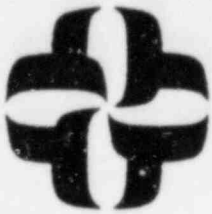


CALCULATION/PROBLEM COVER SHEET



Calculation/Problem No: 1040-001-018

Title: Hydrogen Dilution System 2.15

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

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

MASTER LIST
HARSH ENVIRONMENT
HYDROGEN DILUTION SYSTEM

Index No. 15M-001
Rev.: 2

Prepared by:
Checked by:

N. Lewis
J. McDonald

Date:
Date:

11/1/83
11/2/83

Worksheet Index No.	Rev.	Plant ID Number	Generic Name	LOCATION		REMARKS
				Inside Primary Containment	Outside Primary Containment	
215H-005	2	MC0561	Recirculation Fan Motor	Rm. 407		
215H-006	2	MC0562	Recirculation Fan Motor	Rm. 410		
215H-007	2	MC0621	Blower Fan Motor		Rm. 314	
215H-008	2	MC0622	Blower Fan Motor		Rm. 208	
215H-009	2	MV50370	Valve Motor Operator		Rm. 236	
215H-010	2	MV50380	Valve Motor Operator		Rm. 236	
215H-011	2	MV50650	Valve Motor Operator		Rm. 208	
215H-012	2	MV50670	Valve Motor Operator		Rm. 314	
215H-013	2	MV50900	Valve Motor Operator		Rm. 314	
	2	BEL1A	Motor Control Center		Rm. 209	See 2.21
	2	BEL1B	Motor Control Center		Rm. 304	See 2.21
	2	BEL1D	Motor Control Center		Rm. 227	See 2.21
	2	BF11A	Motor Control Center		Rm. 427	See 2.21
	2	BF11C	Motor Control Center		Rm. 236	See 2.21
	2	BF11D	Motor Control Center		Rm. 227	See 2.21
	2	CDEL1A	Disconnect Switch Cabinet		Rm. 304	See 2.21
	2	CDEL1B-1	Disconnect Switch Cabinet		Rm. 304	See 2.21
	2	CDF11A-1	Disconnect Switch Cabinet		Rm. 427	See 2.21
	2	CDF11A-2	Disconnect Switch Cabinet		Rm. 427	See 2.21
	2	CDF11C	Disconnect Switch Cabinet		Rm. 236	See 2.21
	2	EV50370	Terminal Block Box		Rm. 236	See 2.21
	2	EV50380	Terminal Block Box		Rm. 236	See 2.21
	2	EV50650	Terminal Block Box		Rm. 208	See 2.21
	2	EV50670	Terminal Block Box		Rm. 314	See 2.21
	2	EV50900	Terminal Block Box		Rm. 314	See 2.21
	2	JT3712	Terminal Block Box		Rm. 314	See 2.21
	2	NC0621	Push Button Switch		Rm. 314	See 2.21
	2	NC0622	Push Button Switch		Rm. 208	See 2.21
	2	NV50370	Push Button Switch		Rm. 236	See 2.21
	2	NV50380	Push Button Switch		Rm. 236	See 2.21
	2	NV50650	Push Button Switch		Rm. 208	See 2.21

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

MASTER LIST
HARSH ENVIRONMENT
HYDROGEN DILUTION SYSTEM

Index No: 215M-002
Rev.: 2

Prepared by: N. Lewis

Date: 11/1/83

Checked by: G. Ireland

Date: 11/2/83

[illegible]

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

MASTER LIST
NON-HARSH ENVIRONMENT
HYDROGEN DILUTION SYSTEM

Index No: 215M-003
Rev.: 2

Prepared by: F Lewis
Checked by: [Signature]

Date: 9/30/83
Date: 10/1/83

Worksheet Index No.	Rev.	Plant ID Number	Generic Name	LOCATION		REMARKS
				Inside Primary Containment	Outside Primary Containment	
	0	C5716	Engineering Safety Feature Panel		Rm. 505	
	0	EY50680	Terminal Block Box		Rm. 201A	
	0	MV50680	Valve Motor Operator		Rm. 201A	
	0	NV50680	Push Button Switch		Rm. 427	

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

MASIER LIST

Index No: 215M-004
Rev.: 2

Prepared by:

Checked by:

3 Lewis

Date:

9/3483

Date:

HYDROGEN DILUTION SYSTEM

[illegible]

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No. 215H-005
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: Hydrogen Dilution	Operating Time	1 Year	1 Year 57 Days	F	M-2 ROC-22D V-22A	Simultaneous Test	None
Plant ID No. MC0561							
Component: Recirculation Fan (Motor)	Temperature (°F)	283.0	330.0	H, X	M-2 ROC-22D V-22A	Simultaneous Test	None
Manufacturer: Joy (Reliance)	Pressure (PSIA)	52.0	92.7	G, X	M-2 ROC-22D V-22A	Simultaneous Test	None
Model Number: 500772-498 Serial Number: GF-20662	Relative Humidity (%)	100.0	100.0	A	M-2 ROC-22D V-22A	Simultaneous Test	None
Function: Mixing of Ctmt. Atmosphere for H ₂ Dilution and Purge							
Accuracy: Spec: N/A Demon: N/A	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	M-2 ROC-22D V-22A CAL-40 Note 1	Simultaneous Test, Analysis	None
Service: Containment Recirculation Fan 1							
Location: Containment	Radiation	1.7 x 10 ⁷ RADS	1.0 x 10 ⁹ RADS	CAL-44	M-2 ROC-22D V-22A	Sequential Test	None
Flood Level Elev: 572'-2"							
Above Flood Level: Yes	Aging	40 Years	40 Years	I	M-2 ROC-22D V-22A	Sequential Test	None
Needed for: Hot Shutdown <input checked="" type="checkbox"/>	Submergence	572'-2"	642'-5"	B	M-19	N/A	None
Cold Shutdown <input checked="" type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Prepared by: Y Lewis
Checked by: [Signature]

Date: 11/4/81
Date: 11/2/81

NOTES

Index No.: 215H-005A
Rev.: 2

-
1. 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.: 215H-006
Rev.: 2

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

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Hydrogen Dilution	Operating Time	1 Year	1 Year 57 Days	F	M-2 ROC-22D V-22A	Simultaneous Test	None
Plant ID No. MC0562	Temperature (°F)	283.0	330.0	H, X	M-2 ROC-22D V-22A	Simultaneous Test	None
Component: Recirculation Fan (Motor)	Pressure (PSIA)	52.0	92.7	G, X	M-2 ROC-22D V-22A	Simultaneous Test	None
Manufacturer: Joy (Reliance)	Relative Humidity (%)	100.0	100.0	A	M-2 ROC-22D V-22A	Simultaneous Test	None
Model Number: 500772-498 Serial Number: GF-20663	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	M-2 ROC-22D V-22A CAL-40 Note 1	Simultaneous Test, Analysis	None
Function: Mixing of Ctmt. Atmosphere for H ₂ Dilution and Purge	Radiation	1.7 x 10 ⁷ RADS	1.0 x 10 ⁹ RADS	CAL-44	M-2 ROC-22D V-22A	Sequential Test	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	40 Years	I	M-2 ROC-22D V-22A	Sequential Test	None
Service: Containment Recirculation Fan 2	Submergence	572'-2"	640'-6"	B	M-12	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.: 2154-006A
Rev.: 2

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

NOTES

-
1. 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

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

Index No.: 215H-007
Rev.: 2

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
	System: Hydrogen Dilution	Operating Time	1 Year	20 Years	Note 1		
Plant ID No. MC0621	Temperature (°F)	221.0	Exempt	C-314	Note 2	N/A	None
Component: Blower Fan Motor	Pressure (PSIA)	19.76	Exempt	C-314	Note 2	N/A	None
Manufacturer: Westinghouse	Relative Humidity (%)	100.0	Exempt	A	Note 2	N/A	None
Style Number: 73D72781	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Drives Fan	Radiation	1.0 x 10 ⁶ RADS	1.0 x 10 ⁷ RADS	T	V-41A	Sequential Test	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	20 Years Note 3	I	V-41A	Sequential Test	None
Service: H ₂ Dilution System Blower 1	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 checked="" type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Prepared by: J Lewis
Checked by: [Signature]

Date: 9/30/83
Date: 10/1/83

NOTES

Index No.: 215H-007A
Rev.: 2

1. One-year operating time is used as a conservative maximum specification.
2. This motor operates a hydrogen dilution blower as part of the hydrogen dilution system. In the event of a LOCA, the hydrogen dilution system is designed to add air to the containment vessel to maintain hydrogen concentrations within acceptable limits. The motor is operated manually with a control room switch.

This motor is exempt from qualification because it does not perform a safety-related function in the harsh steam environment caused by a high energy line break. Failure of the motor in this environment will not degrade other safety-related functions because the hydrogen dilution system is not needed to mitigate the effects of a high energy line break accident.

Only if the motor was to fail during operation could its indicating lights give erroneous indication. Since the motor is not operated during a high energy line break, its failure will not mislead the operator. Furthermore, the operator will not be concerned with emergency ventilation system status during a HELB. Increased radiation post-LOCA and HELB are separate effects. The radiation value is the post-LOCA recirculatory fluid accident dose plus the 40-year normal background dose.

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.: 215H-008
Rev.: 2

Prepared by:

F Lewis

Date:

9/29/83

Checked by:

W. J. Condit

Date:

10/1/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Hydrogen Dilution	Operating Time	1 Year	20 Years	Note 1	V-41A	Sequential Test	None
Plant ID No. MC0622							
Component: Blower Fan Motor	Temperature (°F)	192.0	Exempt	C-208	Note 2	N/A	None
Manufacturer: Westinghouse	Pressure (PSIA)	16.25	Exempt	C-208	Note 2	N/A	None
Style Number: 73D72781	Relative Humidity (%)	100.0	Exempt	A	Note 2	N/A	None
Function: Drives Fan							
Accuracy: Spec: N/A Demon: N/A	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Service: H ₂ Dilution System Blower 2							
Location: Auxiliary Bldg. Rm. 208	Radiation	1.97 x 10 ⁶ RADS	1.0 x 10 ⁷ RADS	T	V-41A	Sequential Test	None
Flood Level Elev: N/A							
Above Flood Level: N/A	Aging	40 Years	20 Years Note 3	I	V-41A	Sequential Test	None
Needed for: Hot Shutdown <input checked="" type="checkbox"/>	Submergence	N/A	N/A	N/A	N/A	N/A	None
Cold Shutdown <input checked="" type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index: 215H-008A
Rev.: 2

NOTES

Prepared by: J Lewis Date: 10/10/83
Checked by: W. J. D. D. Date: 11/1/83

1. One-year operating time is used as a conservative maximum specification.
2. This motor operates a hydrogen dilution blower as part of the hydrogen dilution system. In the event of a LOCA, the hydrogen dilution system is designed to add air to the containment vessel to maintain hydrogen concentrations within acceptable limits. The motor is operated manually with a control room switch.

This motor is exempt from qualification because it does not perform a safety-related function in the harsh steam environment caused by a high energy line break. Failure of the motor in this environment will not degrade other safety-related functions because the hydrogen dilution system is not needed to mitigate the effects of a high energy line break accident.

Only if the motor was to fail during operation could its indicating lights give erroneous indication. Since the motor is not operated during a high energy line break, its failure will not mislead the operator. Furthermore, the operator will not be concerned with emergency ventilation system status during a HELB. Increased radiation post-LOCA and HELB are separate effects. The radiation value is the post-LOCA recirculatory fluid accident dose plus the 40-year normal background dose.

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.: 215H-009
Rev.: 2

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

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Hydrogen Dilution System	Operating Time	1 Year	1.1 Years	F	M-28 V-24C Note 1	Simultaneous Test	None
Plant ID No. MV50370	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 O/N: 370756F	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Operates Containment H ₂ Dilution Isolation Valve	Radiation	1.97 x 10 ⁶ RADS	2.0 x 10 ⁷ RADS	T	M-28 V-24C	Sequential Test	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	40 Years	I	CAL-93	Sequential Test Analysis	None
Service: Containment H ₂ Dilution Isolation Valve	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 236							
Flood Level Elev: N/A							
Above Flood Level: N/A							
Needed for: Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input checked="" type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 215H-005A
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 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 after 6.7 minutes.

Based on this information, it can be concluded that the laboratory test subjected the valve motor operator to an overall more severe environment than that which would result from a postulated HELB. Since the valve motor operator remained operable throughout the test and functional after the test, it can be concluded that the valve motor operator will remain functional during and after exposure to the accident environment which would result from the postulated HELB. (Reference C-236)

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 215H-010
Rev.: 2

Prepared by: N Lewis Date: 11/1/82
Checked by: [Signature] Date: 11/4/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Hydrogen Dilution System	Operating Time	1 Year	1.1 Years	F	M-28 V-24C Note 1	Simultaneous Test	None
Plant ID No. MV50380	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 O/N: 370756F	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Operates Containment H ₂ Dilution Isolation Valve	Radiation	1.97 x 10 ⁶ RADS	2.0 x 10 ⁷ RADS	T	M-28 V-24C	Sequential Test	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	40 Years	I	CAL-93	Sequential Test Analysis	None
Service: Containment H ₂ Dilution Isolation Valve	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 236							
Flood Level Elev: N/A Above Flood Level: N/A							
Needed for: Hot Shutdown <input checked="" type="checkbox"/> Cold Shutdown <input checked="" type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 215H-010A
Rev.: 2

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

NOTES

1. The test subjected the valve motor operator to a transient of 300°F and 84.7 psia for 32 minutes, followed by a cooldown to 120°F in 3.2 hours. The valve motor operator was then subjected to a second transient of 300°F and 44.7 psia, which was maintained for 92 hours, then a cooldown to 200°F and 24.7 psia, which was maintained for 24 days. The temperature in Room 236 peaks at 198°F in 19.0 seconds. The pressure in Room 236 peaks at 15.51 psia in 1.60 seconds. The conditions in Room 236 return to ambient after 6.7 minutes.

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index 215H-011
Rev.: 2

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

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Hydrogen Dilution System	Operating Time	1 Year	1.1 Years	F	M-26 V-24C Note 1	Simultaneous Test	None
Plant ID No. MV50650	Temperature (°F)	192.0	300.0	C-208	M-26 V-24C	Simultaneous Test	None
Component: Valve Motor Operator	Pressure (PSIA)	16.25	84.7	C-208	M-26 V-24C	Simultaneous Test	None
Manufacturer: Limitorque	Relative Humidity (%)	100.0	100.0	A	M-26 V-24C	Simultaneous Test	None
Model Number: SMB-000 O/N: 370756A S/N: 195592	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Operates Containment H ₂ Dilution Inlet Isolation Valve	Radiation	1.97 x 10 ⁶ RADS	2.0 x 10 ⁸ RADS	T	M-26 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: H ₂ Dilution Containment Inlet 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 checked="" type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 215H-011A

Rev.: 2

NOTES

Prepared by: H Lewis
Checked by: [Signature]

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

-
1. The test subjected the valve motor operator to a transient of 300°F and 84.7 psia for 32 minutes, followed by a cooldown to 120°F in 3.2 hours. The valve motor operator was then subjected to a second transient of 300°F and 44.7 psia, which was maintained for 92 hours, then a cooldown to 200°F and 24.7 psia, which was maintained for 24 days. The temperature in Room 208 peaks at 192°F in 7.1 seconds. The pressure in Room 208 peaks at 16.25 psia in 1.55 seconds. The conditions in Room 208 return to ambient after 29 minutes.

Based on this information, it can be concluded that the laboratory test subjected the valve motor operator to an overall more severe environment than that which would result from a postulated HELB. Since the valve motor operator remained operable throughout the test and functional after the test, it can be concluded that the valve motor operator will remain functional during and after exposure to the accident environment which would result from the postulated HELB. (Reference C-208)

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index: 215H-012
Rev.: 2

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

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Hydrogen Dilution System	Operating Time	1 Year	1.1 Years	F	M-28 V-24G Note 1	Simultaneous Test	None
Plant ID No. MV50670	Temperature (°F)	221.0	250.0	C-314	M-28 V-24G	Simultaneous Test	None
Component: Valve Motor Operator	Pressure (PSIA)	19.76	39.7	C-314	M-28 V-24G	Simultaneous Test	None
Manufacturer: Limitorque	Relative Humidity (%)	100.0	100.0	A	M-28 V-24G	Simultaneous Test	None
Model Number: O/N: 390480B	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Operates Service Water Valve to H ₂ Dilution Blower #1	Radiation	1.0 x 10 ⁶ RADS	2.0 x 10 ⁷ RADS	T	M-28 V-24G	Sequential Test	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	40 Years	I	CAL-93	Sequential Test Analysis	None
Service: H ₂ Dilution Blower #1 Service Water 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 checked="" type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: E15H-012A

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 314 peaks at 221.0°F in 1.55. The pressure in Room 314 peaks at 19.76 psia in .086 seconds. The temperature and pressure in Room 314 return to ambient conditions after 8 minutes.

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index: 215H-013
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: Hydrogen Dilution System	Operating Time	1 Year	1.1 Years	F	M-28 V-24C Note 1	Simultaneous Test	None
Plant ID No. MV50900	Temperature (°F)	221.0	250.0	C-314	M-28 V-24C	Simultaneous Test	None
Component: Valve Motor Operator	Pressure (PSIA)	19.76	39.7	C-314	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-000-2 O/N: 370756F	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Operates Containment H ₂ Dilution Inlet Isolation Valve	Radiation	1.0 x 10 ⁶ RADS	2.0 x 10 ⁷ RADS	T	M-28 V-24C	Sequential Test	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	40 Years	I	CAL-93	Sequential Test Analysis	None
Service: Containment H ₂ Dilution Inlet Isolation Valve	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 314	Hot Shutdown	<input checked="" type="checkbox"/>					
Flood Level Elev: N/A	Cold Shutdown	<input checked="" type="checkbox"/>					
Above Flood Level: N/A							
Needed for:							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

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NOTES

Prepared by: N Lewis Date: 11/6/83
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 22.0 seconds. The pressure in the containment annulus peaks at 15.32 psia in 5.0 seconds. The temperature and pressure in the containment annulus return to ambient after 6.7 minutes.

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