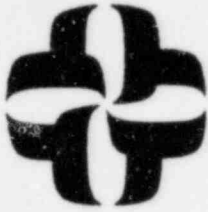


CALCULATION/PROBLEM COVER SHEET



Calculation/Problem No: 1040-001-015

Title: Borated Water Storage Tank 2.12

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. Hawley	10-2-81
2	GENERAL MANUAL REVISIONS	NK Woodward	11/2/83

Docket: 50-346

BORATED WATER STORAGE TANK

Rev.: 2

Prepared by:

Checked by:

Date: 4/1/83

Date: 11/2/82

Worksheet Index No.	Rev.	Plant ID Number	Generic Name	LOCATION		REMARKS
				Inside Primary Containment	Outside Primary Containment	
	2	BE11A	Motor Control Center			See 2.21
	2	CDE11A	Disconnect Switch Cabinet		Rm. 209 Rm. 304	See 2.21

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

MASTER LIST
NON-HARSH ENVIRONMENT
BORATED WATER STORAGE TANK

Index No: 212M-002
Rev.: 2

Prepared by:

N. Lewis

Date:

11/1/83

Checked by:

[Signature]

Date:

11/2/83

Worksheet Index No.	Rev.	Plant ID Number	Generic Name	LOCATION		REMARKS
				Inside Primary Containment	Outside Primary Containment	
	0	BF11B	Motor Control Center		Rm. 405	
	0	C5716	Engineering Safety Feature Panel		Rm. 505	
	0	CDF11B	Disconnect Switch Cabinet		Rm. 405	
	0	EVDH07A	Terminal Block Box		Bwst. Yard	
	0	EVDH07B	Terminal Block Box		Bwst. Yard	
	0	MVDH07A	Valve Motor Operator		Bwst. Yard	
	0	MVDH07B	Valve Motor Operator		Bwst. Yard	

[illegible]

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Prepared by: N Lewis
Checked by: [Signature]

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

NOTES

Index No.: 216H-025A
Rev.: 2

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 the containment annulus peaks at 109°F in 22 seconds. The pressure in the containment annulus peaks at 15.32 psia in 5 seconds. The temperature and pressure in the containment annulus return to ambient conditions in 6.7 minutes.

Based on the above, it is felt that the 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 functional during the test, it can be concluded that the valve motor operator would remain functional during and after exposure to the harsh environment which would result from the postulated HELB. (Reference C-Annulus)

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 216H-026
Rev.: 2

Prepared By: N Lewis Date: 11/1/83
Checked by: J. M. Smith Date: 11/2/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Containment Isolation	Operating Time	30 Seconds	16 Days	K	M-28 V-24C Note 1	Simultaneous Test	None
Plant ID No. MV50711	Temperature (°F)	109.0	250.0	C-Annulus	M-28 V-24C	Simultaneous Test	None
Component: Valve Motor Operator	Pressure (PSIA)	15.32	39.7	C-Annulus	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-000-5	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
IO/N: 370756E	Radiation	1.7 x 10 ⁶ RADS	2.0 x 10 ⁷ RADS	CAL-44	M-28 V-24C	Sequential Test	None
S/N: 188844	Aging	40 Years	40 Years	I	CAL-93	Sequential Test Analysis	None
Function: Operates Containment Vacuum Relief Valve Penetration	Submergence	N/A	N/A	N/A	N/A	N/A	None
Accuracy: Spec: N/A Demon: N/A							
Service: Containment Vacuum Relief Valve							
Location: Annulus							
Flood Level Elev: N/A							
Above Flood Level: N/A							
Needed for:							
Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No. 16H-026A
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 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 the containment annulus peaks at 109°F in 22 seconds. The pressure in the containment annulus peaks at 15.32 psia in 5 seconds. The temperature and pressure in the containment annulus return to ambient conditions in 6.7 minutes.

Based on the above, it is felt that the test subjected the valve motor operator to an overall more severe environment than that which would result from the postulated HEIB. Since the valve motor operator remained functional during the test, it can be concluded that the valve motor operator would remain functional during and after exposure to the harsh environment which would result from the postulated HEIB. (Reference C-Annulus)

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 216F-027
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: Containment Isolation	Operating Time	30 Seconds	16 Days	K	M-28 V-24C Note 1	Simultaneous Test	None
Plant ID No. MV50740	Temperature (°F)	109.0	250.0	C-Annulus	M-28 V-24C	Simultaneous Test	None
Component: Valve Motor Operator	Pressure (PSIA)	15.32	39.7	C-Annulus	M-28 V-24C	Simultaneous Test	None
Manufacturer: Limitingque	Relative Humidity (%)	100.0	100.0	A	M-28 V-24C	Simultaneous Test	None
Model Number: SMB-000-5	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
O/N: 370756E	Radiation	1.7 x 10 ⁶ RADS	2.0 x 10 ⁷ RADS	CAL-44	M-28 V-24C	Sequential Test	None
S/N: 188845	Aging	40 Years	40 Years	I	CAL-93	Sequential Test Analysis	None
Function: Operates Containment Vacuum Relief Valve Penetration	Submergence	N/A	N/A	N/A	N/A	N/A	None
Accuracy: Spec: N/A Demon: N/A							
Service: Containment Vacuum Relief Valve							
Location: Annulus							
Flood Level Elev: N/A							
Above Flood Level: N/A							
Needed for:							
Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 216H-027A
Rev.: 2

NOTES

Prepared by: N Lewis Date 11/1/83
Checked by: J. J. [Signature] 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 the containment annulus peaks at 109°F in 22 seconds. The pressure in the containment annulus peaks at 15.32 psia in 5 seconds. The temperature and pressure in the containment annulus return to ambient conditions in 6.7 minutes.

Based on the above, it is felt that the 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 functional during the test, it can be concluded that the valve motor operator would remain functional during and after exposure to the harsh environment which would result from the postulated HELB. (Reference C-Annulus)

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 216H-023
Rev.: 2

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

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Containment Isolation	Operating Time	30 Seconds	16 Days	K	M-28 V-24C Note 1	Simultaneous Test	None
Plant ID No. MV50750	Temperature (°F)	109.0	250.0	C-Annulus	M-28 V-24C	Simultaneous Test	None
Component: Valve Motor Operator	Pressure (PSIA)	15.32	39.7	C-Annulus	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-000-5	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
IO/N: 370756E	Radiation	1.7 x 10 ⁶ RADS	2.0 x 10 ⁷ RADS	CAL-44	M-28 V-24C	Sequential Test	None
IS/N: 138846	Aging	40 Years	40 Years	I	CAL-93	Sequential Test Analysis	None
Function: Operates Containment Vacuum Relief Valve Penetration	Submergence	N/A	N/A	N/A	N/A	N/A	None
Accuracy: Spec: N/A Demon: N/A							
Service: Containment Vacuum Relief Valve							
Location: Annulus							
Flood Level Elev: N/A							
Above Flood Level: N/A							
Needed for:							
Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 216H-028A
Rev.: 2

Prepared by: N Lewis
Checked by: [Signature]

Date 11/1/83

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 the containment annulus peaks at 109°F in 22 seconds. The pressure in the containment annulus peaks at 15.32 psia in 5 seconds. The temperature and pressure in the containment annulus return to ambient conditions in 6.7 minutes.

Based on the above, it is felt that the 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 functional during the test, it can be concluded that the valve motor operator would remain functional during and after exposure to the harsh environment which would result from the postulated HELB. (Reference C-Annulus)

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 216H-029
Rev.: 2

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

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Containment Isolation	Operating Time	30 Seconds	16 Days	K	M-28 V-24C Note 1	Simultaneous Test	None
Plant ID No. MV50760	Temperature (°F)	109.0	250.0	C-Annulus	M-28 V-24C	Simultaneous Test	None
Component: Valve Motor Operator	Pressure (PSIA)	15.32	39.7	C-Annulus	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-000-5 O/N: 370756E S/N: 188847	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Operates Containment Vacuum Relief Valve Penetration	Radiation	1.7 x 10 ⁶ RADS	2.0 x 10 ⁷ RADS	CAL-44	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: Containment Vacuum Relief Valve	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Annulus							
Flood Level Elev: N/A Above Flood Level: N/A							
Needed for: Hot Shutdown <input checked="" type="checkbox"/> Cold Shutdown <input type="checkbox"/>							

Facility: Davis-Besse Unit 1
Docket: 50-146

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 216H-029A
Rev.: 1

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

NOTES

1. The test subjected the valve motor operator to 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 the containment annulus peaks at 109°F in 22 seconds. The pressure in the containment annulus peaks at 15.32 psia in 5 seconds. The temperature and pressure in the containment annulus return to ambient conditions in 6.7 minutes.

Based on the above, it is felt that the 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 functional during the test, it can be concluded that the valve motor operator would remain functional during and after exposure to the harsh environment which would result from the postulated HELB. (Reference C-Annulus)

Index No.: 216H-030
Rev.: 2

11/1/83

11

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Containment Isolation	Operating Time	30 Seconds	16 Days	K	M-28 V-24C Note 1	Simultaneous Test	None
Plant ID No. MV50770	Temperature (°F)	109.0	250.0	C-Annulus	M-28 V-24C	Simultaneous Test	None
Component: Valve Motor Operator	Pressure (PSIA)	15.32	39.7	C-Annulus	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-000-5							
O/N: 370756E							
S/N: 188848							
Function: Operates Containment Vacuum Relief Valve Penetration							
Accuracy: Spec: N/A Demon: N/A	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Service: Containment Vacuum Relief Valve							
Location: Annulus	Radiation	1.7 x 10 ⁶ RADS	2.0 x 10 ⁷ RADS	CAL-44	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"/>	Submergence	N/A	N/A	N/A	N/A	N/A	None
Cold Shutdown <input type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No. 16H-030A
Rev.: 2

NOTES

Prepared by: N Lewis Date 11/1/83
Checked by: J. J. [Signature] 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 the containment annulus peaks at 199°F in 22 seconds. The pressure in the containment annulus peaks at 15.32 psia in 5 seconds. The temperature and pressure in the containment annulus return to ambient conditions in 6.7 minutes.

Based on the above, it is felt that the 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 functional during the test, it can be concluded that the valve motor operator would remain functional during and after exposure to the harsh environment which would result from the postulated HELB. (Reference C-Annulus)

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 216H-031
Rev.: 2

Prepared by: N. Louis Date: 11/1/83
Checked by: G. Reed Date: 11/2/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Containment Isolation	Operating Time	30 Seconds	16 Days	K	M-28 V-24C Note 1	Simultaneous Test	None
Plant ID No. MV50780	Temperature (°F)	109.0	250.0	C-Annulus	M-28 V-24C	Simultaneous Test	None
Component: Valve Motor Operator	Pressure (PSIA)	15.32	39.7	C-Annulus	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-000-5	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
O/N: 370756E	Radiation	1.7 x 10 ⁶ RADS	2.0 x 10 ⁷ RADS	CAL-44	M-28 V-24C	Sequential Test	None
S/N: 188849	Aging	40 Years	40 Years	I	CAL-93	Sequential Test Analysis	None
Function: Operates Containment Vacuum Relief Valve Penetration	Submergence	N/A	N/A	N/A	N/A	N/A	None
Accuracy: Spec: N/A							
Demon: N/A							
Service: Containment Vacuum Relief Valve							
Location: Annulus							
Flood Level Elev: N/A							
Above Flood Level: N/A							
Needed for:							
Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 216H-031A
Rev.: 2

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

NOTES

1. The test subjected the valve motor operator to 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 the containment annulus peaks at 109°F in 22 seconds. The pressure in the containment annulus peaks at 15.32 psia in 5 seconds. The temperature and pressure in the containment annulus return to ambient conditions in 6.7 minutes.

Based on the above, it is felt that the 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 functional during the test, it can be concluded that the valve motor operator would remain functional during and after exposure to the harsh environment which would result from the postulated HELB. (Reference C-Annulus)

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 216H-032
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: G. H. Ward Date: 11/2/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Containment Isolation	Operating Time	30 Seconds	16 Days	K	M-28 V-24C Note 1	Simultaneous Test	None
Plant ID No. MV50790	Temperature (°F)	109.0	250.0	C-Annulus	M-28 V-24C	Simultaneous Test	None
Component: Valve Motor Operator	Pressure (PSIA)	15.32	35.7	C-Annulus	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-000-5	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
O/N: 370756E	Radiation	1.7 x 10 ⁶ RADS	2.0 x 10 ⁷ RADS	CAL-44	M-28 V-24C	Sequential Test	None
S/N: 188850	Aging	40 Years	40 Years	I	CAL-93	Sequential Test Analysis	None
Function: Operates Containment Vacuum Relief Valve Penetration	Submergence	N/A	N/A	N/A	N/A	N/A	None
Accuracy: Spec: N/A Demon: N/A							
Service: Containment Vacuum Relief Valve							
Location: Annulus							
Flood Level Elev: N/A							
Above Flood Level: N/A							
Needed for:							
Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index no. 216H-032A
Rev.: 2

Prepared by: N Lewis
Checked by: [Signature]

Date 11/1/83
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 the containment annulus peaks at 109°F in 22 seconds. The pressure in the containment annulus peaks at 15.32 psia in 5 seconds. The temperature and pressure in the containment annulus return to ambient conditions in 6.7 minutes.

Based on the above, it is felt that the 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 functional during the test, it can be concluded that the valve motor operator would remain functional during and after exposure to the harsh environment which would result from the postulated HELB. (Reference C-Annulus)

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 216H-033
Rev.: 2

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

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Containment Isolation	Operating Time	1 Year	1.1 Years	F	M-24 V-24A Note 1	Simultaneous Test	None
Plant ID No. MVMU02A	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-00-10 O/N: 360193A S/N: 150028 Function: Operates Valve MU02A	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
Accuracy: Spec: N/A Demon: N/A	Radiation	1.7 x 10 ⁷ RADS	2.0 x 10 ⁸ RADS	CAL-44	M-25 V-24A	Sequential Test	None
Service: Letdown Cooler No. 1 Outlet Valve	Aging	40 Years	40 Years	I	CAL-93	Sequential Test Analysis	None
Location: Containment	Submergence	572'-2"	578'-0"	B	M-10	N/A	None
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
Docket: 50-346

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 216H-033A
Rev.: 2

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

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

NOTES

1. The test subjected the valve motor operator to 1 hour at 329°F and 104.7 psia, then 2 hours at 312°F and 84.7 psia, then 2 hours at 287°F and 54.7 psia, then 19 hours at 256°F and 34.7 psia, and 250°F and 29.7 psia for 6 days. The temperature and pressure inside containment peak at 283°F and 52.0 psia in 17 and 50 seconds, respectively. At 1 hour the conditions are 214.7°F and 32.32 psia; at 3 hours the conditions are 204°F and 29.46 psia; at 5 hours the conditions are 193.2°F and 27.08 psia; and at 24 hours the conditions are 143°F and 18.03 psia. The containment returns to ambient conditions in 7 days.

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

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 216H-034
Rev.: 2

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

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Containment Isolation	Operating Time	15 Seconds	17 Years	K	Note 2	Analysis	None
Plant ID No. SV1542	Temperature (°F)	221.0	Exempt	C-314	Note 1	N/A	None
Component: Solenoid Valve	Pressure (PSIA)	19.76	Exempt	C-314	Note 1	N/A	None
Manufacturer: ASCO	Relative Humidity (%)	100.0	Exempt	A	Note 1	N/A	None
Model Number: HT8320A108	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Isolates Containment	Radiation	1.0 x 10 ⁶ RADS	1.2 x 10 ⁶ RADS	T	CAL-80 Note 2	Analysis	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	17 Years Note 3	I	CAL-80 Note 2	Analysis	None
Service: Core Flooding Tanks to Waste Gas Isolation Valve	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 314							
Flood Level Elev: N/A							
Above Flood Level: N/A							
Needed for: Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 216H-034A
Rev.: 2

Prepared by:

J. Lewis
W. H. Lewis

Date:

11/1/83
4/2/87

NOTES

Checked by:

Date:

4/2/87

1. This solenoid valve controls the air supply to CF1542 (the air-operated core flooding tanks waste gas isolation valve). The only safety-related function performed by this valve is the isolation of containment during a loss of coolant accident.

The solenoid valve is exempt from qualification because it does not perform an essential safety-related function in the harsh steam environment due to a high energy line break. Failure of the solenoid would cause CF1542 to move to (or more likely remain in) its fail-safe closed position. Closure of this valve will not degrade other safety-related functions because it merely isolates the core flooding tank vent lines from the waste gas system. This isolation is a normal operating condition because CF1542 is only opened when venting the tanks.

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 cannot affect the operation of these devices. Solenoid failure will not mislead the operator because valve position indication will be unaffected.

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

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

COMPONENT MATERIALS EVALUATION SHEET

Index No.: 216H-034B
Rev.: 2

Prepared by:

N. Lewis

Date:

11/1/83

Checked by:

[Signature]

Date:

11/2/83

Plant I.D. No.: SV1542

Manufacturer: ASCO

Component: Solenoid Valve

Model No.: HT8320A108

		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	BUNA-N	40 Years @ 104°F	CAL-80	1.5 x 10 ⁷ RADS	CAL-80
Disc	BUNA-N	40 Years @ 104°F	CAL-80	1.5 x 10 ⁷ RADS	CAL-80
Disc Holder	Acetal	17 Years @ 104°F	CAL-80	1.2 x 10 ⁶ RADS	CAL-80
Core Guide	Acetal	17 Years @ 104°F	CAL-80	1.2 x 10 ⁶ RADS	CAL-80
Class H Coil: *		40 Years @ 140°F	CAL-80	2.0 x 10 ⁷ 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				
Insulation	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 No.: 216H-035
Rev.: 2

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

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Containment Isolation	Operating Time	15 Seconds	17 Years	K	Note 2	Analysis	None
Plant ID No. SV1544	Temperature (°F)	218.0	Exempt	C-303	Note 1	N/A	None
Component: Solenoid Valve	Pressure (PSIA)	17.16	Exempt	C-303	Note 1	N/A	None
Manufacturer: ASCO	Relative Humidity (%)	100.0	Exempt	A	Note 1	N/A	None
Model Number: HT8320A108	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Isolates Containment	Radiation	1.16×10^6 RADS	1.2×10^6 RADS	T	CAL-80 Note 2	Analysis	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	17 Years Note 3	I	CAL-80 Note 2	Analysis	None
Service: Core Flooding Tank 1 Fill Line Isolation Valve	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 303							
Flood Level Elev: N/A							
Above Flood Level: N/A							
Needed for: Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 216H-035A
Rev.: 2

Prepared by:

N Lewis

Date:

11/1/83

NOTES

Checked by:

W. McDonald

Date:

11/2/83

1. This solenoid valve controls the air supply to CF1544 (the air-operated core flooding tank fill line isolation valve). The only safety-related function performed by this valve is the isolation of containment during a loss of coolant accident. The solenoid valve is exempt from qualification because it does not perform an essential safety-related function in the harsh steam environment due to a high energy line break. Failure of the solenoid would cause CF1544 to move to (or more likely remain in) its fail-safe closed position. Closure of this valve will not degrade other safety-related functions because it merely isolates the core flooding tank fill line from the high pressure injection pumps and/or the nitrogen supply. This isolation is a normal operating condition because CF1544 is only opened when filling the tank. 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 cannot affect the operation of these devices. Solenoid failure will not mislead the operator because valve position indication will be unaffected.
2. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.
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.

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

COMPONENT MATERIALS EVALUATION SHEET

Index No.: 216H-035B
Rev.: 2

Prepared by:

A. Lewis
McDonnell

Date:

11/1/83

Checked by:

Date:

11/2/83

Plant I.D. No.: SV1544

Component: Solenoid Valve

Manufacturer: ASCO

Model No.: HT8320A108

		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	BUNA-N	40 Years @ 104°F	CAL-80	1.5×10^7 RADS	CAL-80
Disc	BUNA-N	40 Years @ 104°F	CAL-80	1.5×10^7 RADS	CAL-80
Disc Holder	Acetal	17 Years @ 104°F	CAL-80	1.2×10^6 RADS	CAL-80
Core Guide	Acetal	17 Years @ 104°F	CAL-80	1.2×10^6 RADS	CAL-80
Class # Coil: *		40 Years @ 140°F	CAL-80	2.0×10^7 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 No.: 216H-036
Rev.: 2

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

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Containment Isolation	Operating Time	15 Seconds	17 Years	K	Note 2	Analysis	None
Plant ID No. SV1545	Temperature (°F)	221.0	Exempt	C-314	Note 1	N/A	None
Component: Solenoid Valve	Pressure (PSIA)	19.76	Exempt	C-314	Note 1	N/A	None
Manufacturer: ASCO	Relative Humidity (%)	100.0	Exempt	A	Note 1	N/A	None
Model Number: HT8320A108	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Isolates Containment	Radiation	1.0 x 10 ⁶ RADS	1.2 x 10 ⁶ RADS	T	CAL-80 Note 2	Analysis	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	17 Years Note 3	I	CAL-80 Note 2	Analysis	None
Service: Core Flooding Tanks Sample Isolation Valve	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 314							
Flood Level Elev: N/A							
Above Flood Level: N/A							
Needed for: Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 216H-036A
Rev.: 2

Prepared by:

N. Lewis

Date:

11/1/83

NOTES

Checked by:

G. Donald

Date:

11/2/83

1. This solenoid valve controls the air supply to CF1545 (the air-operated core flooding tanks sample isolation valve). The only safety-related function performed by CF1545 is the isolation of containment during a loss of coolant accident.

The solenoid valve is exempt from qualification because it does not perform an essential safety-related function in the harsh steam environment due to a high energy line break. Failure of the solenoid would cause CF1545 to move to (or more likely remain in) its fail-safe closed position. Closure of CF1545 will not degrade other safety-related functions because it merely isolates the core flooding tank sample lines from the reactor coolant draining tank and/or the sampling system. This isolation is a normal operating condition because CF1545 is only opened when draining or sampling the tanks.

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 cannot affect the operation of these devices. Solenoid failure will not mislead the operator because valve position indication will be unaffected.
2. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.
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.

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

COMPONENT MATERIALS EVALUATION SHEET

Index No.: 216H-036B
Rev.: 2

Prepared by: N. Lewis
Checked by: G. M. Dornick

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

Plant I.D. No.: SV1545

Manufacturer: ASCO

Component: Solenoid Valve

Model No.: HT8320A108

Parts List	Materials List	THERMAL AGING		RADIATION	
		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	BUNA-N	40 Years @ 104°F	CAL-80	Not Affected	CAL-80
Disc	BUNA-N	40 Years @ 104°F	CAL-80	1.5 x 10 ⁷ RADS	CAL-80
Disc Holder	Acetal	17 Years @ 104°F	CAL-80	1.5 x 10 ⁷ RADS	CAL-80
Core Guide	Acetal	17 Years @ 104°F	CAL-80	1.2 x 10 ⁶ RADS	CAL-80
Class H Coil: *		40 Years @ 140°F	CAL-80	1.2 x 10 ⁶ RADS	CAL-80
Outerwrap	Fiberglass			2.0 x 10 ⁷ RADS	CAL-80
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 No.: 216H-037
Rev.: 2

Prepared by:

K. 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: Containment Isolation	Operating Time	15 Seconds	30 Days	K	J-18	Simultaneous Test	None
Plant ID No. SV1719A	Temperature (°F)	283.0	346.0	H, X	J-18	Simultaneous Test	None
Component: Solenoid Valve	Pressure (PSIA)	52.0	124.7	G, X	J-18	Simultaneous Test	None
Manufacturer: ASCO	Relative Humidity (%)	100.0	100.0	A	J-18	Simultaneous Test	None
Model Number: NP8320A185E	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	J-18 CAL-40 Note 1	Simultaneous Test	None
Function: Isolates Containment	Radiation	1.7 x 10 ⁷ RADS	2.0 x 10 ⁷ RADS	CAL-44	J-18 J-41	Sequential Test	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	22 Years Note 2	I	J-18 J-41	Sequential Test	None
Service: Containment Vent Header Isolation Valve	Submergence	572° - 2°	578° - 6°	B	J-12	N/A	None
Location: Containment Rm. 220	Hot Shutdown	<input checked="" type="checkbox"/>					
Flood Level Elev: 572'-2"	Cold Shutdown	<input type="checkbox"/>					
Above Flood Level: Yes							
Needed for:							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 216H-037A
Rev.: 2

NOTES

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

-
1. CAL-40 qualifies components tested in a high pH boric acid spray to a pH value of 5.
 2. Materials and/or components sensitive to thermal aging will be replaced as per maintenance and replacement schedules to assure that associated component will maintain functional operability in harsh environments.

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 216H-038
Rev.: 2

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

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Containment Isolation	Operating Time	15 Seconds	17 Years	K	Note 2	Analysis	None
Plant ID No. SV1719B	Temperature (°F)	198.0	Exempt	C-236	Note 1	N/A	None
Component: Solenoid Valve	Pressure (PSIA)	15.51	Exempt	C-236	Note 1	N/A	None
Manufacturer: ASCO	Relative Humidity (%)	100.0	Exempt	A	Note 1	N/A	None
Model Number: HT8320A108	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Isolates Containment	Radiation	7.1 x 10 ⁵ RADS	1.2 x 10 ⁶ RADS	T	CAL-80 Note 2,4	Analysis	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	17 Years Note 3	I	CAL-80 Note 2	Analysis	None
Service: Containment Vent Header 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 type="checkbox"/>							

Facility: Davis-Besse Unit 1

Docket: 50-346

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 216H-038A

Rev.: 2

Prepared by:

J. Lewis

Date:

11/1/83

NOTES

Checked by:

[Signature]

Date:

11/2/83

1. This solenoid valve controls the air supply to RC1719B (the air-operated containment vent header isolation valve). The only safety-related function performed by this valve is the isolation of containment during a loss of coolant accident.

The solenoid valve is exempt from qualification because it does not perform an essential safety-related function in the harsh steam environment due to a high energy line break. Failure of the solenoid would cause RC1719B to move to (or more likely remain in) its fail-safe closed position. Closure of this valve will not degrade other safety-related functions because it merely isolates the containment vent header from the gaseous radwaste system.

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 cannot affect the operation of these devices. Solenoid failure will not mislead the operator because valve position indication will be unaffected.

2. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.
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.
4. Radiation value is 40 day background dose plus the one day accident dose. This valve is required to function to isolate containment in 15 seconds following a LOCA. Subsequent failure will not degrade other safety-related functions or mislead the operator.

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

COMPONENT MATERIALS EVALUATION SHEET

Index No.: 216H-0388
Rev.: 2

Prepared by:

N. Lewis

Date:

11/1/83

Checked by:

Samuel

Date:

11/2/83

Plant I.D. No.: SV1719B

Manufacturer: ASCO

Component: Solenoid Valve

Model No.: HT8320A108

Parts List	Materials List	THERMAL AGING		RADIATION	
		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	BUNA-N	Not Sensitive	CAL-80	Not Affected	CAL-80
Disc	BUNA-N	40 Years @ 104°F	CAL-80	1.5 x 10 ⁷ RADS	CAL-80
Disc Holder	Acetal	40 Years @ 104°F	CAL-80	1.5 x 10 ⁷ RADG	CAL-80
Core Guide	Acetal	17 Years @ 104°F	CAL-80	1.2 x 10 ⁶ RADS	CAL-80
Class H Coil: *		17 Years @ 104°F	CAL-80	1.2 x 10 ⁶ RADS	CAL-80
Outerwrap	Fiberglass	40 Years @ 140°F	CAL-80	2.0 x 10 ⁷ RADS	CAL-80
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 No.: 216H-039
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: Containment Isolation	Operating Time	15 Seconds	24 Hours	K	V-3H	Engineering Experience	None
Plant ID No. SV1773A	Temperature (°F)	283.0	346.0	H, X	V-3H	Engineering Experience	None
Component: Solenoid Valve	Pressure (PSIA)	52.0	54.7 Notes 2 & 3	G, X	V-3H	Engineering Experience	Note 1
Manufacturer: ASCO	Relative Humidity (%)	100.0	100.0	A	V-3H	Engineering Experience	None
Model Number: HTX8316C45V	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Notes 2 & 3	A	N/A	N/A	Note 1
Function: Isolates Containment	Radiation	1.7×10^7 RADS	1.2×10^6 RADS Notes 2 & 3	CAL-44	CAL-80 Note 5	Analysis	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	9 Years Note 6	I	CAL-80 Note 5	Analysis	None
Service: Reactor Coolant Drain Tank Header Isolation Valve	Submergence	572'- 2"	566'-3" Notes 2, 3 & 4	B	J-13	N/A	None
Location: Containment Rm. 220							
Flood Level Elev: 572'-2"							
Above Flood Level: No							
Needed for:							
Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 216H-039a
Rev.: 2

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

NOTES

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 RC1773A (an air-operated reactor coolant drain tank header isolation valve). The only safety-related function performed by this valve is the isolation of containment during a loss of coolant accident.
3. During a loss of coolant accident, an SPAS signal de-energizes the solenoid, causing closure of RC1773A within 15 seconds of the initiation of SPAS incident level 2. The solenoid would become submerged no sooner than 10.9 minutes post-LOCA (see CAL-49). This is a worst-case value based on a postulated DBA LOCA. For smaller LOCAs, component submergence will occur further into the accident, if it occurs at all. This time margin is adequate because the SPAS initiation that causes the closure of RC1773A also starts the high pressure injection, containment spray, and low pressure injection/decay heat pumps. It is through the operation of these pumps that the containment flood elevation is reached as they discharge the borated water storage tank supply into the reactor coolant system and containment. Since this flooding must be preceded by the closure of RC1773A by a constant time margin, this margin is sufficient.
4. Failure of the solenoid (due to submergence, radiation, or the harsh steam environment) would cause RC1773A to move to its fail-safe closed position. This action will not be detrimental to plant safety because it performs the desired function of isolating the reactor coolant drain tank header from the reactor coolant drain tank to maintain containment isolation. RC1773B, located outside containment and downstream from RC1773A, also isolates the reactor coolant drain tank header during a LOCA.

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 cannot 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.: 216H-039B
Rev.: 2

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

Plant I.D. No.: SV1773A
Manufacturer: ASCO

Component: Solenoid Valve
Model No.: HTX8316C45V

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Core Tube	Stainless Steel	Not Sensitive		Not Affected	
Core & Plugnut	Stainless Steel	Not Sensitive		Not Affected	
Screws	Steel	Not Sensitive		Not Affected	
Pilot, Body	Brass	Not Sensitive		Not Affected	
Body & Bonnet	Brass	Not Sensitive		Not Affected	
Disc, Spring	Stainless Steel	Not Sensitive		Not Affected	
Disc Holder	Metallic	Not Sensitive		Not Affected	
Core Spring	Stainless Steel	Not Sensitive		Not Affected	
Sol. Base Sub-Assembly	Metallic	Not Sensitive		Not Affected	
Shading Coil	Copper	Not Sensitive		Not Affected	
Gaskets	Viton	40 Years @ 265°F	CAL-80	3.0×10^7 RADS	CAL-80
Disc	Viton	40 Years @ 265°F	CAL-80	3.0×10^7 RADS	CAL-80
Diaphragm Assemblies	Viton, Brass	40 Years @ 265°F	CAL-80	3.0×10^7 RADS	CAL-80
Bottom Plug	Acetal (Delrin)	9 Years @ 120°F	CAL-80	1.2×10^6 RADS	CAL-80
Pilot Seat Cartridge	Acetal	9 Years @ 120°F	CAL-80	1.2×10^6 RADS	CAL-80
Class H Coil: *		40 Years @ 140°F	CAL-80	2.0×10^7 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				

Materials & Parts List Reference: V-3A, 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 No.: 216H-039
Rev.: 2

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

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Containment Isolation	Operating Time	15 Seconds	1.1 Years	K	J-18 Note 3	Simultaneous Test	None
Plant ID No. SV1773A	Temperature (°F)	283.0	346.0	H, X	J-18	Simultaneous Test	None
Component: Solenoid Valve	Pressure (PSIA)	52.0	124.7	G, X	J-18	Simultaneous Test	None
Manufacturer: ASCO	Relative Humidity (%)	100.0	100.0	A	J-18	Simultaneous Test	None
Model Number: NP8320A185E Note 1	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	J-18 CAL-40 Note 2	Simultaneous Test, Analysis	None
Function: Isolates Containment	Radiation	1.7×10^7 RADS	2.0×10^7 RADS	CAL-44	J-18 J-41	Sequential Test	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	22 Years Note 4	I	J-41	Sequential Test	None
Service: Reactor Coolant Drain Tank Header Isolation Valve	Submergence	572'-2"	566'-3" Note 5	B	J-13	N/A	None
Location: Containment Rm. 220							
Flood Level Elev: 572'-2"							
Above Flood Level: No							
Needed for: Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 216H-039A
Rev.: 2

NOTES

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

1. This component replaces HTX8316C45V in accordance with FCR 79-311.
2. CAL-40 qualifies components tested in a high pH boric acid spray to a pH value of 5.
3. 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 Containment peaks at 283°F in 17.0 seconds. The pressure in Containment peaks at 52 psia in 50 seconds. The conditions in Containment return to ambient in 7 days.

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 LOCA. 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 LOCA. (Reference J-18, C-602)

4. Materials and/or components sensitive to thermal aging will be replaced as per maintenance and replacement schedules to assure that associated component will maintain functional operability in harsh environments.
5. During a loss of coolant accident, an SFAS signal de-energizes the solenoid, causing closure of RC1773A within 15 seconds of the initiation of SFAS incident level 2. The solenoid would become submerged no sooner than 10.9 minutes post-LOCA (see CAL-49). This is a worst-case value based on a postulated DBA LOCA. For smaller LOCAs, component submergence will occur further into the accident, if it occurs at all. This time margin is adequate because the SFAS initiation that causes the closure of RC1773A also starts the high pressure injection, containment spray, and low pressure injection/decay heat pumps. It is through the operation of these pumps that the containment flood elevation is reached as they discharge the borated water storage tank supply into the reactor coolant system and containment. Since this flooding must be preceded by the closure of RC1773A by a constant time margin, this margin is sufficient.

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 216H-040
Rev.: 2

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

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Containment Isolation	Operating Time	15 Seconds	17 Years	K	Note 2	Analysis	None
Plant ID No. SV2010	Temperature (°F)	221.0	Exempt	C-314	Note 1	N/A	None
Component: Solenoid Valve	Pressure (PSIA)	19.76	Exempt	C-314	Note 1	N/A	None
Manufacturer: ASCO	Relative Humidity (%)	100.0	Exempt	A	Note 1	N/A	None
Model Number: HT8320A108	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Isolates Containment	Radiation	1.0 x 10 ⁶ RADS	1.2 x 10 ⁶ RADS	T	CAL-80 Note 2	Analysis	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	17 Years Note 3	I	CAL-80 Note 2	Analysis	None
Service: Containment Service Air Isolation Valve	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 314							
Flood Level Elev: N/A							
Above Flood Level: N/A							
Needed for:							
Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 216H-040A
Rev.: 2

Prepared by: A. Lewis
Checked by: J. McDonald

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

NOTES

1. This solenoid valve controls the air supply to SA2010 (the air-operated containment service air isolation valve). The only safety-related function performed by this valve is the isolation of containment during a loss of coolant accident.

The solenoid valve is exempt from qualification because it does not perform an essential safety-related function in the harsh steam environment due to a high energy line break. Failure of the solenoid would cause SA2010 to move to (or more likely remain in) its fail-safe closed position. Closure of SA2010 will not degrade other safety-related functions because it merely isolates service air from containment. Service air is not needed for the operation of any safety-related equipment located inside containment.

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 cannot affect the operation of these devices. Solenoid failure will not mislead the operator because valve position indication will be unaffected.
2. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.
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.

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

COMPONENT MATERIALS EVALUATION SHEET

Index No.: 216H-040B
Rev.: 2

Prepared by:

N. Lewis

Date:

11/1/83

Checked by:

Shaw

Date:

11/1/83

Plant I.D. No.: SV2010

Manufacturer: ASCO

Component: Solenoid Valve

Model No.: HT8320A108

Parts List	Materials List	THERMAL AGING		RADIATION	
		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	BUNA-N	Not Sensitive	CAL-80	Not Affected	CAL-80
Disc	BUNA-N	40 Years @ 104°F	CAL-80	1.5 x 10 ⁷ RADS	CAL-80
Disc Holder	Acetal	40 Years @ 104°F	CAL-80	1.5 x 10 ⁷ RADS	CAL-80
Core Guide	Acetal	17 Years @ 104°F	CAL-80	1.2 x 10 ⁶ RADS	CAL-80
Class H Coil: *		17 Years @ 104°F	CAL-80	1.2 x 10 ⁶ RADS	CAL-80
Outerwrap	Fiberglass	40 Years @ 140°F	CAL-80	2.0 x 10 ⁷ RADS	CAL-80
Varnish	Silicone				
Lead Wire Insulation	Silicone Rubber, Glass Braid				
Magnet Wire Insulation	Enamel				
Insulation	Nomex				
Insulation	Iso-Mica				
Insulation	Epoxy				
	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 No.: 216H-041
Rev.: 2

Prepared by: A. Lewis Date: 11/1/83
Checked by: SA Small Date: 11/4/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Containment Isolation	Operating Time	15 Seconds	17 Years	K	Note 2	Analysis	None
Plant ID No. SV2011	Temperature (°F)	221.0	Exempt	C-314	Note 1	N/A	None
Component: Solenoid Valve	Pressure (PSIA)	19.76	Exempt	C-314	Note 1	N/A	None
Manufacturer: ASCO	Relative Humidity (%)	100.0	Exempt	A	Note 1	N/A	None
Model Number: HT8320A108	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Isolates Containment	Radiation	1.0 x 10 ⁶ RADS	1.2 x 10 ⁶ RADS	T	CAL-80 Note 2	Analysis	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	17 Years Note 3	I	CAL-80 Note 2	Analysis	None
Service: Containment Instrument Air Isolation Valve	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 314							
Flood Level Elev: N/A							
Above Flood Level: N/A							
Needed for: Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 216H-041A
Rev.: 2

Prepared by:

A. Lewis

Date:

11/1/83

Checked by:

[Signature]

Date:

11/2/83

NOTES

1. This solenoid valve controls the air supply to IA2011 (the air-operated containment instrument air isolation valve). The only safety-related function performed by IA2011 is the isolation of containment during a loss of coolant accident.

The solenoid valve is exempt from qualification because it does not perform an essential safety-related function in the harsh steam environment due to a high energy line break. Failure of this solenoid would cause IA2011 to move to (or remain in) its fail-safe closed position. Closure of IA2011 will isolate instrument air from the following safety-related solenoid valves causing them to move to their fail-safe positions:

- a. SV1719A. This solenoid valve controls the air supply to RC1719A (an air-operated containment vent header isolation valve). Upon loss of air, RC1719A will move to its fail-safe closed position. Closure of this valve will not degrade other safety-related functions because it merely isolates the containment vent header from the gaseous radwaste system.
- b. SV1733A. This solenoid valve controls the air supply to RC1773A (an air-operated coolant drain tank header isolation valve). Upon loss of air, RC1773A will move to its fail-safe closed position. Closure of this valve will not degrade other safety-related functions because it merely isolates the reactor coolant drain tank header from the reactor coolant drain tank.
- c. SV229B. This solenoid valve controls the air supply to RC229B (an air-operated pressurizer quenck tank outlet isolation valve). Upon loss of air, RC229B will move to its fail-safe closed position. Closure of this valve will not degrade other safety-related functions because it merely isolates the pressurizer quench tank from the quench tank circulation pump.
- d. SV235B. This solenoid valve controls the air supply to SS235B (an air-operated pressurizer quenck tank sample isolation valve). Upon loss of air, SS235B will move to (or remain in) its fail-safe closed position. Closure of this valve will not degrade other safety-related functions because SS235B is only opened when sampling primary coolant from the quench tank.
- e. SV5006. This solenoid valve controls the air supply to CV5006 (an air-operated containment purge inlet isolation valve). Upon loss of air, CV5006 will move to (or remain in) its fail-safe closed position. Closure of this valve will not degrade other safety-related functions because it merely isolates the containment purge inlet line from containment. This isolation is a normal operating condition because SV5005 is only opened when purging the containment atmosphere. The containment purge system is not needed to mitigate high energy line break accidents.

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Prepared by: W. Lewis
Checked by: Sumner

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

NOTES

Index No.: 216H-041B
Rev.: 2

- f. SV5007. This solenoid valve controls the air supply to CV5007 (an air-operated containment purge inlet isolation valve). Upon loss of air, CV5007 will move to (or remain in) its fail-safe closed position. Closure of this valve will not degrade other safety-related functions because it merely isolates the containment purge inlet line from containment. This isolation is a normal operating condition because SV5007 is only opened when purging the containment atmosphere. The containment purge system is not needed to mitigate high energy line break accidents.
- g. SV6831A. This solenoid valve controls the air supply to DW6831A (an air-operated demineralized water to containment isolation valve). Upon loss of air, DW6831A will move to its fail-safe closed position. Closure of this valve will isolate the demineralized water supply line from the reactor coolant pump standpipe. This water is used for the reactor coolant pump seal injection. Loss of water or the seals will not degrade safety-related functions because the reactor coolant pumps are not needed to mitigate accidents.

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 cannot affect the operation of these devices. Solenoid failure will not mislead the operator because valve position indication will be unaffected.

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

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

COMPONENT MATERIALS EVALUATION SHEET

Index No.: 216H-041C
Rev.: 2

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

Plant I.D. No.: SV2011

Component: Solenoid Valve

Manufacturer: ASCO

Model No.: HT8320A108

Parts List	Materials List	THERMAL AGING		RADIATION	
		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	BUNA-N	Not Sensitive	CAL-80	Not Affected	CAL-80
Disc	BUNA-N	40 Years @ 104°F	CAL-80	1.5 x 10 ⁷ RADS	CAL-80
Disc Holder	Acetal	40 Years @ 104°F	CAL-80	1.5 x 10 ⁷ RADS	CAL-80
Core Guide	Acetal	17 Years @ 104°F	CAL-80	1.2 x 10 ⁶ RADS	CAL-80
Class H Coil: *		17 Years @ 104°F	CAL-80	1.2 x 10 ⁶ RADS	CAL-80
Outerwrap	Fiberglass	40 Years @ 140°F	CAL-80	2.0 x 10 ⁷ RADS	CAL-80
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 No.: 216H-042
Rev.: 2

Prepared by: K. 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: Containment Isolation	Operating Time	15 Seconds	30 Days	K	J-18	Simultaneous Test	None
Plant ID No. SV229B	Temperature (°F)	283.0	346.0	H, X	J-18	Simultaneous Test	None
Component: Solenoid Valve	Pressure (PSIA)	52.0	124.7	G, X	J-18	Simultaneous Test	None
Manufacturer: ASCO	Relative Humidity (%)	100.0	100.0	A	J-18	Simultaneous Test	None
Model Number: NP8316A75E	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	J-18 CAL-40 Note 1	Simultaneous Test, Analysis	None
Function: Isolates Containment	Radiation	1.7 x 10 ⁷ RADS	2.0 x 10 ⁷ RADS	CAL-44	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	Analysis	None
Service: Pressurizer Quench Tank Outlet Isolation Valve	Submergence	572' - 2"	566' - 3" Note 2	B	J-13	N/A	None
Location: Containment Rm. 220							
Flood Level Elev: 572'-2"							
Above Flood Level: No							
Needed for:							
Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 216H-042A
Rev.: 2

NOTES

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

1. CAL-40 qualifies components tested in a high pH boric acid spray to a pH value of 5.
2. This solenoid valve controls the air supply to RC229B (an air-operated pressurizer quench tank outlet isolation valve). The only safety-related function performed by this valve is the isolation of containment during a loss of coolant accident.
3. During this accident, an SPAS signal de-energizes the solenoid, causing closure of RC229B within 15 seconds of the initiation of SPAS incident level 2. The solenoid would become submerged no sooner than 10.9 minutes post-LOCA (see CAL-49). This is a worst-case value based on a postulated DBA LOCA. For smaller LOCAs, component submergence will occur further into the accident, if it occurs at all. This time margin is adequate because the SPAS initiation that causes the closure of RC229B also starts the high pressure injection, containment spray, and low pressure injection/decay heat pumps. It is through the operation of these pumps that the containment flood elevation is reached as they discharge the borated water storage tank supply into the reactor coolant system and containment. Since this flooding must be preceded by the closure of RC229B by a constant time margin, this margin is sufficient.
4. Failure of the solenoid (due to submergence) would cause RC229B to move to (or remain in) its fail-safe closed position. This action will not be detrimental to plant safety because it performs the desired function of isolating the pressurizer quench tank from the quench tank circulation pump. RC229A, located outside containment and downstream from RC229B, also isolates the pressurizer quench tank during a LOCA.

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 cannot affect the operation of these devices. Solenoid failure will not mislead the operator because valve position indication will be unaffected.

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.

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 216H-043
Rev.: 2

Prepared by:

H. Lewis
Bradford

Date:

11/1/83
11/2/83

Checked by:

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Containment Isolation	Operating Time	15 Seconds	17 Years	K	Note 2	Analysis	None
Plant ID No. SV232	Temperature (°F)	198.0	Exempt	C-236	Note 1	N/A	None
Component: Solenoid Valve	Pressure (PSIA)	15.51	Exempt	C-236	Note 1	N/A	None
Manufacturer: ASCO	Relative Humidity (%)	100.0	Exempt	A	Note 1	N/A	None
Model Number: HT8320A108	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Isolates Containment	Radiation	7.1 x 10 ⁵ RADS	1.2 x 10 ⁶ RADS	T	CAL-80 Note 2,4	Analysis	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	17 Years Note 3	I	CAL-80 Note 2	Analysis	None
Service: Pressurizer Quench Tank Inlet 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 type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 216H-043A
Rev.: 2

Prepared by:

N. Lewis
B. McDonald

Date:

11/1/83
11/4/83

NOTES

1. This solenoid valve controls the air supply to RC232 (the air-operated pressurizer quench tank inlet isolation valve). The only safety-related function performed by this valve is the isolation of containment during a loss of coolant accident.

The solenoid valve is exempt from qualification because it does not perform an essential safety-related function in the harsh steam environment due to a high energy line break. Failure of the solenoid would cause RC232 to move to (or more likely remain in) its fail-safe closed position. Closure of RC232 will not degrade other safety-related functions because it will merely isolate the quench tank from the quench tank cooler.

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 cannot affect the operation of these devices. Solenoid failure will not mislead the operator because valve position indication will be unaffected.

2. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.
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.
4. Radiation value is 40 day background dose plus the one day accident dose. This valve is required to function to isolate containment in 15 seconds following a LOCA. Subsequent failure will not degrade other safety-related functions or mislead the operator.

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Docket: 50-346

COMPONENT MATERIALS EVALUATION SHEET

Index No.: 216H-043B
Rev.: 2

Prepared by:

H. Lewis

Date:

11/1/83

Checked by:

W. MacDonell

Date:

11/2/83

Plant I.D. No.: SV2011

Manufacturer: ASCO

Component:

Solenoid Valve

Model No.:

HT8320A108

Parts List	Materials List	THERMAL AGING		RADIATION	
		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	BUNA-N	Not Sensitive	CAL-80	Not Affected	CAL-80
Disc	BUNA-N	40 Years @ 104°F	CAL-80	1.5 x 10 ⁷ RADS	CAL-80
Disc Holder	Acetal	40 Years @ 104°F	CAL-80	1.5 x 10 ⁷ RADS	CAL-80
Core Guide	Acetal	17 Years @ 104°F	CAL-80	1.2 x 10 ⁶ RADS	CAL-80
Class H Coil: *		17 Years @ 104°F	CAL-80	1.2 x 10 ⁶ RADS	CAL-80
Outerwrap	Fiberglass	40 Years @ 140°F	CAL-80	2.0 x 10 ⁷ RADS	CAL-80
Varnish	Silicone				
Lead Wire Insulation	Silicone Rubber, Glass Braid				
Magnet Wire Insulation	Enamel				
Insulation	Nomex				
Insulation	Iso-Mica				
Insulation	Epoxy				
Insulation	Silicone Resin				
Insulation	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 No.: 216H-044
Rev.: 2

Prepared by: H. 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: Containment Isolation	Operating Time	35 Seconds	17 Years	K	Note 2	Analysis	None
Plant ID No. SV235A	Temperature (°F)	221.0	Exempt	C-314	Note 1	N/A	None
Component: Solenoid Valve	Pressure (PSIA)	19.76	Exempt	C-314	Note 1	N/A	None
Manufacturer: ASCO	Relative Humidity (%)	100.0	Exempt	A	Note 1	N/A	None
Model Number: HT8320A108							
Function: Isolates Containment							
Accuracy: Spec: N/A Demon: N/A							
Service: Pressurizer Quench Tank Sample Isolation Valve	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 314	Radiation	1.0×10^6 RADS	1.2×10^6 RADS	T	CAL-80 Note 2	Analysis	None
Flood Level Elev: N/A Above Flood Level: N/A	Aging	40 Years	17 Years Note 3	I	Note 2	Analysis	None
Needed for: Hot Shutdown <input checked="" type="checkbox"/> Cold Shutdown <input 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.: 216H-044A
Rev.: 2

NOTES

Prepared by: A. Lewis
Checked by: Examiner

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

1. This solenoid valve controls the air supply to SS235A (the air-operated pressurizer quench tank sample isolation valve). The only safety-related function performed by SS235A is the isolation of containment during a loss of coolant accident.

The solenoid valve is exempt from qualification because it does not perform an essential safety-related function in the harsh steam environment due to a high energy line break. Failure of this solenoid would cause SS235A to move to (or more likely remain in) its fail-safe closed position. Closure of SS235A will not degrade other safety-related functions because it will merely isolate the quench tank from the sampling system. This isolation is a normal operating condition because SS235A is only opened when sampling primary coolant from the quench tank.

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.

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

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

COMPONENT MATERIALS EVALUATION SHEET

Index No.: 216H-044B
Rev.: 2

Prepared by:

N. Lewis

Date:

11/1/83

Checked by:

E. Anderson

Date:

11/2/83

Plant I.D. No.: SV235A

Manufacturer: ASCO

Component: Solenoid Valve

Model No.: HT8320A108

		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	BUNA-N	Not Sensitive	CAL-80	Not Affected	CAL-80
Disc	BUNA-N	40 Years @ 104°F	CAL-80	1.5 x 10 ⁷ RADS	CAL-80
Disc Holder	Acetal	40 Years @ 104°F	CAL-80	1.5 x 10 ⁷ RADS	CAL-80
Core Guide	Acetal	17 Years @ 104°F	CAL-80	1.2 x 10 ⁶ RADS	CAL-80
Class H Coil: *		17 Years @ 104°F	CAL-80	1.2 x 10 ⁶ RADS	CAL-80
Outerwrap	Fiberglass	40 Years @ 140°F	CAL-80	2.0 x 10 ⁷ RADS	CAL-80
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 No.: 216H-045
Rev.: 2

Prepared by: W. 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: Containment Isolation	Operating Time	35 Seconds	24 Hours	K	V-3H	Engineering Experience	None
Plant ID No. SV235B	Temperature (°F)	283.0	300.0	H, X	V-3H	Engineering Experience	None
Component: Solenoid Valve	Pressure (PSIA)	52.0	54.7 Note 2	G, X	V-3H	Engineering Experience	Note 1
Manufacturer: ASCO	Relative Humidity (%)	100.0	100.0	A	V-3H	Engineering Experience	None
Model Number: HTX8316C45V	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Note 2	A	N/A	N/A	Note 1
Function: Isolates Containment	Radiation	1.7 x 10 ⁷ RADS	1.2 x 10 ⁶ RADS Note 2	CAL-44	CAL-80 Note 3	Analysis	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	9 Years	I	CAL-80 Note 3	Analysis	None
Service: Pressurizer Quench Tank Sample Isolation Valve	Submergence	572'- 2"	578'	E	J-15	N/A	None
Location: Containment Rm. 315							
Flood Level Elev: 572'-2"							
Above Flood Level: Yes							
Needed for: Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 216H-045A
Rev.: 2

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

NOTES

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 SS235B (an air-operated pressurizer quench tank sample isolation valve). The only safety-related function performed by this valve is the isolation of containment during a loss of coolant accident.

Failure of the solenoid would cause SS235 to move to (or more likely to remain in) its fail-safe closed position. This action will not degrade other safety-related components because it performs the desired function of isolating the pressurizer quench tank from the sampling system. SS235B is closed during normal plant operation, as is SS235A, a second isolation valve located outside containment and downstream of SS235B. SS235B will also isolate containment during a LOCA.

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 cannot affect the operation of these devices. Solenoid failure will not mislead the operator because valve position indication will be unaffected.
3. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

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

COMPONENT MATERIALS EVALUATION SHEET

Index No.: 216H-045B
Rev.: 2

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

Plant I.D. No.: SV235B

Manufacturer: ASCO

Component: Solenoid Valve

Model No.: HTX8316C45V

Parts List	Materials List	THERMAL AGING		RADIATION	
		Qualification	Reference	Qualification	Reference
Core Tube	Stainless Steel	Not Sensitive		Not Affected	
Core & Plugnut	Stainless Steel	Not Sensitive		Not Affected	
Screws	Steel	Not Sensitive		Not Affected	
Pilot, Body	Brass	Not Sensitive		Not Affected	
Body & Bonnet	Brass	Not Sensitive		Not Affected	
Disc, Spring	Stainless Steel	Not Sensitive		Not Affected	
Disc Holder	Metallic	Not Sensitive		Not Affected	
Core Spring	Stainless Steel	Not Sensitive		Not Affected	
Sol. Base Sub-Assembly	Metallic	Not Sensitive		Not Affected	
Shading Coil	Copper	Not Sensitive		Not Affected	
Gaskets	Viton	Not Sensitive		Not Affected	
Disc	Viton	40 Years @ 265°F	CAL-80	3.0 x 10 ⁷ RADS	CAL-80
Diaphragm Assemblies	Viton, Brass	40 Years @ 265°F	CAL-80	3.0 x 10 ⁷ RADS	CAL-80
Bottom Plug	Acetal (Delrin)	40 Years @ 265°F	CAL-80	3.0 x 10 ⁷ RADS	CAL-80
Pilot Seat Cartridge	Acetal	9 Years @ 120°F	CAL-80	1.2 x 10 ⁶ RADS	CAL-80
Class H Coil: *		9 Years @ 120°F	CAL-80	1.2 x 10 ⁶ RADS	CAL-80
Outerwrap	Fiberglass	40 Years @ 140°F	CAL-80	2.0 x 10 ⁷ RADS	CAL-80
Varnish	Silicone				
Lead Wire Insulation	Silicone Rubber, Glass				
	Braid				
Magnet Wire Insulation	Enamel				
Insulation	Nomex				
Insulation	Iso-Mica				
	Epoxy				
Insulation	Silicone Resin				
	Mica				

Materials & Parts List Reference: V-3A, 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

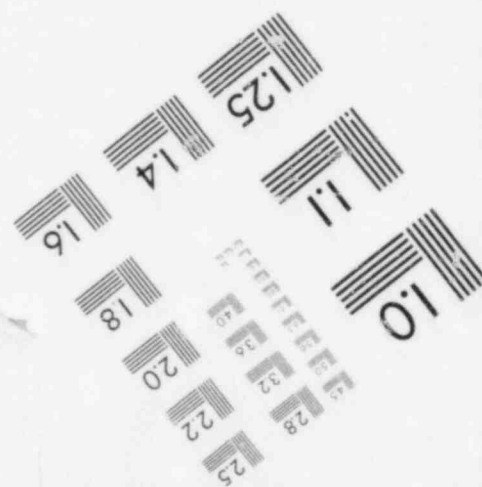
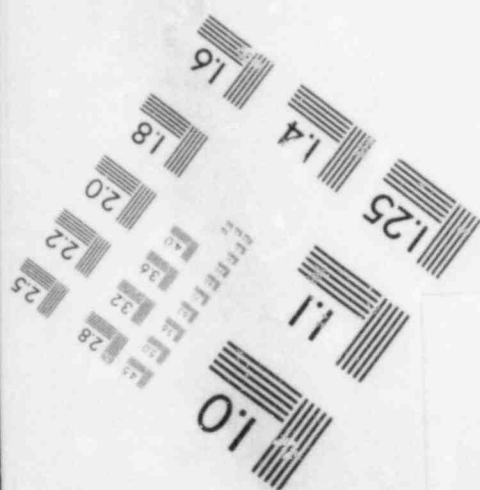
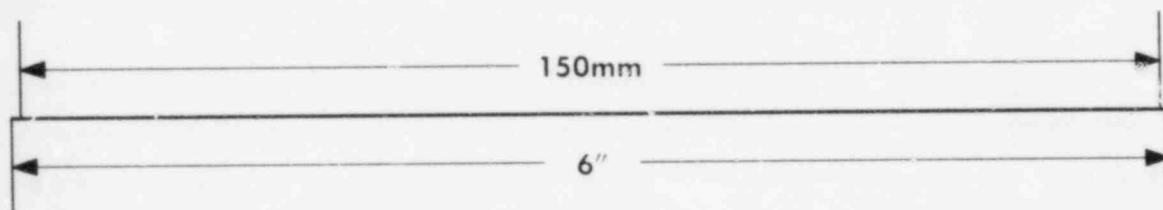
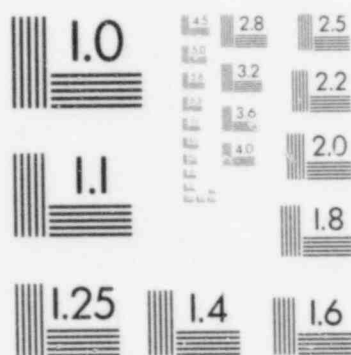
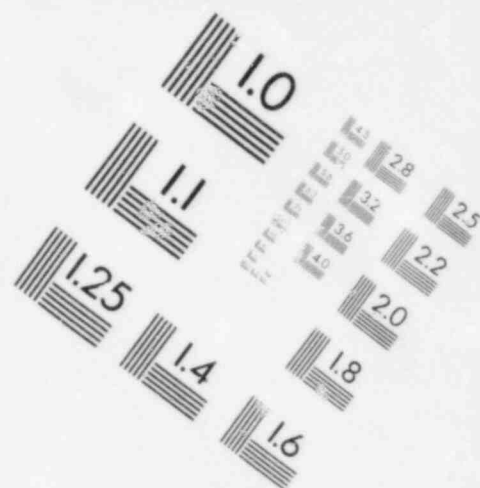
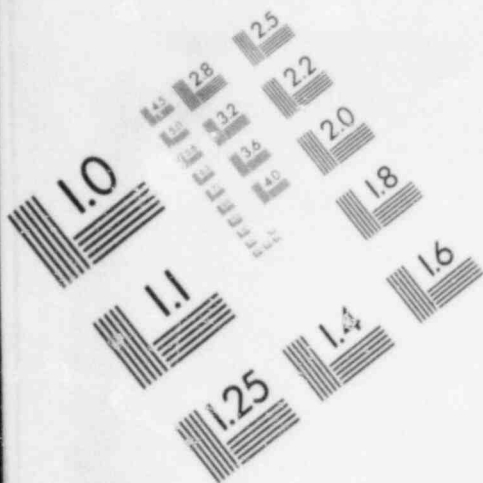
SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 216H-045
Rev.: 2

Prepared by: [Signature] Date: 11/1/83
Checked by: [Signature] Date: 12/1/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Containment Isolation	Operating Time	35 Seconds	1.1 Years	K	J-18 Note 3	Simultaneous Test	None
Plant ID No. SV235B	Temperature (°F)	283.0	346.0	H, X	J-18	Simultaneous Test	None
Component: Solenoid Valve	Pressure (PSIA)	52.0	124.7	G, X	J-18	Simultaneous Test	None
Manufacturer: ASCO	Relative Humidity (%)	100.0	100.0	A	J-18	Simultaneous Test	None
Model Number: NP8316A75E Note 1	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	J-18 CAL-40 Note 2	Simultaneous Test, Analysis	None
Function: Isolates Containment	Radiation	1.7 x 10 ⁷ RADS	2.0 x 10 ⁷ RADS	CAL-44	J-18 J-41	Sequential Test	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	22 Years Note 4	I	J-18 J-41	Analysis	None
Service: Pressurizer Quench Tank Sample Isolation Valve	Submergence	572' - 2"	587' - 0"	B	J-15	N/A	None
Location: Containment Rm. 315	Hot Shutdown	<input checked="" type="checkbox"/>					
Flood Level Elev: 572'-2" Above Flood Level: Yes	Cold Shutdown	<input type="checkbox"/>					
Needed for:							

IMAGE EVALUATION
TEST TARGET (MT-3)



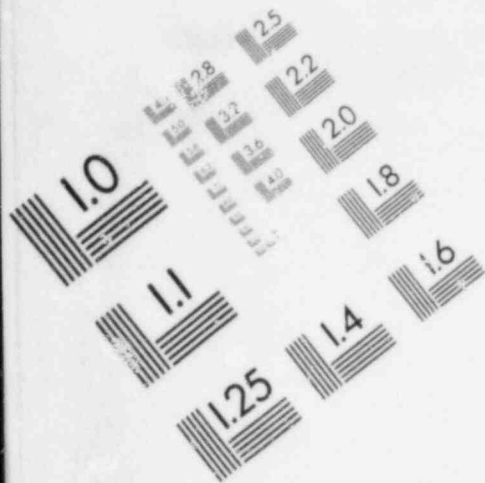
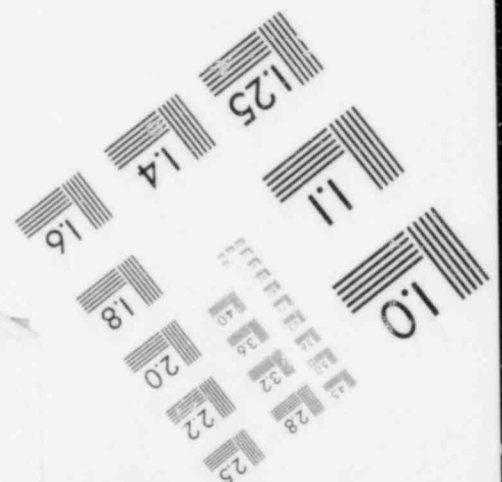
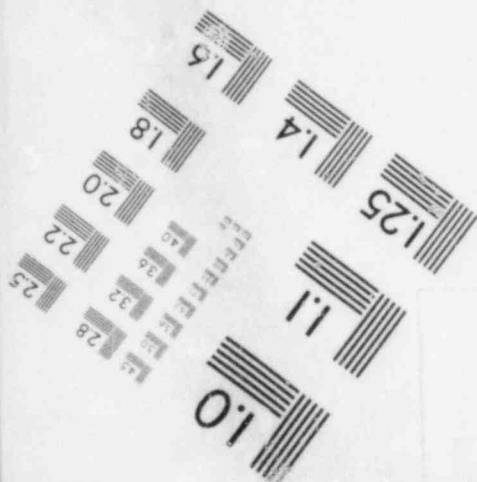
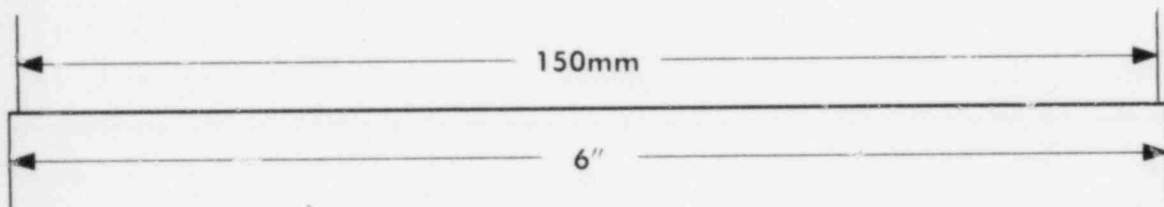
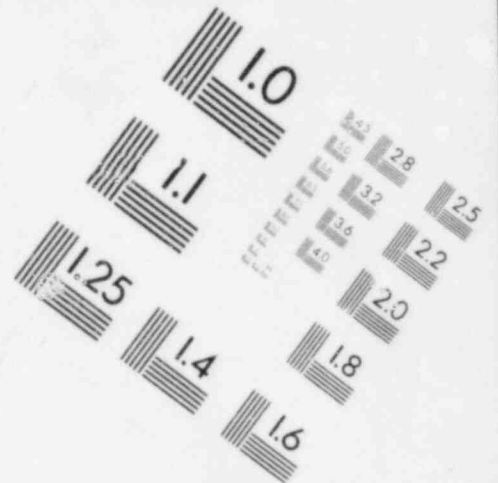


IMAGE EVALUATION TEST TARGET (MT-3)



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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 216H-045A
Rev.: 2

NOTES

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

1. This component replaces HTX8316C45V in accordance with FCR 79-311.
2. CAL-40 qualifies components tested in a high pH boric acid spray to a pH value of 5.
3. 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 Containment peaks at 283°F in 17.0 seconds. The pressure in Containment peaks at 52 psia in 50 seconds. The conditions in Containment return to ambient in 7 days.

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 LOCA. 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 LOCA. (Reference J-18, C-602)

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 216H-046
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: Containment Isolation	Operating Time	15 Seconds	17 Years	K	Note 2	Analysis	None
Plant ID No. SV236	Temperature (°F)	198.0	Exempt	C-236	Note 1	N/A	None
Component: Solenoid Valve	Pressure (PSIA)	15.51	Exempt	C-236	Note 1	N/A	None
Manufacturer: ASCO	Relative Humidity (%)	100.0	Exempt	A	Note 1	N/A	None
Model Number: HT8320A108	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Isolates Containment	Radiation	7.1 x 10 ⁵ RADS	1.2 x 10 ⁶ RADS	T	CAL-80 Note 2,4	Analysis	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	17 Years Note 3	I	CAL-80 Note 2	Analysis	None
Service: Containment N ₂ Header 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 type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Prepared by: M. Lewis
Checked by: E. Henderson

Date: 11/1/83
Date: 4/2/83

NOTES

Index No.: 216H-046A
Rev.: 2

1. This solenoid valve controls the air supply to NN236 (containment nitrogen header isolation valve). The only safety-related function performed by NN236 is the isolation of containment during a loss of coolant accident.

The solenoid valve is exempt from qualification because it does not perform an essential safety-related function in the harsh steam environment due to a high energy line break. Failure of this solenoid would cause NN236 to move to (or more likely remain in) its fail-safe closed position. Closure of NN236 will not degrade other safety-related components because it will merely isolate the nitrogen supply from the pressurizer quench tank.

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.
2. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.
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.
4. Radiation valve is 40 day background dose plus the one day accident dose. This valve is required to function to isolate containment in 15 seconds following a LOCA. Subsequent failure will not degrade other safety-related functions or mislead the operator.

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

COMPONENT MATERIALS EVALUATION SHEET

Index No.: 216H-046B
Rev.: 2

Prepared by:
Checked by:

H. Lewis
[Signature]

Date:
Date:

11/1/83
11/1/83

Plant I.D. No.: SV236

Manufacturer: ASCO

Component:

Solenoid Valve

Model No.:

HT8320A108

Parts List	Materials List	THERMAL AGING		RADIATION	
		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	BUNA-N	Not Sensitive	CAL-80	Not Affected	CAL-80
Disc	BUNA-N	40 Years @ 104°F	CAL-80	Not Affected	CAL-80
Disc Holder	Acetal	40 Years @ 104°F	CAL-80	1.5 x 10 ⁷ RADS	CAL-80
Core Guide	Acetal	17 Years @ 104°F	CAL-90	1.5 x 10 ⁷ RADS	CAL-80
Class H Coil: *	Acetal	17 Years @ 104°F	CAL-80	1.2 x 10 ⁶ RADS	CAL-80
Outerwrap	Fiberglass	40 Years @ 140°F	CAL-80	1.2 x 10 ⁶ RADS	CAL-80
Varnish	Silicone			2.0 x 10 ⁷ RADS	CAL-80
Lead Wire Insulation	Silicone Rubber, Glass				
Magnet Wire Insulation	Braid				
Insulation	Enamel				
Insulation	Nomex				
	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

Prepared by: J. L. [Signature] Date: 11/1/82
Checked by: S. Macdonald Date: 4/2/83

Index No.: 216H-047
Rev.: 2

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Containment Isolation	Operating Time	15 Seconds	1 Day Note 2	K	Note 3	Analysis	None
Plant ID No. SV5005	Temperature (°F)	282.0	Exempt	C-601	Note 1	N/A	None
Component: Solenoid Valve	Pressure (PSIA)	17.0	Exempt	C-601	Note 1	N/A	None
Manufacturer: ASCO	Relative Humidity (%)	100.0	Exempt	A	Note 1	N/A	None
Model Number: HT8316C44MO	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Isolates Containment	Radiation	1.86 x 10 ³ RADS Note 2	1.2 x 10 ⁶ RADS	T	CAL-80 J-41	Analysis	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	17 Years Note 4	I	CAL-80 Note 3 J-41	Analysis	None
Service: Containment Purge Inlet Isolation Valve	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 501							
Flood Level Elev: N/A							
Above Flood Level: N/A							
Needed for:							
Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

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

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

NOTES

Index No.: 216H-047A
Rev.: 2

1. This solenoid valve controls the air supply to CV5005 (the air-operated containment purge inlet isolation valve). The only safety-related function performed by this valve is the isolation of containment during a loss of coolant accident.

The solenoid valve is exempt from qualification because it does not perform an essential safety-related function in the harsh steam environment due to a high energy line break. Failure of the solenoid would cause CV5005 to move to (or more likely remain in) its fail-safe closed position. Closure of CV5005 will not degrade other safety-related functions because it merely isolates the containment purge inlet line from containment. This isolation is a normal operating condition because CV5005 is only opened when purging the containment atmosphere. The containment purge system is not needed to mitigate high energy line break accidents.

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.
2. Radiation value specified is the total integrated dose present at one day post-LOCA.
3. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.
4. Materials and/or components sensitive to thermal aging will be replaced as per maintenance and replacement schedules to assure that associated component will maintain functional operability in harsh environments.

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

COMPONENT MATERIALS EVALUATION SHEET

Index No.: 216H-047B
Rev: 2

Prepared by: N. L.

Date: 11/1/83

Checked by: D. A. G. G.

Date: 11/1/83

Plant I.D. No.: SV5005

Manufacturer: ASCO

Component: Solenoid Valve

Model No.: HT8316C44MO

Parts List	Materials List	THERMAL AGING		RADIATION	
		Qualification	Reference	Qualification	Reference
Manual Operator Assembly	Brass	Not Sensitive		Not Affected	
Screws	Steel	Not Sensitive		Not Affected	
Pilot, Body	Brass	Not Sensitive		Not Affected	
Body & Bonnet	Brass	Not Sensitive		Not Affected	
Disc Spring	Stainless Steel	Not Sensitive		Not Affected	
Disc Holder	Metallic	Not Sensitive		Not Affected	
Core Spring	Stainless Steel	Not Sensitive		Not Affected	
Sol. Base Sub-Assembly	Metallic	Not Sensitive		Not Affected	
Shading Coil	Copper	Not Sensitive		Not Affected	
Gaskets	BUNA-N	Not Sensitive		Not Affected	
Disc	BUNA-N	40 Years @ 104°F	CAL-80	1.5 x 10 ⁷ RADS	CAL-80
Diaphragm Assemblies	BUNA-N, Brass	40 Years @ 104°F	CAL-80	1.5 x 10 ⁷ RADS	CAL-80
Bottom Plug	Acetal	40 Years @ 104°F	CAL-80	1.5 x 10 ⁷ RADS	CAL-80
Pilot Seat Cartridge	Acetal	17 Years @ 104°F	CAL-80	1.2 x 10 ⁶ RADS	CAL-80
Class H Coil: *		17 Years @ 104°F	CAL-80	1.2 x 10 ⁶ RADS	CAL-80
Outerwrap	Fiberglass	40 Years @ 140°F	CAL-80	2.0 x 10 ⁸ RADS	CAL-80
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-3F, CAT-3A, ROC-3A, ROC-3E, ROC-3G

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 216H-048
Rev.: 2

Prepared by: A. Lee Date: 11/1/83
Checked by: M. J. G. G. G. Date: 11/2/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Containment Isolation	Operating Time	15 Seconds	30 Days	K	J-18	Simultaneous Test	None
Plant ID No. SV5006	Temperature (°F)	283.0	346.0	H, X	J-18	Simultaneous Test	None
Component: Solenoid Valve	Pressure (PSIA)	52.0	124.7	G, X	J-18	Simultaneous Test	None
Manufacturer: ASCO	Relative Humidity (%)	100.0	100.0	A	J-18	Simultaneous Test	None
Model Number: NP8316A75E	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	J-18 CAL-40 Note 1	Simultaneous Test, Analysis	None
Function: Isolates Containment	Radiation	1.7 x 10 ⁷ RADS	2.0 x 10 ⁷ RADS	CAL-44	J-18 J-41	Sequential Test	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	22 Years Note 2	I	J-41	Sequential Test	None
Service: Containment Purge Inlet Isolation Valve	Submergence	572'-2"	603'-0"	B	J-16	N/A	None
Location: Containment Rm. 407							
Flood Level Elev: 572'-2"							
Above Flood Level: Yes							
Needed for:							
Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 216H-048A
Rev.: 2

Prepared by:

J. L. [Signature]
S. MacDonell

Date:

11/1/92
11/2/83

NOTES

-
1. CAL-40 qualifies components tested in a high pH boric acid spray to a pH value of 5.
 2. Materials and/or components sensitive to thermal aging will be replaced as per maintenance and replacement schedules to assure that associated component will maintain functional operability in harsh environments.

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Prepared by: [Signature]
Checked by: [Signature]

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

Index No.: 216H-049
Rev.: 2

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Containment Isolation	Operating Time	15 Seconds	30 Days	K	J-18	Simultaneous Test	None
Plant ID No. SV5007	Temperature (°F)	283.0	346.0	H, X	J-18	Simultaneous Test	None
Component: Solenoid Valve	Pressure (PSIA)	52.0	124.7	G, X	J-18	Simultaneous Test	None
Manufacturer: ASCO	Relative Humidity (%)	100.0	100.0	A	J-18	Simultaneous Test	None
Model Number: NP8316A75E	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	J-18 CAL-40 Note 1	Simultaneous Test, Analysis	None
Function: Isolates Containment	Radiation	1.7 x 10 ⁷ RADS	2.0 x 10 ⁷ RADS	CAL-44	J-18 J-41	Sequential Test	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	22 Years Note 2	I	J-41	Sequential Test	None
Service: Containment Purge Outlet Isolation Valve	Submergence	572'-2"	606'-0"	B	J-16	N/A	None
Location: Containment Rm. 410							
Flood Level Elev: 572'-2"							
Above Flood Level: Yes							
Needed for:							
Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Prepared by:

Date:

NOTES

Index No.: 216H-049A
Rev.: 2

Checked by:

Date:

-
1. CAL-40 qualifies components tested in a high pH boric acid spray to a pH value of 5.
 2. Materials and/or components sensitive to thermal aging will be replaced as per maintenance and replacement schedules to assure that associated component will maintain functional operability in harsh environments.

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 216H-050
Rev.: 2

Prepared by:

Date:

14/1/83

Checked by:

Date:

4/2/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Containment Isolation	Operating Time	15 Seconds	40 Years	K	J-18	Sequential Test, Analysis	None
Plant ID No. SV5008	Temperature (°F)	N/A	N/A	Note 1	N/A	N/A	None
Component: Solenoid Valve	Pressure (PSIA)	N/A	N/A	Note 1	N/A	N/A	None
Manufacturer: ASCO	Relative Humidity (%)	N/A	N/A	Note 1	N/A	N/A	None
Model Number: NP8316A75E	Chemical Spray	N/A	N/A	Note 1	N/A	N/A	None
Function: Isolates Containment	Radiation	3.12 x 10 ⁵ RADS	2.0 x 10 ⁷ RADS	T	J-18 J-41	Sequential Test	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	40 Years	I	J-41	Sequential Test	None
Service: Containment Purge Outlet Isolation Valve	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 427							
Flood Level Elev: N/A							
Above Flood Level: N/A							
Needed for:							
Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 216H-050A
Rev.: 2

Prepared by:

J. L. [Signature]
J. McDonald

Date:

11/1/83
11/2/83

NOTES

Checked by:

Date:

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 216H-051
Rev.: 2

Prepared by: [Signature]
Checked by: [Signature]

Date: 11/1/93
Date: 11/2/93

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Containment Isolation	Operating Time	15 Seconds	30 Days	K	J-18	Simultaneous Test	None
Plant ID No. SV6831A	Temperature (°F)	283.0	346.0	H, X	J-18	Simultaneous Test	None
Component: Solenoid Valve	Pressure (PSIA)	52.0	124.7	G, X	J-18	Simultaneous Test	None
Manufacturer: ASCO	Relative Humidity (%)	100.0	100.0	A	J-18	Simultaneous Test	None
Model Number: NP8316A75E	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	J-18 CAL-40 Note 1	Simultaneous Test, Analysis	None
Function: Isolates Containment	Radiation	1.7 x 10 ⁷ RADS	2.0 x 10 ⁷ RADS	CAL-44	CAL-80 J-41	Sequential Test	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	22 Years Note 3	I	CAL-80 J-41	Analysis	None
Service: Demineralizer Water to Ctmt. Isolation Valve	Submergence	572'-2"	585'	B	Note 2	N/A	None
Location: Containment Rm. 316							
Flood Level Elev: 572'-2"							
Above Flood Level: Yes							
Needed for: Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 216H-051A
Rev.: 2

NOTES

Prepared by: *M. L. Linn* Date: 11/1/83
Checked by: *MacDonald* Date: 11/2/83

-
1. CAL-40 qualifies components tested in a high pH boric acid spray to a pH value of 5.
 2. Room 316 is located on level 585', which is above the flood level.
 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.

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 216H-052
Rev.: 2

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

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Containment Isolation	Operating Time	15 Seconds	17 Years	K	Note 2	Analysis	None
Plant ID No. SV6831B	Temperature (°F)	192.0	Exempt	C-208	Note 1	N/A	None
Component: Solenoid Valve	Pressure (PSIA)	16.25	Exempt	C-208	Note 1	N/A	None
Manufacturer: ASCO	Relative Humidity (%)	100.0	Exempt	A	Note 1	N/A	None
Model Number: HTX8316C45V	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Isolates Containment	Radiation	7.1 x 10 ⁵ RADS	1.2 x 10 ⁶ RADS	T	CAL-80 Note 2,4	Analysis	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	17 Years Note 3	I	CAL-80 Note 2,4	Analysis	None
Service: Demineralized Water to Containment Isolation Valve	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 208							
Flood Level Elev: N/A							
Above Flood Level: N/A							
Needed for: Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No. 216H-052A
Rev.: 2

NOTES

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

1. This solenoid valve controls the air supply to DW6831B (the air-operated demineralized water to containment isolation valve). The only safety-related function performed by DW6831B is the isolation of containment during a loss of coolant accident.

The solenoid valve is exempt from qualification because it does not perform an essential safety-related function in the harsh steam environment due to a high energy line break. Failure of this solenoid would cause DW6831B to move to (or remain in) its fail-safe closed position. Closure of DW6831B merely isolates the demineralized water supply line from the reactor coolant pump standpipe. This water is utilized for the reactor coolant pump seal injection. Loss of the water or the seals will not degrade other safety-related functions because the reactor coolant pumps are not needed to mitigate accidents.

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.

2. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.
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.
4. Radiation valve is 40 day background dose plus the one day accident dose. This valve is required to function to isolate containment in 15 seconds following a LOCA. Subsequent failure will not degrade other safety-related functions or mislead the operator.

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

COMPONENT MATERIALS EVALUATION SHEET

Index No.: 216H-052B
Rev.: 2

Prepared by: [Signature] Date: 11/4/87
Checked by: [Signature] Date: 11/2/83

Plant I.D. No.: SV6831B

Component: Solenoid Valve

Manufacturer: ASCO

Model No.: HTX8316C45V

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Core Tube	Stainless Steel	Not Sensitive		Not Affected	
Core & Plugnut	Stainless Steel	Not Sensitive		Not Affected	
Screws	Steel	Not Sensitive		Not Affected	
Pilot, Body	Brass	Not Sensitive		Not Affected	
Body & Bonnet	Brass	Not Sensitive		Not Affected	
Disc, Spring	Stainless Steel	Not Sensitive		Not Affected	
Disc Holder	Metallic	Not Sensitive		Not Affected	
Core Spring	Stainless Steel	Not Sensitive		Not Affected	
Sol. Base Sub-Assembly	Metallic	Not Sensitive		Not Affected	
Shading Coil	Copper	Not Sensitive		Not Affected	
Gaskets	Viton	40 Years @ 265°F	CAL-80	8.0 x 10 ⁶ RADS	CAL-80
Disc	Viton	40 Years @ 265°F	CAL-80	8.0 x 10 ⁶ RADS	CAL-80
Diaphragm Assemblies	Viton, Brass	40 Years @ 265°F	CAL-80	8.0 x 10 ⁶ RADS	CAL-80
Bottom Plug	Acetal (Delrin)	17 Years @ 104°F	CAL-80	1.2 x 10 ⁶ RADS	CAL-80
Pilot Seat Cartridge	Acetal	17 Years @ 104°F	CAL-80	1.2 x 10 ⁶ RADS	CAL-80
Class H Coil: *		40 Years @ 140°F		2.0 x 10 ⁷ 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				

Materials & Parts List Reference: V-3A, 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

Prepared by: [Signature]
Checked by: [Signature]

Date: 11/1/87
Date: 11/2/83

Index No.: 216H-053
Rev.: 2

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Containment Isolation	Operating Time	30 Seconds	17 Years	K	Note 2	Analysis	None
Plant ID No. SVMU03	Temperature (°F)	192.0	Exempt	C-208	Note 1	N/A	None
Component: Solenoid Valve	Pressure (PSIA)	16.25	Exempt	C-208	Note 1	N/A	None
Manufacturer: ASCO	Relative Humidity (%)	100.0	Exempt	A	Note 1	N/A	None
Model Number: FT8344-A5	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Isolates Containment	Radiation	7.1 x 10 ⁵ RADS	1.2 x 10 ⁶ RADS	T	CAL-80 Note 2,4	Analysis	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	17 Years Note 3	I	CAL-80 Note 2	Analysis	None
Service: Reactor Coolant Letdown Isolation Valve	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 208							
Flood Level Elev: N/A							
Above Flood Level: N/A							
Needed for:							
Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input type="checkbox"/>							

Facility: D.C.S-Besse Unit 1
Docket: 50-346

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 216H-053A
Rev.: 2

Prepared by: N. Lewis Date: 11/1/87
Checked by: J. McDonald Date: 11/2/87

NOTES

1. This solenoid valve controls the air supply to MU03 (the air-operated reactor coolant letdown isolation valve). The only safety-related function performed by MU03 is the isolation of containment during a loss of coolant accident.

This solenoid valve is exempt from qualification because it does not perform an essential safety-related function in the harsh steam environment due to a high energy line break. Failure of this solenoid would cause MU03 to move to (or remain in) its fail-safe closed position. Closure of MU03 will not degrade other safety-related functions because it merely isolates the letdown coolers from the make-up and purification system. If it is necessary to remove coolant from the primary system, the pressurizer sample and vent lines can be used.

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.

2. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.
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.
4. Radiation valve is 40 day background dose plus the one day accident dose. This valve is required to function to isolate containment in 15 seconds following a LOCA. Subsequent failure will not degrade other safety-related functions or mislead the operator.

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

COMPONENT MATERIALS EVALUATION SHEET

Index No.: 216H-053B
Rev.: 2

Prepared by: N. L. Date: 1/1/83
Checked by: MacDonald Date: 1/2/83

Plant I.D. No.: SVMU03
Manufacturer: ASCO

Component: Solenoid Valve
Model No.: FT8344-A5

Parts List	Materials List	THERMAL AGING		RADIATION	
		Qualification	Reference	Qualification	Reference
Gasket, Shaft	Lead Copper	Not Sensitive		Not Affected	
U-cups	BUNA-N	40 Years @ 104°F	CAL-80	1.5 x 10 ⁷ RADS	CAL-80
Gaskets	BUNA-N	40 Years @ 104°F	CAL-80	1.5 x 10 ⁷ RADS	CAL-80
Discs	BUNA-N	40 Years @ 104°F	CAL-80	1.5 x 10 ⁷ RADS	CAL-80
Shaft, Main	Brass	Not Sensitive		Not Affected	
Insert	Brass	Not Sensitive		Not Affected	
Spring, Core	Stainless Steel	Not Sensitive		Not Affected	
Spring, Disc	Stainless Steel	Not Sensitive		Not Affected	
Piston	Brass	Not Sensitive		Not Affected	
Screw	Steel	Not Sensitive		Not Affected	
Body	Brass	Not Sensitive		Not Affected	
Seat	Brass	Not Sensitive		Not Affected	
Nut	Brass	Not Sensitive		Not Affected	
Core Tube	Stainless Steel	Not Sensitive		Not Affected	
Core & Plugnut	Stainless Steel	Not Sensitive		Not Affected	
Shading Coil	Copper	Not Sensitive		Not Affected	
Insert	Plastic (Acetal)	Not Sensitive		Not Affected	
Pilot Seat Cartridge	Acetal	17 Years @ 104 °F	CAL-80	1.2 x 10 ⁶ RADS	CAL-80
Class F Coil:		17 Years @ 104 °F	CAL-80	1.2 x 10 ⁶ RADS	CAL-80
Bobbin	Polysulfone	40 Years @ 220°F	CAL-80	2.0 x 10 ⁷ RADS	CAL-80
Encapsulant	Epoxy	40 Years @ 147°F	CAL-80		
Magnet Wire Insulation	Enamel	Greater than	CAL-80		
Inner Layer Insulation	Nomex	40 Years @ 122°F	CAL-80		
Lead Wire Insulation	Cross-Linked Polyethylene	Greater than	CAL-80		
		40 Years @ 122°F	CAL-80		

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

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 216H-054
Rev.: 2

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

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

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Containment Isolation	Operating Time	45 Seconds	Note 3	K	N/A	N/A	Note 1
Plant ID No. SVMU38	Temperature (°F)	192.0	Note 3	C-208	N/A	N/A	Note 1
Component: Solenoid Valve	Pressure (PSIA)	16.25	Note 3	C-208	N/A	N/A	Note 1
Manufacturer: ASCO	Relative Humidity (%)	100.0	Note 3	A	N/A	N/A	Note 1
Model Number: HTX831655	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Isolates Containment	Radiation	7.1×10^5 RADS	1.2×10^6 RADS	T	CAL-80 Note 4	Analysis	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	17 Years Note 5	I	CAL-80 Note 4	Analysis	None
Service: Reactor Coolant Pump Seal Return Isolation Valve	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 208							
Flood Level Elev: N/A Above Flood Level: N/A							
Needed for: Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 216H-054A
Rev.: 2

Prepared by: N Lewis
Checked by: Michael

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

NOTES

1. This component is scheduled for replacement during the first refueling outage subsequent to component on-site availability.
2. The radiation specification value is a 40 year operating dose plus the accident dose present at one day post-LOCA.
3. This solenoid valve controls the air supply to MU38 (the air-operated reactor coolant pump seal return line isolation valve). Failure of the solenoid in the harsh steam conditions resulting from a high energy line break would cause MU38 to move to its fail-safe closed position. Adequate time is allotted for room cooldown so that MU38 can be operated manually if required.
4. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.
5. 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 MATERIAL EVALUATION SHEET

Index No. 216H-054B
Rev.: 2

Prepared by:

N Lewis

Date:

11/1/83

Checked by:

S. M. Dorsett

Date:

11/2/83

Plant I.D. No.: SVMU38

Component: Solenoid Valve

Manufacturer: ASCO

Model No.: HTX831655

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Gaskets	BUNA-N	40 Years @ 104°F	CAL-80	1.5 x 10 ⁷ RADS	CAL-80
Body	Brass	Not Sensitive		Not Affected	
Bonnet	Brass	Not Sensitive		Not Affected	
Adapter	Brass	Not Sensitive		Not Affected	
Retaining Rings	Brass	Not Sensitive		Not Affected	
Screw	Brass	Not Sensitive		Not Affected	
Spring, Disc	Stainless Steel	Not Sensitive		Not Affected	
Spring, Core	Metallic	Not Sensitive		Not Affected	
Sol. Base Sub-Assembly	Metallic	Not Sensitive		Not Affected	
Insert	Acetal (Delrin)	17 Years @ 104°F	CAL-80	1.2 x 10 ⁶ RADS	CAL-80
Pilot Seat Cartridge	Acetal	17 Years @ 104°F	CAL-80	1.2 x 10 ⁶ RADS	CAL-80
Disc	BUNA-N	40 Years @ 104°F	CAL-80	1.5 x 10 ⁷ RADS	CAL-80
Diaphragm Assemblies	BUNA-N, Brass	40 Years @ 104°F	CAL-80	1.5 x 10 ⁷ RADS	CAL-80
Core Tube	Stainless Steel	Not Sensitive		Not Affected	
Core & Plugnut	Stainless Steel	Not Sensitive		Not Affected	
Shading Coil	Copper	Not Sensitive		Not Affected	
Class H Coil: *		40 Years @ 140°F	CAL-80	2.0 x 10 ⁷ 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

Prepared by: A. J. [Signature] Date: 11/1/83
Checked by: [Signature] Date: 11/2/83

Index No.: 216H-054
Rev.: 2

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Containment Isolation	Operating Time	45 Seconds	1.1 Years	K	J-18 Note 2	Simultaneous Test	None
Plant ID No. SVMU38	Temperature (°F)	192.0	346.0	C-208	J-18	Simultaneous Test	None
Component: Solenoid Valve	Pressure (PSIA)	16.25	124.7	C-208	J-18	Simultaneous Test	None
Manufacturer: ASCO	Relative Humidity (%)	100.0	100.0	A	J-18	Simultaneous Test	None
Model Number: NP8316_E Note 1	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Isolates Containment	Radiation	1.97 x 10 ⁶ RADS	2.0 x 10 ⁷ RADS	T	J-18 J-41	Sequential Test	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	40 Years	I	J-18 J-41	Sequential Test	None
Service: Reactor Coolant Pump Seal Return Isolation Valve	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 208							
Flood Level Elev: N/A							
Above Flood Level: N/A							
Needed for:							
Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 216H-054A
Rev.: 2

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

NOTES

1. This component replaces HTX831655 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 (25 days). (Reference J-18)

The temperature in Room 208 peaks at 192°F in 7 seconds. The pressure in Room 208 peaks at 16.3 psia in 1.5 seconds. The conditions in Room 208 return to ambient in 20 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 LOCA. 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 LOCA. (Reference J-18, C-208)

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 216H-055
Rev.: 2

Prepared by: D. L. Linn Date: 11/4/83
Checked by: D. McDonald Date: 11/2/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Containment Isolation	Operating Time	17 Seconds	17 Years	K	Note 2	Analysis	None
Plant ID No. SVMU66A	Temperature (°F)	192.0	Exempt	C-208	Note 1	N/A	None
Component: Solenoid Valve	Pressure (PSIA)	16.25	Exempt	C-208	Note 1	N/A	None
Manufacturer: ASCO	Relative Humidity (%)	100.0	Exempt	A	Note 1	N/A	None
Model Number: FT8344-A5	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Isolates Containment	Radiation	7.1 x 10 ⁵ RADS	1.2 x 10 ⁶ RADS	T	CAL-80 Note 2,4	Analysis	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	17 Years Note 3	I	CAL-80 Note 2 J-41	Analysis	None
Service: Reactor Coolant Pump (2-1) Seal Injection Isolation Valve	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 208							
Flood Level Elev: N/A							
Above Flood Level: N/A							
Needed for:							
Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Prepared by:

N Lewis

Date:

11/1/83

NOTES

Checked by:

J. McLaughlin

Date:

11/2/83

Index No.: 216H-055A

Rev.: 2

1. This solenoid valve controls the air supply to an air-operated reactor coolant pump seal injection isolation valve. The only safety-related function performed by the isolation valve is the isolation of containment during a loss of coolant accident.

The solenoid valve is exempt from qualification because it does not perform an essential safety-related function in the harsh steam environment due to a high energy line break. Failure of this solenoid would cause the isolation valve to move to (or remain in) its fail-safe closed position. This closure results in the isolation of the seal injection line from the reactor coolant pump seals. This action will not degrade other safety-related functions because the reactor coolant pumps are not needed to mitigate accidents. In addition, the solenoid valves can be manually operated after room cooldown has occurred (20 minutes).

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.

2. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.
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.
4. Radiation valve is 40 day background dose plus the one day accident dose. This valve is required to function to isolate containment in 15 seconds following a LOCA. Subsequent failure will not degrade other safety-related functions or mislead the operator.

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

COMPONENT MATERIALS EVALUATION SHEET

Index No.: 216H-055B
Rev.: 2

Prepared by:

Date:

Checked by:

Date:

Plant I.D. No.: SVMU66A

Component: Solenoid Valve

Manufacturer: ASCO

Model No.: FT8344-A5

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Gasket, Shaft	Lead Copper	Not Sensitive		Not Affected	
U-cups	BUNA-N	40 Years @ 104°F	CAL-80	1.5×10^7 RADS	CAL-80
Gaskets	BUNA-N	40 Years @ 104°F	CAL-80	1.5×10^7 RADS	CAL-80
Discs	BUNA-N	40 Years @ 104°F	CAL-80	1.5×10^7 RADS	CAL-80
Shaft, Main	Brass	Not Sensitive		Not Affected	
Insert	Brass	Not Sensitive		Not Affected	
Spring, Core	Stainless Steel	Not Sensitive		Not Affected	
Spring, Disc	Stainless Steel	Not Sensitive		Not Affected	
Piston	Brass	Not Sensitive		Not Affected	
Screw	Steel	Not Sensitive		Not Affected	
Body	Brass	Not Sensitive		Not Affected	
Seat	Brass	Not Sensitive		Not Affected	
Nut	Brass	Not Sensitive		Not Affected	
Core Tube	Stainless Steel	Not Sensitive		Not Affected	
Core & Plugnut	Stainless Steel	Not Sensitive		Not Affected	
Shading Coil	Copper	Not Sensitive		Not Affected	
Insert	Plastic (Acetal)	17 Years @ 104°F	CAL-80	1.2×10^6 RADS	CAL-80
Pilot Seat Cartridge	Acetal	17 Years @ 104°F	CAL-80	1.2×10^6 RADS	CAL-80
Class F Coil:				2.0×10^7 RADS	CAL-80
Bobbin	Polysulfone	40 Years @ 220°F	CAL-80		
Encapsulant	Epoxy	40 Years @ 147°F	CAL-80		
Magnet Wire Insulation	Enamel	Greater than 40 Years @ 122°F	CAL-80		
Inner Layer Insulation	Nomex	Greater than 40 Years @ 122°F	CAL-80		
Lead Wire Insulation	Cross-Linked Polyethylene	40 Years @ 122°F	CAL-80		

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

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 216H-056
Rev.: 2

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

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Containment Isolation	Operating Time	17 Seconds	17 Years	K	Note 2	Analysis	None
Plant ID No. SVMU66B	Temperature (°F)	192.0	Exempt	C-208	Note 1	N/A	None
Component: Solenoid Valve	Pressure (PSIA)	16.25	Exempt	C-208	Note 1	N/A	None
Manufacturer: ASCO	Relative Humidity (%)	100.0	Exempt	A	Note 1	N/A	None
Model Number: FT8344-A5	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Isolates Containment	Radiation	7.1 x 10 ⁵ RADS	1.2 x 10 ⁶ RADS	T	CAL-80 Note 2,4	Analysis	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	17 Years Note 3	I	CAL-80 Note 2 J-41	Analysis	None
Service: Reactor Coolant Pump (2-2) Seal Injection Isolation Valve	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 208							
Flood Level Elev: N/A							
Above Flood Level: N/A							
Needed for: Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 216H-056A
Rev.: 2

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

NOTES

1. This solenoid valve controls the air supply to an air-operated reactor coolant pump seal injection isolation valve. The only safety-related function performed by the isolation valve is the isolation of containment during a loss of coolant accident.

The solenoid valve is exempt from qualification because it does not perform an essential safety-related function in the harsh steam environment due to a high energy line break. Failure of this solenoid would cause the isolation valve to move to (or remain in) its fail-safe closed position. This closure results in the isolation of the seal injection line from the reactor coolant pump seals. This action will not degrade other safety-related functions because the reactor coolant pumps are not needed to mitigate accidents. In addition, the solenoid valves can be manually operated after room cooldown has occurred (20 minutes).

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.

2. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.
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.
4. Radiation valve is 40 day background dose plus the one day accident dose. This valve is required to function to isolate containment in 15 seconds following a LOCA. Subsequent failure will not degrade other safety-related functions or mislead the operator.

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

COMPONENT MATERIALS EVALUATION SHEET

Index No.: 216H-056B
Rev.: 2

Prepared by: N. J. [Signature] Date: 11/1/83
Checked by: [Signature] Date: 4/2/83

Plant I.D. No.: SVMU66B

Manufacturer: ASCO

Component: Solenoid Valve

Model No.: FT8344-A5

Parts List	Materials List	THERMAL AGING		RADIATION	
		Qualification	Reference	Qualification	Reference
Gasket, Shaft	Lead Copper	Not Sensitive		Not Affected	
U-cups	BUNA-N	40 Years @ 104°F	CAL-80	1.5 x 10 ⁷ RADS	CAL-80
Gaskets	BUNA-N	40 Years @ 104°F	CAL-80	1.5 x 10 ⁷ RADS	CAL-80
Discs	BUNA-N	40 Years @ 104°F	CAL-80	1.5 x 10 ⁷ RADS	CAL-80
Shaft, Main	Brass	Not Sensitive		Not Affected	
Insert	Brass	Not Sensitive		Not Affected	
Spring, Core	Stainless Steel	Not Sensitive		Not Affected	
Spring, Disc	Stainless Steel	Not Sensitive		Not Affected	
Piston	Brass	Not Sensitive		Not Affected	
Screw	Steel	Not Sensitive		Not Affected	
Body	Brass	Not Sensitive		Not Affected	
Seat	Brass	Not Sensitive		Not Affected	
Nut	Brass	Not Sensitive		Not Affected	
Core Tube	Stainless Steel	Not Sensitive		Not Affected	
Core & Plugnut	Stainless Steel	Not Sensitive		Not Affected	
Shading Coil	Copper	Not Sensitive		Not Affected	
Insert	Plastic (Acetal)	Not Sensitive		Not Affected	
Pilot Seat Cartridge	Acetal	17 Years @ 104°F	CAL-80	1.2 x 10 ⁶ RADS	CAL-80
Class F Coil:		17 Years @ 104°F	CAL-80	1.2 x 10 ⁶ RADS	CAL-80
Bobbin	Polysulfone	40 Years @ 220°F	CAL-80	2.0 x 10 ⁷ RADS	CAL-80
Encapsulant	Epoxy	40 Years @ 147°F	CAL-80		
Magnet Wire Insulation	Enamel	Greater than	CAL-80		
Inner Layer Insulation	Nomex	40 Years @ 122°F			
		Greater than	CAL-80		
Lead Wire Insulation	Cross-Linked Polyethylene	40 Years @ 122°F			
		40 Years @ 122°F	CAL-80		

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

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Prepared by: [Signature] Date: 11/1/01
Checked by: [Signature] Date: 4/2/83

Index No.: 216H-057
Rev.: 2

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Containment Isolation	Operating Time	17 Seconds	17 Years Note 2	K	Note 2	Analysis	None
Plant ID No. SVM366C	Temperature (°F)	192.0	Exempt	C-208	Note 1	N/A	None
Component: Solenoid Valve	Pressure (PSIA)	16.25	Exempt	C-208	Note 1	N/A	None
Manufacturer: ASCO	Relative Humidity (%)	100.0	Exempt	A	Note 1	N/A	None
Model Number: PT8344-A5	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Isolates Containment	Radiation	7.1 x 10 ⁵ RADS	1.2 x 10 ⁶ RADS	T	CAL-80 Note 2,4	Analysis	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	17 Years Note 3	I	CAL-80 Note 2 J-41	Analysis	None
Service: Reactor Coolant Pump (1-1) Seal Injection Isolation Valve	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 208							
Flood Level Elev: N/A							
Above Flood Level: N/A							
Needed for:							
Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input type="checkbox"/>							

Facility: B. Is-Besse Unit 1
Docket: 50-346

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 216H-057A
Rev.: 2

Prepared by: N Lewis
Checked by: [Signature]

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

NOTES

1. This solenoid valve controls the air supply to an air-operated reactor coolant pump seal injection isolation valve. The only safety-related function performed by the isolation valve is the isolation of containment during a loss of coolant accident.

The solenoid valve is exempt from qualification because it does not perform an essential safety-related function in the harsh steam environment due to a high energy line break. Failure of this solenoid would cause the isolation valve to move to (or remain in) its fail-safe closed position. This closure results in the isolation of the seal injection line from the reactor coolant pump seals. This action will not degrade other safety-related functions because the reactor coolant pumps are not needed to mitigate accidents. In addition, the solenoid valves can be manually operated after room cooldown has occurred (20 minutes).

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.

2. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.
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.
4. Radiation valve is 40 day background dose plus the one day accident dose. This valve is required to function to isolate containment in 15 seconds following a LOCA. Subsequent failure will not degrade other safety-related functions or mislead the operator.

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

COMPONENT MATERIALS EVALUATION SHEET

Index No.: 216H-057B
Rev.: 2

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

Plant I.D. No.: SVMU66C
Manufacturer: ASCO

Component: Solenoid Valve
Model No.: FT8344-A5

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Gasket, Shaft	Lead Copper	Not Sensitive		Not Affected	
U-cups	BUNA-N	40 Years @ 104°F	CAL-80	1.5×10^7 RADS	CAL-80
Gaskets	BUNA-N	40 Years @ 104°F	CAL-80	1.5×10^7 RADS	CAL-80
Discs	BUNA-N	40 Years @ 104°F	CAL-80	1.5×10^7 RADS	CAL-80
Shaft, Main	Brass	Not Sensitive		Not Affected	
Insert	Brass	Not Sensitive		Not Affected	
Spring, Core	Stainless Steel	Not Sensitive		Not Affected	
Spring, Disc	Stainless Steel	Not Sensitive		Not Affected	
Piston	Brass	Not Sensitive		Not Affected	
Screw	Steel	Not Sensitive		Not Affected	
Body	Brass	Not Sensitive		Not Affected	
Seat	Brass	Not Sensitive		Not Affected	
Nut	Brass	Not Sensitive		Not Affected	
Core Tube	Stainless Steel	Not Sensitive		Not Affected	
Core & Plugnut	Stainless Steel	Not Sensitive		Not Affected	
Shading Coil	Copper	Not Sensitive		Not Affected	
Insert	Plastic (Acetal)	Not Sensitive		Not Affected	
Pilot Seat Cartridge	Acetal	17 Years @ 104 °F	CAL-80	1.2×10^6 RADS	CAL-80
Class F Coil:		17 Years @ 104 °F	CAL-80	1.2×10^6 RADS	CAL-80
Bobbin	Polysulfone	40 Years @ 220°F	CAL-80	2.0×10^7 RADS	CAL-80
Encapsulant	Epoxy	40 Years @ 147°F	CAL-80		
Magnet Wire Insulation	Enamel	Greater than	CAL-80		
		40 Years @ 122°F			
Inner Layer Insulation	Nomex	Greater than	CAL-80		
		40 Years @ 122°F			
Lead Wire Insulation	Cross-Linked Polyethylene	40 Years @ 122°F	CAL-80		

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

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 216H-058
Rev.: 2

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

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Containment Isolation	Operating Time	17 Seconds	17 Years Note 2	K	Note 2	Analysis	None
Plant ID No. SVMU66D	Temperature (°F)	192.0	Exempt	C-208	Note 1	N/A	None
Component: Solenoid Valve	Pressure (PSIA)	16.25	Exempt	C-208	Note 1	N/A	None
Manufacturer: ASCO	Relative Humidity (%)	100.0	Exempt	A	Note 1	N/A	None
Model Number: FT8344-A5	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Isolates Containment	Radiation	7.1 x 10 ⁵ RADS	1.2 x 10 ⁶ RADS	T	CAL-80 Note 2,4	Analysis	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	17 Years Note 3	I	CAL-80 Note 2 J-41	Analysis	None
Service: Reactor Coolant Pump (1-2) Seal Injection Isolation Valve	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 208							
Flood Level Elev: N/A							
Above Flood Level: N/A							
Needed for:							
Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index NO.: 216H-058A
Rev.: 2

NOTES

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

1. This solenoid valve controls the air supply to an air-operated reactor coolant pump seal injection isolation valve. The only safety-related function performed by the isolation valve is the isolation of containment during a loss of coolant accident.

The solenoid valve is exempt from qualification because it does not perform an essential safety-related function in the harsh steam environment due to a high energy line break. Failure of this solenoid would cause the isolation valve to move to (or remain in) its fail-safe closed position. This closure results in the isolation of the seal injection line from the reactor coolant pump seals. This action will not degrade other safety-related functions because the reactor coolant pumps are not needed to mitigate accidents. In addition, the solenoid valves can be manually operated after room cooldown has occurred (20 minutes).

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.

2. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.
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.
4. Radiation valve is 40 day background dose plus the one day accident dose. This valve is required to function to isolate containment in 15 seconds following a LOCA. Subsequent failure will not degrade other safety-related functions or mislead the operator.

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

COMPONENT MATERIALS EVALUATION SHEET

Index No.: 216H-058B
Rev.: 2

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

Plant I.D. No.: SVMU66D
Manufacturer: ASCO

Component: Solenoid Valve
Model No.: FT8344-A5

Parts List	Materials List	THERMAL AGING		RADIATION	
		Qualification	Reference	Qualification	Reference
Gasket, Shaft	Lead Copper	Not Sensitive		Not Affected	
U-cups	BUNA-N	40 Years @ 104°F	CAL-80	1.5×10^7 RADS	CAL-80
Gaskets	BUNA-N	40 Years @ 104°F	CAL-80	1.5×10^7 RADS	CAL-80
Discs	BUNA-N	40 Years @ 104°F	CAL-80	1.5×10^7 RADS	CAL-80
Shaft, Main	Brass	Not Sensitive		Not Affected	
Insert	Brass	Not Sensitive		Not Affected	
Spring, Core	Stainless Steel	Not Sensitive		Not Affected	
Spring, Disc	Stainless Steel	Not Sensitive		Not Affected	
Piston	Brass	Not Sensitive		Not Affected	
Screw	Steel	Not Sensitive		Not Affected	
Body	Brass	Not Sensitive		Not Affected	
Seat	Brass	Not Sensitive		Not Affected	
Nut	Brass	Not Sensitive		Not Affected	
Core Tube	Stainless Steel	Not Sensitive		Not Affected	
Core & Plugnut	Stainless Steel	Not Sensitive		Not Affected	
Shading Coil	Copper	Not Sensitive		Not Affected	
Insert	Plastic (Acetal)	Not Sensitive		Not Affected	
Pilot Seat Cartridge	Acetal	17 Years @ 104 °F	CAL-80	1.2×10^6 RADS	CAL-80
Class F Coil:		17 Years @ 104 °F	CAL-80	1.2×10^6 RADS	CAL-80
Bobbin	Polysulfone	40 Years @ 220°F	CAL-80	2.0×10^7 RADS	CAL-80
Encapsulant	Epoxy	40 Years @ 147°F	CAL-80		
Magnet Wire Insulation	Enamel	Greater than	CAL-80		
Inner Layer Insulation	Nomex	40 Years @ 122°F	CAL-80		
Lead Wire Insulation	Cross-Linked Polyethylene	Greater than	CAL-80		
		40 Years @ 122°F	CAL-80		

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

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 216H-059
Rev.: 2

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

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Containment Isolation	Operating Time	1 Year	1.1 Years	F	M-28, V-24C Note 1	Simultaneous Test	None
Plant ID No. MV06110	Temperature (°F)	192.0	250.0	C-208	M-28, V-24C	Simultaneous Test	None
Component: Valve Motor Operator	Pressure (PSIA)	16.25	39.7	C-208	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-000	Accuracy: Spec: N/A						
O/N: 370174A	Demon: N/A						
S/N: 168785	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Steam Generator Drain Valve							
Location: Aux. Bldg. Rm. 208	Radiation	1.97 x 10 ⁶ RADS	2.0 x 10 ⁷ RADS	T	M-28, V-24C	Sequential Test	None
Flood Level Elev: N/A	Aging	40 Years	40 Years	I	CAL-93	Sequential Test Analysis	None
Above Flood Level: N/A	Submergence	N/A	N/A	N/A	N/A	N/A	None
Needed for: Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input checked="" type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 216H-059A

Rev.: 2

NOTES

Prepared by: N Lewis
Checked by: Williamson

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 208 peaks at 192°F in 7.1 seconds. The pressure in Room 208 peaks at 16.25 psia in 1.55 seconds. The temperature and pressure in Room 208 return to ambient conditions in 20 minutes.

Based on the above, it is felt that the 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 functional during the test, it can be concluded that the valve motor operator would remain functional during and after exposure to the harsh environment which would result from the postulated HELB. (Reference C-208)

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 216H-060
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: Containment Isolation	Operating Time	1 Year	1.1 Years	F	M-28, V-24C Note 1	Simultaneous Test	None
Plant ID No. MV0611A	Temperature (°F)	192.0	250.0	C-208	M-28, V-24C	Simultaneous Test	None
Component: Valve Motor Operator	Pressure (PSIA)	16.25	39.7	C-208	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-000 O/N: 392414A S/N: 230160	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Steam Generator Drain Valve	Radiation	1.97 x 10 ⁶ RADS	2.0 x 10 ⁶ 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: Steam Generator Drain Valve	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Aux. Bldg. Rm. 208 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: Data-Besse Unit 1
Socket: 50-346

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 216H-060A

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 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 208 peaks at 192°F in 7.1 seconds. The pressure in Room 208 peaks at 16.25 psia in 1.55 seconds. The temperature and pressure in Room 208 return to ambient conditions in 20 minutes.

Based on the above, it is felt that the 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 functional during the test, it can be concluded that the valve motor operator would remain functional during and after exposure to the harsh environment which would result from the postulated HELB. (Reference C-208)

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 216H-061
 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: Containment Isolation	Operating Time	1 Year	1.1 Years	F	M-28, V-24C Note 1	Simultaneous Test	None
Plant ID No. MV06030	Temperature (°F)	198.0	250.0	C-236	M-28, V-24C	Simultaneous Test	None
Component: Valve Motor Operator	Pressure (PSIA)	15.51	39.7	C-236	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-000	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
O/N: 370174A	Radiation	1.97 x 10 ⁶ RADS	2.0 x 10 ⁷ RADS	T	M-28, V-24C	Sequential Test	None
S/N: 168784	Aging	40 Years	40 Years	I	CAL-93	Sequential Test Analysis	None
Function: Steam Generator Drain Valve	Submergence	N/A	N/A	N/A	N/A	N/A	None
Accuracy: Spec: N/A Demon: N/A							
Service: Steam Generator Drain Valve							
Location: Aux. 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"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 216H-061A
Rev.: 2

NOTES

pared by: N. Lewis Date 11/1/83
checked by: A. McGoniff 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 236 peaks at 198°F in 19.0 seconds. The pressure in Room 236 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 the above, it is felt that the 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 functional during the test, it can be concluded that the valve motor operator would remain functional during and after exposure to the harsh environment which would result from the postulated HELB. (Reference C-236)

Facility: Davis-Besse Unit 1
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SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 216H-062
Rev.: 2

Prepared by: N. Harris 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: Containment Isolation	Operating Time	1 Year	1.1 Years	F	M-28, V-24C Note 1	Simultaneous Test	None
Plant ID No. MV0603A	Temperature (°F)	198.0	250.0	C-236	M-28, V-24C	Simultaneous Test	None
Component: Valve Motor Operator	Pressure (PSIA)	15.51	39.7	C-236	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-000	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
O/N: 392414A	Radiation	1.97 x 10 ⁶ RADS	2.0 x 10 ⁷ RADS	T	M-28, V-24C	Sequential Test	None
S/N: 230161	Aging	40 Years	40 Years	I	CAL-93	Sequential Test Analysis	None
Function: Steam Generator Drain Valve	Submergence	N/A	N/A	N/A	N/A	N/A	None
Accuracy: Spec: N/A Demon: N/A							
Service: Steam Generator Drain Valve							
Location: Aux. 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"/>							

ility: Davis Besse Unit 1
cket: 50-346

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 216H-062A

Rev.: 2

NOTES

pared by: N Lewis Date 11/1/83
cked by: W. J. Carroll , Date 11/2/83

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 236 peaks at 198°F in 19.0 seconds. The pressure in Room 236 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 the above, it is felt that the 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 functional during the test, it can be concluded that the valve motor operator would remain functional during and after exposure to the harsh environment which would result from the postulated HELB. (Reference C-236)

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 216H-063
Rev.: 2

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

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Containment Isolation	Operating Time	1 Year	1.1 Years	F	M-24, V-24A Note 1	Simultaneous Test	None
Plant ID No. MVCF02A	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-000 O/N: 364187A S/N: 158233	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: Core Flooding Tank Sample Line	Radiation	1.7 x 10 ⁷ RADS	2.0 x 10 ⁸ RADS	CAL-44	M-25, V-24A	Sequential Test	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	40 Years	I	CAL-93	Sequential Test Analysis	None
Service: Core Flooding Tank Sample Line	Submergence	572' - 2"	578' - 1 1/2"	B	M-3	N/A	None
Location: Containment							
Flood Level Elev: 572'-2"							
Above Flood Level: Yes							
Needed for:							
Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input checked="" type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 216H-063A
Rev.: 2

pared by: N Lewis
checked by: [Signature]

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

NOTES

1. The test subjected the valve motor operator to 1 hour at 329°F and 104.7 psia, then 2 hours at 312°F and 84.7 psia, then 2 hours at 287°F and 54.7 psia, then 19 hours at 256°F and 34.7 psia, and 250°F and 29.7 psia for 6 days. The temperature and pressure inside containment peak at 283°F and 52.0 psia in 17 and 50 seconds, respectively. At 1 hour the conditions are 218°F and 32.7 psia; at 3 hours the conditions are 213°F and 31.7 psia; at 5 hours the conditions are 195°F and 27.7 psia; and at 24 hours the conditions are 143°F and 17 psia. The containment returns to ambient conditions in 7 days.

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

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 216H-064
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 Iter
	Parameter	Specification	Qualification	Specification	Qualification		
System: Containment Isolation	Operating Time	1 Year	1.1 Years	F	M-24, V-24A Note 1	Simultaneous Test	None
Plant ID No. MVCF02B	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	C, 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-000 O/N: 364187A S/N: 158234	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: Core Flooding Tank Sample Line	Radiation	1.7 x 10 ⁷ RADS	2.0 x 10 ⁸ RADS	CAL-44	M-25, V-24A	Sequential Test	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	40 Years	I	CAL-93	Sequential Test Analysis	None
Service: Core Flooding Tank Sample Line	Submergence	572' - 2"	578' - 5"	B	M-4	N/A	None
Location: Containment							
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
Docket: 50-346

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 216H-064A
Rev.: 2

NOTES

Prepared by: A Lewis Date: 11/1/83
Checked by: [Signature] 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 218°F and 32.7 psia; at 3 hours the conditions are 213°F and 31.7 psia; at 5 hours the conditions are 195°F and 27.7 psia; and at 24 hours the conditions are 143°F and 17 psia. The containment returns to ambient conditions in 7 days.

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

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 216H-065
Rev.: 2

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

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Containment Isolation	Operating Time	1 Year	1.1 Years	F	M-24, V-24A Note 1	Simultaneous Test	None
Plant ID No. MVCF05A	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-000	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
O/N: 364187A	Radiation	1.7 x 10 ⁷ RADS	2.0 x 10 ⁸ RADS	CAL-44	M-25, V-24A	Sequential Test	None
S/N: 158235	Aging	40 Years	40 Years	I	CAL-93	Sequential Test Analysis	None
Function: Vent Piping from Core Flooding Tank	Submergence	572' - 2"	598' - 10"	B	M-15	N/A	None
Accuracy: Spec: N/A							
Demon: N/A							
Service: Vent Piping from Core Flooding Tank							
Location: Containment							
Flood Level Elev: 572'-2"							
Above Flood Level: Yes							
Needed for:							
Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input checked="" type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 216H-065A

Rev.: 2

NOTES

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

- 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 218°F and 32.7 psia; at 3 hours the conditions are 213°F and 31.7 psia; at 5 hours the conditions are 195°F and 27.7 psia; and at 24 hours the conditions are 143°F and 17 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)

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 216H-066
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: Containment Isolation	Operating Time	1 Year	1.1 Years	F	M-24, V-24A Note 1	Simultaneous Test	None
Plant ID No. MVCF05B	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-000 O/N: 364187A S/N: 158236	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: Vent Piping from Core Flooding Tank	Radiation	1.7 x 10 ⁷ RADS	2.0 x 10 ⁸ RADS	CAL-44	M-25, V-24A	Sequential Test	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	40 Years	I	CAL-93	Sequential Test Analysis	None
Service: Vent Piping from Core Flooding Tank	Submergence	572' - 2"	598' - 11"	B	M-33	N/A	None
Location: Containment 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
Socket: 50-346

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 216H-066A

Rev.: 3

Prepared by: N. Lewis

Date: 11/1/83

NOTES

Checked by: Amelia

Date: 11/2/83

.. 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 218°F and 32.7 psia; at 3 hours the conditions are 213°F and 31.7 psia; at 5 hours the conditions are 195°F and 27.7 psia; and at 24 hours the conditions are 143°F and 17 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.