt of a safety features actuation signal, the solenoid valve de-energizes causing CCl467 to move to its fail-safe open position. Failure of the solenoid would also cause CCl467 to move to its fail-safe open position. This action will not be detrimental to plant safety because it performs the desired function of allowing component cooling water to flow through the decay heat removal cooler so that plant cooldown can be accomplished.
3. This solenoid valve is exempt from qualification because it does not perform an essential safety-related function in the harsh steam environment caused by a high energy line break. Failure of the solenoid during this accident will not degrade other safety-related functions because it merely allows component cooling water to flow through the decay heat removal cooler. The decay heat removal coolers are not needed to mitigate a high energy line break accident.
4. The air-operated valve's position indicating lights are powered by a 120 v.a.c. essential instrument bus. These lights are operated by the valve's position indicating (limit) switches. Since the solenoid valve is part of a separate 125 v.d.c. control circuit, its failure can not affect the operation of these devices. Solenoid failure will not mislead the operator because valve position indication will be unaffected.
5. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.
6. 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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## COMPONENT MATERIAL EVALUATION SHEET

Index No.: 210H-021B

Rev.: 2

Prepared by: A. S. S. S. Date: 10/1/83

Checked by: S. J. [Signature] Date: 10/1/78

Plant I.D. No.: SV1467

Manufacturer: ASCO

Component: Solenoid Valve

Model No.: HT8320A8V

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Body & End Cap	Brass	Not Sensitive	CAL-80	Not Affected	CAL-80
Spring, Disc	Stainless Steel	Not Sensitive	CAL-80	Not Affected	CAL-80
Spring, Core	Stainless Steel	Not Sensitive	CAL-80	Not Affected	CAL-80
Sol. Base Sub-Assembly	Metallic	Not Sensitive	CAL-80	Not Affected	CAL-80
Core Tube	Stainless Steel	Not Sensitive	CAL-80	Not Affected	CAL-80
Core & Plugnut	Stainless Steel	Not Sensitive	CAL-80	Not Affected	CAL-80
Shading Coil	Copper	Not Sensitive	CAL-80	Not Affected	CAL-80
Gasket, Body	Viton	40 Years @ 265°F	CAL-80	3.0 x 10 <sup>7</sup> RADS	CAL-80
Disc	Viton	40 Years @ 265°F	CAL-80	3.0 x 10 <sup>7</sup> RADS	CAL-80
Disc Holder	Acetal	9 Years @ 122°F	CAL-80	1.2 x 10 <sup>6</sup> RADS	CAL-80
Core Guide	Acetal	9 Years @ 122°C	CAL-80	1.2 x 10 <sup>6</sup> RADS	CAL-80
Class H Coil: *		40 Years @ 140°F	CAL-80	2.0 x 10 <sup>7</sup> RADS	CAL-80
Outerwrap	Fiberglass				
Varnish	Silicone				
Lead Wire Insulation	Silicone Rubber, Glass Braid				
Magnet Wire Insulation	Enamel				
Insulation	Nomex				
Insulation	Iso-Mica				
	Epoxy				
Insulation	Silicone Resin				
	Mica				

Material & Parts List Reference: V-3A, V-3B, V-3E, V-3F, CAT-3A, ROC-3A

\* Coil is scheduled for replacement in accordance with manufacturer's recommendations.

Facility: Davis-Besse Unit 1  
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## SYSTEM COMPONENT EVALUATION WORKSHEET

Index 210H-021  
Rev.: 2

Prepared by: N Lewis Date: 11/1/03  
Checked by: [Signature] Date: 11/4/03

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Low Pressure Injection	Operating Time	1 Year	1.1 Years	O	J-18 Note 2	Simultaneous Test	None
Plant ID No. SV1467	Temperature (°F)	155.0	346.0	C-113	J-18	Simultaneous Test	None
Component: Solenoid Valve	Pressure (PSIA)	16.06	124.7	C-113	J-18	Simultaneous Test	None
Manufacturer: ASCO	Relative Humidity (%)	100.0	100.0	A	J-18	Simultaneous Test	None
Model Number: NP8320 E Note 1							
Function: Valve Control							
Accuracy: Spec: N/A Demon: N/A							
Service: Decay Heat Removal Cooler 1 Component Cooling Outlet Valve	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Room 113	Radiation	$7.1 \times 10^6$ RADS	$2.0 \times 10^7$ RADS	T	J-18 J-41	Sequential Test	None
Flood Level Elev: N/A Above Flood Level: N/A	Aging	40 Years	22 Years Note 3	I	J-18 J-41	Sequential Test	None
Needed for: Hot Shutdown <input checked="" type="checkbox"/>	Submergence	N/A	N/A	N/A	N/A	N/A	None
Cold Shutdown <input checked="" type="checkbox"/>							

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SYSTEM COMPONENT EVALUATION WORKSHEET

Index 210H-021A  
Rev.: 2

NOTES

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

1. This component replaces HT8320A8V in accordance with FCR 82-125.

2. The solenoid valve test consisted of the following: Exposure to steam at 346°F and 124.7 psia for 3 hours, followed by a cooldown to 140°F. A second transient followed with 3 hours at 346°F and 124.7 psia, followed by a cooldown to 320°F and 89.7 psia which lasted for 3 hours, followed by 3-1/2 days exposure to 250°F and 29.7 psia, followed by exposure to 200°F and 14.7 psia for the duration of the test (26 days). (Reference J-18)

The temperature in Room 113 peaks at 155°F in 19 seconds. The pressure in Room 113 peaks at 16.06 psia in 0.6 seconds. The conditions in Room 113 return to ambient in 6.7 minutes.

Based on this information, it can be concluded that the laboratory test subjected the solenoid valve to an overall more severe environment than that which would result from the postulated HELB. Since the solenoid valve remained operable throughout the test and functional after the test, it can be concluded that the solenoid valve will remain functional during and after exposure to the accident environment which would result from the postulated HELB. (Reference J-18, C-113)

3. 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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Docket: 50-346

# SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 210H-022  
Rev.: 2

Prepared by: A. Lewis Date: 11/1/83  
Checked by: Samuel Date: 11/2/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Low Pressure Injection	Operating Time	1 Year	Note 2, 4	O	N/A	N/A	Note 1
Plant ID No. SV1469	Temperature (°F)	155.0	Exempt	C-113	Note 3, 4	N/A	None
Component: Solenoid Valve	Pressure (PSIA)	16.06	Exempt	C-113	Note 3, 4	N/A	None
Manufacturer: ASCO	Relative Humidity (%)	100.0	Exempt	A	Note 3, 4	N/A	None
Model Number: HT8320A8V							
Function: Valve Control							
Accuracy: Spec: N/A Demon: N/A							
Service: Decay Heat Removal Cooler 2 Component Cooling Outlet Valve	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Room 113	Radiation	7.1 x 10 <sup>6</sup> RADS	1.2 x 10 <sup>6</sup> RADS Note 2, 4	T	CAL-80 Note 5	Analysis	Note 1
Flood Level Elev: N/A Above Flood Level: N/A	Aging	40 Years	9 Years Note 6	I	CAL-80 Note 5	Analysis	None
Needed for: Hot Shutdown <input checked="" type="checkbox"/> Cold Shutdown <input checked="" type="checkbox"/>	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.: 210H-022A  
Rev.: 2

NOTES

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

1. This component is scheduled for replacement during the first refueling outage subsequent to component on-site availability.
2. This solenoid valve controls the air supply to CCl469 (the air-operated decay heat removal cooler 2 component cooling water outlet valve). Upon receipt of a safety features actuation signal, the solenoid valve de-energizes causing CCl469 to move to its fail-safe open position. Failure of the solenoid would also cause CCl469 to move to its fail-safe open position. This action will not be detrimental to plant safety because it performs the desired function of allowing component cooling water to flow through the decay heat removal cooler so that plant cooldown can be accomplished.
3. This solenoid valve is exempt from qualification because it does not perform an essential safety-related function in the harsh steam environment caused by a high energy line break. Failure of the solenoid during this accident will not degrade other safety-related functions because it merely allows component cooling water to flow through the decay heat removal cooler. The decay heat removal coolers are not needed to mitigate a high energy line break accident.
4. The air-operated valve's position indicating lights are powered by a 120 v.a.c. essential instrument bus. These lights are operated by the valve's position indicating (limit) switches. Since the solenoid valve is part of a separate 125 v.d.c. control circuit, its failure can not affect the operation of these devices. Solenoid failure will not mislead the operator because valve position indication will be unaffected.
5. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.
6. 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.



Facility: Davis-Besse Unit 1

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## COMPONENT MATERIALS EVALUATION SHEET

Index No. 210H-022B

Rev.: 2

Prepared by:

*H. Lewis*

Date:

*11/1/83*

Checked by:

*[Signature]*

Date:

*11/2/83*

Plant I.D. No.: SV1469

Component: Solenoid Valve

Manufacturer: ASCO

Model No.: HT8320A8V

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Body & End Cap	Brass	Not Sensitive	CAL-80	Not Affected	CAL-80
Spring, Disc	Stainless Steel	Not Sensitive	CAL-80	Not Affected	CAL-80
Spring, Core	Stainless Steel	Not Sensitive	CAL-80	Not Affected	CAL-80
Sol. Base Sub-Assembly	Metallic	Not Sensitive	CAL-80	Not Affected	CAL-80
Core Tube	Stainless Steel	Not Sensitive	CAL-80	Not Affected	CAL-80
Core & Plugnut	Stainless Steel	Not Sensitive	CAL-80	Not Affected	CAL-80
Shading Coil	Copper	Not Sensitive	CAL-80	Not Affected	CAL-80
Gasket, Body	Viton	40 Years @ 265°F	CAL-80	3.0 x 10 <sup>7</sup> RADS	CAL-80
Disc	Viton	40 Years @ 265°F	CAL-80	3.0 x 10 <sup>7</sup> RADS	CAL-80
Disc Holder	Acetal	9 Years @ 122°F	CAL-80	1.2 x 10 <sup>6</sup> RADS	CAL-80
Core Guide	Acetal	9 Years @ 122°F	CAL-80	1.2 x 10 <sup>6</sup> RADS	CAL-80
Class H Coil: *		40 Years @ 140°F	CAL-80	2.0 x 10 <sup>7</sup> RADS	CAL-80
Outerwrap	Fiberglass				
Varnish	Silicone				
Lead Wire Insulation	Silicone Rubber, Glass Braid				
Magnet Wire Insulation	Enamel				
Insulation	Nomex				
Insulation	Iso-Mica				
Insulation	Epoxy				
Insulation	Silicone Resin				
	Mica				

Material &amp; Parts List Reference: V-3A, V-3B, V-3E, V-3F, CAT-3A, ROC-3A

\* Coil is scheduled for replacement in accordance with manufacturer's recommendations.

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SYSTEM COMPONENT EVALUATION WORKSHEET

Index No. 210H-022  
Rev.: 2

Prepared by: N Lewis Date: 11/1/83  
Checked by: A. J. Donald Date: 11/2/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Low Pressure Injection	Operating Time	1 Year	1.1 Years	O	J-18 Note 2	Simultaneous Test	None
Plant ID No. SV1469	Temperature (°F)	155.0	346.0	C-113	J-18	Simultaneous Test	None
Component: Solenoid Valve	Pressure (PSIA)	16.06	124.7	C-113	J-18	Simultaneous Test	None
Manufacturer: ASCO	Relative Humidity (%)	100.0	100.0	A	J-18	Simultaneous Test	None
Model Number: NP8320 E Note 1							
Function: Valve Control							
Accuracy: Spec: N/A Demon: N/A							
Service: Decay Heat Removal Cooler 2 Component Cooling Outlet Valve	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Room 113	Radiation	$7.1 \times 10^6$ RADS	$2.0 \times 10^7$ RADS	T	J-18 J-41	Sequential Test	None
Flood Level Elev: N/A Above Flood Level: N/A	Aging	40 Years	22 Years Note 3	I	J-18 J-41	Sequential Test	None
Needed for: Hot Shutdown <input checked="" type="checkbox"/>	Submergence	N/A	N/A	N/A	N/A	N/A	None
Cold Shutdown <input checked="" type="checkbox"/>							

Facility: Davis-Besse Unit 1  
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SYSTEM COMPONENT EVALUATION WORKSHEET

Index: 210H-022A  
Rev.: 2

NOTES

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

1. This component replaces HT8320A8V in accordance with FCR 82-125.

2. The solenoid valve test consisted of the following: Exposure to steam at 346°F and 124.7 psia for 3 hours, followed by a cooldown to 140°F. A second transient followed with 3 hours at 346°F and 124.7 psia, followed by a cooldown to 320°F and 89.7 psia which lasted for 3 hours, followed by 3-1/2 days exposure to 250°F and 29.7 psia, followed by exposure to 200°F and 14.7 psia for the duration of the test (26 days). (Reference J-18)

The temperature in Room 113 peaks at 155°F in 19 seconds. The pressure in Room 113 peaks at 16.66 psia in 0.6 seconds. The conditions in Room 113 return to ambient in 6.7 minutes.

Based on this information, it can be concluded that the laboratory test subjected the solenoid valve to an overall more severe environment than that which would result from the postulated HELB. Since the solenoid valve remained operable throughout the test and functional after the test, it can be concluded that the solenoid valve will remain functional during and after exposure to the accident environment which would result from the postulated HELB. (Reference J-18, C-113)

3. 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.: 210H-023  
Rev.: 2

Prepared by: N. Jones 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: Low Pressure Injection	Operating Time	1 Year	Note 2, 4	O	N/A	N/A	Note 1
Plant ID No. SVDH13A	Temperature (°F)	155.0	Exempt	C-113	Note 3, 4	N/A	None
Component: Solenoid Valve	Pressure (PSIA)	16.06	Exempt	C-113	Note 3, 4	N/A	None
Manufacturer: ASCO	Relative Humidity (%)	100.0	Exempt	A	Note 3, 4	N/A	None
Model Number: HTX8320A177	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Valve Control	Radiation	$7.1 \times 10^6$ RADS	$1.2 \times 10^6$ RADS Note 2, 4	T	CAL-80 Note 5	Analysis	Note 1
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	9 Years Note 6	I	CAL-80 Note 5	Analysis	None
Service: Decay Heat Removal Cooler 2 By-Pass Valve	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Room 113							
Flood Level Elev: N/A Above Flood Level: N/A							
Needed for: Hot Shutdown <input type="checkbox"/>							
Cold Shutdown <input checked="" type="checkbox"/>							

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SYSTEM COMPONENT EVALUATION WORKSHEET

Index NO.: 210H-023A  
Rev.: 2

NOTES

Prepared by: M. Lewis Date 1/1/83  
Checked by: [Signature] Date 1/2/83

1. This component is scheduled for replacement during the first refueling outage subsequent to component on-site availability.
2. This solenoid valve controls the air supply to DH13A (the air-operated decay heat removal cooler 2 by-pass valve). Upon receipt of a safety features actuation signal, the solenoid valve de-energizes causing DH13A to move to its fail-safe closed position. Failure of the solenoid would also cause DH13A to move to its fail-safe closed position. This action will not be detrimental to plant safety because it performs the desired function of closing the decay heat removal cooler by-pass valve so that plant cooldown can be accomplished using the decay heat removal coolers.
3. This solenoid valve is exempt from qualification because it does not perform an essential safety-related function in the harsh steam environment caused by a high energy line break. Failure of the solenoid during this accident will not degrade other safety-related functions because it merely causes the decay heat removal cooler by-pass valve to move to its fail-safe closed position. The decay heat removal coolers are not needed to mitigate a high energy line break accident.
4. The air-operated valve's position indicating lights are powered by a 120 v.a.c. essential instrument bus. These lights are operated by the valve's position indicating (limit) switches. Since the solenoid valve is part of a separate 125 v.d.c. control circuit, its failure can not affect the operation of these devices. Solenoid failure will not mislead the operator because valve position indication will be unaffected.
5. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.
6. 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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COMPONENT MATERIALS EVALUATION SHEET

Index No.: 210H-023B  
Rev.: 2

Prepared by: P. J. J. J. Date: 11/15/80  
Checked by: C. J. J. J. Date: 11/15/80

Plant I.D. No.: SVDH13A  
Manufacturer: ASCO

Component: Solenoid Valve  
Model No.: HTX8320A177

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Gaskets, Body	BUNA-N	15 Years @ 122°F	CAL-80	1.5 x 10 <sup>7</sup> RADS	CAL-80
Body	Brass	Not Sensitive	CAL-80	Not Affected	CAL-80
End Cap, Body	Brass	Not Sensitive	CAL-80	Not Affected	CAL-80
Spring, Disc	Stainless Steel	Not Sensitive	CAL-80	Not Affected	CAL-80
Spring, Core	Stainless Steel	Not Sensitive	CAL-80	Not Affected	CAL-80
Sol. Base Sub-Assembly	Metallic	Not Sensitive	CAL-80	Not Affected	CAL-80
Core Tube	Stainless Steel	Not Sensitive	CAL-80	Not Affected	CAL-80
Core & Plugnut	Stainless Steel	Not Sensitive	CAL-80	Not Affected	CAL-80
Shading Coil	Copper	Not Sensitive	CAL-80	Not Affected	CAL-80
Disc	BUNA-N	15 Years @ 122°F	CAL-80	1.5 x 10 <sup>7</sup> RADS	CAL-80
Disc Holder	Acetal	9 Years @ 122°F	CAL-80	1.2 x 10 <sup>6</sup> RADS	CAL-80
Core Guide	Acetal	9 Years @ 122°F	CAL-80	1.2 x 10 <sup>6</sup> RADS	CAL-80
Class H Coil: *		40 Years @ 140°F	CAL-80	2.0 x 10 <sup>7</sup> RADS	CAL-80
Outerwrap	Fiberglass				
Varnish	Silicone				
Lead Wire Insulation	Silicone Rubber, Glass				
	Braid				
Magnet Wire Insulation	Enamel				
Insulation	Nomex				
Insulation	Iso-Mica				
	Epoxy				
Insulation	Silicone Resin				
	Mica				

Material & Parts List Reference: V-3A, V-3B, V-3F, CAT-3A, ROC-3A

\* Coil is scheduled for replacement in accordance with manufacturer's recommendations.

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

# SYSTEM COMPONENT EVALUATION WORKSHEET

Index: 210H-023  
 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: Low Pressure Injection	Operating Time	1 Year	1.1 Years	0	J-18 Note 2	Simultaneous Test	None
Plant ID No. SVDH13A	Temperature (°F)	155.0	346.0	C-113	J-18	Simultaneous Test	None
Component: Solenoid Valve	Pressure (PSIA)	16.06	124.7	C-113	J-18	Simultaneous Test	None
Manufacturer: ASCO	Relative Humidity (%)	100.0	100.0	A	J-18	Simultaneous Test	None
Model Number: NP8320 E Note 1	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Valve Control	Radiation	$7.1 \times 10^6$ RADS	$2.0 \times 10^7$ RADS	T	J-18 J-41	Sequential Test	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	22 Years Note 3	I	J-18 J-41	Sequential Test	None
Service: Decay Heat Removal Cooler 2 By-Pass Valve	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Room 113							
Flood Level Elev: N/A Above Flood Level: N/A							
Needed for: Hot Shutdown <input checked="" type="checkbox"/> Cold Shutdown <input checked="" type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index 210H-023A  
Rev.: 2

NOTES

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

1. This component replaces HT8320A8V in accordance with FCR 82-125.

2. The solenoid valve test consisted of the following: Exposure to steam at 346°F and 124.7 psia for 3 hours, followed by a cooldown to 140°F. A second transient followed with 3 hours at 346°F and 124.7 psia, followed by a cooldown to 320°F and 89.7 psia which lasted for 3 hours, followed by 3-1/2 days exposure to 250°F and 29.7 psia, followed by exposure to 200°F and 14.7 psia for the duration of the test (26 days). (Reference J-18)

The temperature in Room 113 peaks at 155°F in 19 seconds. The pressure in Room 113 peaks at 16.06 psia in 0.6 seconds. The conditions in Room 113 return to ambient in 6.7 minutes.

Based on this information, it can be concluded that the laboratory test subjected the solenoid valve to an overall more severe environment than that which would result from the postulated HELB. Since the solenoid valve remained operable throughout the test and functional after the test, it can be concluded that the solenoid valve will remain functional during and after exposure to the accident environment which would result from the postulated HELB. (Reference J-18, C-113)

3. 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.

The limiting material is ethylene propylene terpolymer which, according to page C-5 (Figure 1) in Reference J-41, has a life of 2.2 years at 122°F.

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 210H-024

Rev.: 2

Prepared by:

*H. Lewis*

Date:

*11/1/83*

Checked by:

*John O'Neil*

Date:

*11/2/83*

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Low Pressure Injection	Operating Time	1 Year	Note 2, 4	O	N/A	N/A	Note 1
Plant ID No. SVDH13B	Temperature (°F)	155.0	Exempt	C-113	Note 3, 4	N/A	None
Component: Solenoid Valve	Pressure (PSIA)	16.06	Exempt	C-113	Note 3, 4	N/A	None
Manufacturer: ASCO	Relative Humidity (%)	100.0	Exempt	A	Note 3, 4	N/A	None
Model Number: HTX8320A177	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Valve Control	Radiation	$7.1 \times 10^6$ RADS	$1.2 \times 10^6$ RADS Note 2, 4	T	CAL-80 Note 5	Analysis	Note 1
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	9 Years Note 6	I	CAL-80 Note 5	Analysis	None
Service: Decay Heat Removal Cooler 1 By-Pass Valve	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Room 113							
Flood Level Elev: N/A Above Flood Level: N/A							
Needed for: Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input checked="" type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 210H-024A  
Rev.: 2

NOTES

Prepared by: K. Lewis Date 11/1/83  
Checked by: [Signature] Date 11/4/83

1. This component is scheduled for replacement during the first refueling outage subsequent to component on-site availability.
2. This solenoid valve controls the air supply to DH13B (the air-operated decay heat removal cooler 1 by-pass valve). Upon receipt of a safety features actuation signal, the solenoid valve de-energizes causing DH13B to move to its fail-safe closed position. Failure of the solenoid would also cause DH13B to move to its fail-safe closed position. This action will not be detrimental to plant safety because it performs the desired function of closing the decay heat removal cooler by-pass valve so that plant cooldown can be accomplished using the decay heat removal coolers.
3. This solenoid valve is exempt from qualification because it does not perform an essential safety-related function in the harsh steam environment caused by a high energy line break. Failure of the solenoid during this accident will not degrade other safety-related functions because it merely causes the decay heat removal cooler by-pass valve to move to its fail-safe closed position. The decay heat removal coolers are not needed to mitigate a high energy line break accident.
4. The air-operated valve's position indicating lights are powered by a 120 v.a.c. essential instrument bus. These lights are operated by the valve's position indicating (limit) switches. Since the solenoid valve is part of a separate 125 v.d.c. control circuit, its failure can not affect the operation of these devices. Solenoid failure will not mislead the operator because valve position indication will be unaffected.
5. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.
6. 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.



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

COMPONENT MATERIALS EVALUATION SHEET

Index No.: 210H-024B  
Rev.: 2

Prepared by: P. J. Smith Date: 7/1/80  
Checked by: C. J. McDonald Date: 7/2/80

Plant I.D. No.: SVDH13B  
Manufacturer: ASCO

Component: Solenoid Valve  
Model No.: HTX8320A177

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Gaskets, Body	BUNA-N	15 Years @ 122°F	CAL-80	1.5 x 10 <sup>7</sup> RADS	CAL-80
Body	Brass	Not Sensitive	CAL-80	Not Affected	CAL-80
End Cap, Body	Brass	Not Sensitive	CAL-80	Not Affected	CAL-80
Spring, Disc	Stainless Steel	Not Sensitive	CAL-80	Not Affected	CAL-80
Spring, Core	Stainless Steel	Not Sensitive	CAL-80	Not Affected	CAL-80
Sol. Base Sub-Assembly	Metallic	Not Sensitive	CAL-80	Not Affected	CAL-80
Core Tube	Stainless Steel	Not Sensitive	CAL-80	Not Affected	CAL-80
Core & Plugnut	Stainless Steel	Not Sensitive	CAL-80	Not Affected	CAL-80
Shading Coil	Copper	Not Sensitive	CAL-80	Not Affected	CAL-80
Disc	BUNA-N	15 Years @ 122°F	CAL-80	1.5 x 10 <sup>7</sup> RADS	CAL-80
Disc Holder	Acetal	9 Years @ 122°F	CAL-80	1.2 x 10 <sup>6</sup> RADS	CAL-80
Core Guide	Acetal	9 Years @ 122°F	CAL-80	1.2 x 10 <sup>6</sup> RADS	CAL-80
Class H Coil: *		40 Years @ 140°F	CAL-80	2.0 x 10 <sup>7</sup> RADS	CAL-80
Outerwrap	Fiberglass				
Varnish	Silicone				
Lead Wire Insulation	Silicone Rubber, Glass				
	Braid				
Magnet Wire Insulation	Enamel				
Insulation	Nomex				
Insulation	Iso-Mica				
	Epoxy				
Insulation	Silicone Resin				
	Mica				

Material & Parts List Reference: V-3A, V-3B, V-3F, CAT-3A, ROC-3A

\* Coil is scheduled for replacement in accordance with manufacturer's recommendations.

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

# SYSTEM COMPONENT EVALUATION WORKSHEET

Index 210H-024  
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: Low Pressure Injection	Operating Time	1 Year	1.1 Years	O	J-18 Note 2	Simultaneous Test	None
Plant ID No. SVDH13B	Temperature (°F)	155.0	346.0	C-113	J-18	Simultaneous Test	None
Component: Solenoid Valve							
Manufacturer: ASCO	Pressure (PSIA)	16.06	124.7	C-113	J-18	Simultaneous Test	None
Model Number: NP8320 E Note 1							
Function: Valve Control	Relative Humidity (%)	100.0	100.0	A	J-18	Simultaneous Test	None
Accuracy: Spec: N/A Demon: N/A	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Service: Decay Heat Removal Cooler 1 By-Pass Valve							
Location: Auxiliary Bldg. Room 113	Radiation	$7.1 \times 10^6$ RADS	$2.0 \times 10^7$ RADS	T	J-18 J-41	Sequential Test	None
Flood Level Elev: N/A Above Flood Level: N/A	Aging	40 Years	22 Years Note 3	I	J-18 J-41	Sequential Test	None
Needed for: Hot Shutdown <input checked="" type="checkbox"/> Cold Shutdown <input checked="" type="checkbox"/>	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 210H-024A  
Rev.: 2

NOTES

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

1. This component replaces MT8320ABV in accordance with FCR 82-125.
2. The solenoid valve test consisted of the following: Exposure to steam at 346°F and 124.7 psia for 3 hours, followed by a cooldown to 140°F. A second transient followed with 3 hours at 346°F and 124.7 psia, followed by a cooldown to 320°F and 89.7 psia which lasted for 3 hours, followed by 3-1/2 days exposure to 250°F and 29.7 psia, followed by exposure to 200°F and 14.7 psia for the duration of the test (26 days). (Reference J-18)  
  
The temperature in Room 113 peaks at 155°F in 19 seconds. The pressure in Room 113 peaks at 16.06 psia in 0.6 seconds. The conditions in Room 113 return to ambient in 6.7 minutes.  
  
Based on this information, it can be concluded that the laboratory test subjected the solenoid valve to an overall more severe environment than that which would result from the postulated HELB. Since the solenoid valve remained operable throughout the test and functional after the test, it can be concluded that the solenoid valve will remain functional during and after exposure to the accident environment which would result from the postulated HELB. (Reference J-18, C-113)
3. 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.

Index No.: 210H-025  
Rev.: 2

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Low Pressure Injection	Operating Time	1 Year	Note 2, 4	O	N/A	N/A	Note 1
Plant ID No. SVDH14A	Temperature (°F)	155.0	Exempt	C-113	Note 3, 4	N/A	None
Component: Solenoid Valve							
Manufacturer: ASCO	Pressure (PSIA)	16.06	Exempt	C-113	Note 3, 4	N/A	None
Model Number: HTX8320A177							
Function: Valve Control	Relative Humidity (%)	100.0	Exempt	A	Note 3, 4	N/A	None
Accuracy: Spec: N/A Demon: N/A							
Service: Decay Heat Removal Cooler 2 Outlet Valve	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Room 113	Radiation	7.1 x 10 <sup>6</sup> RADS	1.2 x 10 <sup>6</sup> RADS Note 2, 4	T	CAL-80 Note 5	Analysis	Note 1
Flood Level Elev: N/A Above Flood Level: N/A	Aging	40 Years	9 Years Note 6	I	CAL-80 Note 5	Analysis	None
Needed for: Hot Shutdown <input checked="" type="checkbox"/> Cold Shutdown <input checked="" type="checkbox"/>	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.: 210H-025A  
Rev.: 2

NOTES

Prepared by: N. Lewis Date 11/1/83  
Checked by: E. McDonald Date 11/2/83

1. This component is scheduled for replacement during the first refueling outage subsequent to component on-site availability.
2. This solenoid valve controls the air supply to DH14A (the air-operated decay heat removal cooler 2 outlet valve). Upon receipt of a safety features actuation signal, the solenoid valve de-energizes causing DH14A to move to its fail-safe open position. Failure of the solenoid would also cause DH14A to move to its fail-safe open position. This action will not be detrimental to plant safety because it performs the desired function of allowing reactor coolant to pass through the decay heat removal cooler so that plant cooldown can be accomplished.
3. This solenoid valve is exempt from qualification because it does not perform an essential safety-related function in the harsh steam environment caused by a high energy line break. Failure of the solenoid during this accident will not degrade other safety-related functions because it merely causes the decay heat removal cooler outlet valve to move to (or remain in) its fail-safe open position. The decay heat removal system is not needed to mitigate a high energy line break accident.
4. The air-operated valve's position indicating lights are powered by a 120 v.a.c. essential instrument bus. These lights are operated by the valve's position indicating (limit) switches. Since the solenoid valve is part of a separate 125 v.d.c. control circuit, its failure can not affect the operation of these devices. Solenoid failure will not mislead the operator because valve position indication will be unaffected.
5. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.
6. 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.



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

COMPONENT MATERIALS EVALUATION SHEET

Index No.: 210H-025B  
Rev.: 2

Prepared by:

*K. Lewis*

Date:

*11/1/83*

Checked by:

*[Signature]*

Date:

*11/2/83*

Plant I.D. No.: SVDH14A

Component: Solenoid Valve

Manufacturer: ASCO

Model No.: HTX8320A177

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Gaskets, Body	BUNA-N	15 Years @ 122°F	CAL-80	1.5 x 10 <sup>7</sup> RADS	CAL-80
Body	Brass	Not Sensitive	CAL-80	Not Affected	CAL-80
End Cap, Body	Brass	Not Sensitive	CAL-80	Not Affected	CAL-80
Spring, Disc	Stainless Steel	Not Sensitive	CAL-80	Not Affected	CAL-80
Spring, Core	Stainless Steel	Not Sensitive	CAL-80	Not Affected	CAL-80
Sol. Base Sub-Assembly	Metallic	Not Sensitive	CAL-80	Not Affected	CAL-80
Core Tube	Stainless Steel	Not Sensitive	CAL-80	Not Affected	CAL-80
Core & Plugnut	Stainless Steel	Not Sensitive	CAL-80	Not Affected	CAL-80
Shading Coil	Copper	Not Sensitive	CAL-80	Not Affected	CAL-80
Disc	BUNA-N	15 Years @ 122°F	CAL-80	1.5 x 10 <sup>7</sup> RADS	CAL-80
Disc Holder	Acetal	9 Years @ 122°F	CAL-80	1.2 x 10 <sup>6</sup> RADS	CAL-80
Core Guide	Acetal	9 Years @ 122°F	CAL-80	1.2 x 10 <sup>6</sup> RADS	CAL-80
Class H Coil: *		40 Years @ 140°F	CAL-80	2.0 x 10 <sup>7</sup> RADS	CAL-80
Outerwrap	Fiberglass				
Varnish	Silicone				
Lead Wire Insulation	Silicone Rubber, Glass Braid				
Magnet Wire Insulation	Enamel				
Insulation	Nomex				
Insulation	Iso-Mica				
Insulation	Epoxy				
Insulation	Silicone Resin				
	Mica				

Material & Parts List Reference: V-3A, V-3B, V-3F, CAT-3A, ROC-3A

\* Coil is scheduled for replacement in accordance with manufacturer's recommendations.

Re v. : 2

Date: 11/2/53

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Low Pressure Injection	Operating Time	1 Year	1.1 Years	O	J-18 Note 2	Simultaneous Test	None
Plant ID No. SVDH14A	Temperature (°F)	155.0	346.0	C-113	J-18	Simultaneous Test	None
Component: Solenoid Valve							
Manufacturer: ASCO	Pressure (PSIA)	16.06	124.7	C-113	J-18	Simultaneous Test	None
Model Number: NP8320 E Note 1							
Function: Valve Control	Relative Humidity (%)	100.0	100.0	A	J-18	Simultaneous Test	None
Accuracy: Spec: N/A Demon: N/A	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Service: Decay Heat Removal Cooler 2 Outlet Valve							
Location: Auxiliary Bldg. Room 113	Radiation	7.1 x 10 <sup>6</sup> RADS	2.0 x 10 <sup>7</sup> RADS	T	J-18 J-41	Sequential Test	None
Flood Level Elev: N/A Above Flood Level: N/A	Aging	40 Years	22 Years Note 3	I	J-18 J-41	Sequential Test	None
Needed for: Hot Shutdown <input checked="" type="checkbox"/>	Submergence	N/A	N/A	N/A	N/A	N/A	None
Cold Shutdown <input checked="" type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No. 10H-025A  
Rev.: 2

NOTES

Repaired by: N. Lewis Date 11/1/83  
Checked by: James O'Neil Date 11/2/83

. This component replaces HT8320A8V in accordance with FCR 82-125.

. The solenoid valve test consisted of the following: Exposure to steam at 346°F and 124.7 psia for 3 hours, followed by a cooldown to 140°F. A second transient followed with 3 hours at 346°F and 124.7 psia, followed by a cooldown to 320°F and 89.7 psia which lasted for 3 hours, followed by 3-1/2 days exposure to 250°F and 29.7 psia, followed by exposure to 200°F and 14.7 psia for the duration of the test (26 days). (Reference J-18)

The temperature in Room 113 peaks at 155°F in 19 seconds. The pressure in Room 113 peaks at 16.06 psia in 0.6 seconds. The conditions in Room 113 return to ambient in 6.7 minutes.

Based on this information, it can be concluded that the laboratory test subjected the solenoid valve to an overall more severe environment than that which would result from the postulated HELB. Since the solenoid valve remained operable throughout the test and functional after the test, it can be concluded that the solenoid valve will remain functional during and after exposure to the accident environment which would result from the postulated HELB. (Reference J-18, C-113)

. 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.

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 210H-026  
Rev.: 2

Prepared by: N. Lewis Date: 11/6/83  
Checked by: G. Paul Date: 11/2/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Low Pressure Injection	Operating Time	1 Year	Note 2, 4	O	N/A	N/A	Note 1
Plant ID No. SVDH14B	Temperature (°F)	155.0	Exempt	C-113	Note 3, 4	N/A	None
Component: Solenoid Valve	Pressure (PSIA)	16.06	Exempt	C-113	Note 3, 4	N/A	None
Manufacturer: ASCO	Relative Humidity (%)	100.0	Exempt	A	Note 3, 4	N/A	None
Model Number: HTX8320A177	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Valve Control	Radiation	7.1 x 10 <sup>6</sup> RADS	1.2 x 10 <sup>6</sup> RADS Note 2, 4	T	CAL-80 Note 5	Analysis	Note 1
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	9 Years Note 6	I	CAL-80 Note 5	Analysis	None
Service: Decay Heat Removal Cooler 2 Outlet Valve	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Room 113							
Flood Level Elev: N/A							
Above Flood Level: N/A							
Needed for:							
Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input checked="" type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 210H-026A  
Rev.: 2

NOTES

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

1. This component is scheduled for replacement during the first refueling outage subsequent to component on-site availability.
2. This solenoid valve controls the air supply to DH14B (the air-operated decay heat removal cooler 1 outlet valve). Upon receipt of a safety features actuation signal, the solenoid valve de-energizes causing DH14B to move to its fail-safe open position. Failure of the solenoid would also cause DH14B to move to its fail-safe open position. This action will not be detrimental to plant safety because it performs the desired function of allowing reactor coolant to pass through the decay heat removal cooler so that plant cooldown can be accomplished.
3. This solenoid valve is exempt from qualification because it does not perform an essential safety-related function in the harsh steam environment caused by a high energy line break. Failure of the solenoid during this accident will not degrade other safety-related functions because it merely causes the decay heat removal cooler outlet valve to move to (or remain in) its fail-safe open position. The decay heat removal system is not needed to mitigate a high energy line break accident.
4. The air-operated valve's position indicating lights are powered by a 120 v.a.c. essential instrument bus. These lights are operated by the valve's position indicating (limit) switches. Since the solenoid valve is part of a separate 125 v.d.c. control circuit, its failure can not affect the operation of these devices. Solenoid failure will not mislead the operator because valve position indication will be unaffected.
5. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.
6. 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.



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

COMPONENT MATERIALS EVALUATION SHEET

Index No.: 210H-026B  
Rev.: 2

Prepared by:

*M. Lewis*

Date:

*11/1/83*

Checked by:

*Bruce*

Date:

*11/2/83*

Plant I.D. No.: SVDH14B

Component: Solenoid Valve

Manufacturer: ASCO

Model No.: HTX8320A177

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Gaskets, Body	BUNA-N	15 Years @ 122°F	CAL-80	1.5 x 10 <sup>7</sup> RADS	CAL-80
Body	Brass	Not Sensitive	CAL-80	Not Affected	CAL-80
End Cap, Body	Brass	Not Sensitive	CAL-80	Not Affected	CAL-80
Spring, Disc	Stainless Steel	Not Sensitive	CAL-80	Not Affected	CAL-80
Spring, Core	Stainless Steel	Not Sensitive	CAL-80	Not Affected	CAL-80
Sol. Base Sub-Assembly	Metallic	Not Sensitive	CAL-80	Not Affected	CAL-80
Core Tube	Stainless Steel	Not Sensitive	CAL-80	Not Affected	CAL-80
Core & Plugnut	Stainless Steel	Not Sensitive	CAL-80	Not Affected	CAL-80
Shading Coil	Copper	Not Sensitive	CAL-80	Not Affected	CAL-80
Disc	BUNA-N	15 Years @ 122°F	CAL-80	1.5 x 10 <sup>7</sup> RADS	CAL-80
Disc Holder	Acetal	9 Years @ 122°F	CAL-80	1.2 x 10 <sup>6</sup> RADS	CAL-80
Core Guide	Acetal	9 Years @ 122°F	CAL-80	1.2 x 10 <sup>6</sup> RADS	CAL-80
Class H Coil: *		40 Years @ 140°F	CAL-80	2.0 x 10 <sup>7</sup> RADS	CAL-80
Outerwrap	Fiberglass				
Varnish	Silicone				
Lead Wire Insulation	Silicone Rubber, Glass Braid				
Magnet Wire Insulation	Enamel				
Insulation	Nomex				
Insulation	Iso-Mica				
Insulation	Epoxy				
Insulation	Silicone Resin				
	Mica				

Material & Parts List Reference: V-3A, V-3B, V-3F, CAT-3A, ROC-3A

\* Coil is scheduled for replacement in accordance with manufacturer's recommendations.



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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index: 210H-026A  
Rev.: 2

NOTES

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

1. This component replaces HT8320A8V in accordance with FCR 82-125.

2. The solenoid valve test consisted of the following: Exposure to steam at 346°F and 124.7 psia for 3 hours, followed by a cooldown to 140°F. A second transient followed with 3 hours at 346°F and 124.7 psia, followed by a cooldown to 320°F and 89.7 psia which lasted for 3 hours, followed by 3-1/2 days exposure to 250°F and 29.7 psia, followed by exposure to 200°F and 14.7 psia for the duration of the test (26 days). (Reference J-18)

The temperature in Room 113 peaks at 155°F in 19 seconds. The pressure in Room 113 peaks at 16.06 psia in 0.6 seconds. The conditions in Room 113 return to ambient in 6.7 minutes.

Based on this information, it can be concluded that the laboratory test subjected the solenoid valve to an overall more severe environment than that which would result from the postulated HELB. Since the solenoid valve remained operable throughout the test and functional after the test, it can be concluded that the solenoid valve will remain functional during and after exposure to the accident environment which would result from the postulated HELB. (Reference J-18, C-113)

3. 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.