CALCULATION/PROBLEM COVER SHEET

Calculation/Problem No: 1040-001-025

Title: Emergency Ventilation System 2.22

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

Job No: 1040-001-671

I & E Bulletin 79-01B
Equipment Qualification

Design Input/References:

Design Inputs are outlined in the Cover Report.

Assumptions:

Assumptions are outlined in the Cover Report.

Method:

Methods are outlined in the Cover Report.

Remarks:

EDS Nuclear Report No. 02-1040-1076.

REV. NO.	REVISION	APPROVED	DATE
0	Original	Jeffrey S. Haverly	10-2-81
2	GENERAL MANUAL REVISIONS	N K Woodward	11/2/83

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

MASTER LIST
HARSH ENVIRONMENT
EMERGENCY VENTILATION SYSTEM

Index No: 222M-001
Rev.: 2

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

Worksheet Index No.	Rev.	Plant ID Number	Generic Name	LOCATION: Inside Primary Containment	LOCATION: Outside Primary Containment	REMARKS
222H-005	2	MC0301	Ventilation Fan Motor		Rm. 515	
222H-006	2	MC0302	Ventilation Fan Motor		Rm. 515	
222H-007	2	MC5017	Damper Motor Operator		Rm. 515	
222H-008	2	MC5018	Damper Motor Operator		Rm. 515	
222H-009	2	MC5056	Damper Motor Operator		Rm. 515	
222H-010	2	MC5057	Damper Motor Operator		Rm. 515	
222H-011	2	MV5000A	Damper Motor Operator		Rm. 515	
222H-012	2	MV5000B	Damper Motor Operator		Rm. 515	
222H-013	2	MV5014A	Damper Motor Operator		Rm. 515	
222H-014	2	MV5014B	Damper Motor Operator		Rm. 515	
222H-015	2	MV50240	Valve Motor Operator		Rm. 515	
222H-016	2	MV50250	Valve Motor Operator		Rm. 515	
222H-017	2	PDC5000	Pressure Differential Controller		Rm. 304	
222H-018	2	PDIS5017	Pressure Differential Switch		Rm. 515	
222H-019	2	PDIS5018	Pressure Differential Switch		Rm. 515	
222H-020	2	PDT5000	Pressure Differential Transmitter		Rm. 303	
222H-021	2	PDT5014	Pressure Differential Transmitter		Rm. 515	
222H-022	2	PDY5000C	Current Repeater		Rm. 304	
222H-023	2	SV8446	Solenoid Valve		Rm. 427	
222H-024	2	TSH5022A	Temperature Switch		Rm. 515	
222H-025	2	TSH5022B	Temperature Switch		Rm. 515	
222H-026	2	TSH5058A	Temperature Switch		Rm. 515	
222H-027	2	TSH5058B	Temperature Switch		Rm. 515	
222H-028	2	PDY5000A	Signal Buffer		Rm. 304	
222H-029	2	PDY5000B	Power Supply		Rm. 304	
	2	BYE2	Motor Control Center		Rm. 304	See 2.21
	2	BYF2	Motor Control Center		Rm. 427	See 2.21
	2	EC5017	Terminal Block Box		Rm. 515	See 2.21
	2	EC5018	Terminal Block Box		Rm. 515	See 2.21

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

MASTER LIST
HARSH ENVIRONMENT
EMERGENCY VENTILATION SYSTEM

Index No: 222M-002
Rev.: 2

Prepared by: N Lewis Date 11/1/93
Checked by: [signature] Date 11/4/93

Worksheet Index No.	Rev.	Plant ID Number	Generic Name	LOCATION		REMARKS
				Inside Primary Containment	Outside Primary Containment	
	2	EC5056	Terminal Block Box		Rm. 515	See 2.21
	2	EC5057	Terminal Block Box		Rm. 515	See 2.21
	2	EV50240	Terminal Block Box		Rm. 515	See 2.21
	2	EV50250	Terminal Block Box		Rm. 515	See 2.21
	2	JT3704	Terminal Block Box		Rm. 304	See 2.21
	2	JT3803	Terminal Block Box		Rm. 304	See 2.21
	2	NC5017	Push Button Switch		Rm. 515	See 2.21
	2	NC5018	Push Button Switch		Rm. 515	See 2.21
	2	NC5056	Push Button Switch		Rm. 515	See 2.21
	2	NC5057	Push Button Switch		Rm. 515	See 2.21

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

MASTER LIST
NON-HARSH ENVIRONMENT
EMERGENCY VENTILATION SYSTEM

Index No: 222M-003
Rev.: 2

Prepared by: N Lewis Date 11/1/93
Checked by: [signature] Date 11/4/93

Worksheet Index No.	Rev.	Plant ID Number	Generic Name	LOCATION: Inside Primary Containment	LOCATION: Outside Primary Containment	REMARKS
	0	BE12A	Motor Control Center		Rm. 429	
	0	BF12A	Motor Control Center		Rm. 428	
	0	C5716	Engineering Safety Feature Panel		Rm. 505	
	0	C5717	Engineering Safety Feature Panel		Rm. 505	
	0	CDE12A1	Disconnect Switch Cabinet		Rm. 429	
	0	CDE12A2	Disconnect Switch Cabinet		Rm. 429	
	0	CDF12A1	Disconnect Switch Cabinet		Rm. 428	
	0	PDC5014	Pressure Differential Controller		Rm. 310	
	0	PDY5014C	Pressure Relay		Rm. 310	
	0	RC4604	Relay Cabinet		Rm. 429	
	0	RC4605	Relay Cabinet		Rm. 428	

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

MASTER LIST

Index No: 222M-004
Rev.: 2

EMERGENCY VENTILATION SYSTEM

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

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

Facility: Davis-Besse Unit 1 SYSTEM COMPONENT EVALUATION WORKSHEET Index No.: 222H-005
Docket: 50-346 Rev.: 2

Prepared by: [signature] Date: 11/18/83
Checked by: J. McDonald Date: 11/21/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Emergency Ventilation System	Operating Time	1 Year	40 Years	F	Note 1	N/A	None
Plant ID No. MC0301	Temperature (°F)	203.0	311.0	C-515	Note 1	N/A	None
Component: Ventilation Fan Motor							
Manufacturer: General Electric	Pressure (PSIA)	15.60	Greater than 15.7	C-515	Note 1	N/A	None
Model Number: 5K254AN6359							
	Relative Humidity (%)	100.0	100.0	A	Note 1	N/A	None
Function: Drives Ventilation Fan							
Accuracy: Spec: N/A Demon: N/A	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Service: Emergency Ventilation Fan 1							
Location: Auxiliary Bldg. Rm. 515	Radiation	9.0×10^2 RADS	5.0×10^7 RADS	T	CAL-84 Note 2	Analysis	None
Flood Level Elev: N/A							
Above Flood Level: N/A	Aging	40 Years	40 Years	I	CAL-84 Note 2	Analysis	None
Needed for:							
Hot Shutdown [X]	Submergence	N/A	N/A	N/A	N/A	N/A	None
Cold Shutdown [X]							

Facility: Davis-Besse Unit 1 SYSTEM COMPONENT EVALUATION WORKSHEET Index No.: 222H-005A
Docket: 50-346 Rev.: 2

NOTES

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

1. This motor is a 2 horsepower, continuous duty, totally enclosed, air over cooled motor, rated NEMA design B with a Class F high temperature insulation system. This motor is not utilized during normal plant operation and is operated only during emergency conditions. Room 515 conditions peak at 203°F and 15.6 psia in 40 seconds and return to ambient in approximately 18 minutes. The low pressure of less than 1.0 psig and the 100% relative humidity will not affect this totally enclosed motor. Class F insulation systems are rated at 155°C (311°F) continuous duty. An 18-minute transient peaking at 203°F will not be approaching the thermal limit of the insulation system. The motor leads are attached with qualified heat shrink connections. Bearing lubrication is addressed through normal plant maintenance procedures. (Reference V-18A)

2. The materials used in this review are from motors in the same series as those being qualified. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on the attached evaluation.

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 222H-005
Rev.: 2

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

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Emergency Ventilation System	Operating Time	1 Year	40 Years	F	Note 2	Analysis	None
Plant ID No. MC0301	Temperature (°F)	203.0	Exempt	C-515	Note 1	Analysis	None
Component: Ventilation Fan Motor							
Manufacturer: General Electric	Pressure (PSIA)	15.60	Exempt	C-515	Note 1	Analysis	None
Model Number: 5K254AN6359							
Function: Drives Ventilation Fan	Relative Humidity (%)	100.0	Exempt	A	Note 1	Analysis	None
Accuracy: Spec: N/A Demon: N/A	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Service: Emergency Ventilation Fan 1							
Location: Auxiliary Bldg. Rm. 515	Radiation	9×10^2 Rads	5×10^7 Rads	T	CAL 84 Note 2	Analysis	None
Flood Level Elev: N/A Above Flood Level: N/A	Aging	40 Years	40 Years	I	Note 2	Analysis	None
Needed for:							
Hot Shutdown [X]	Submergence	N/A	N/A	N/A	N/A	N/A	None
Cold Shutdown [X]							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 222H-005A
Rev.: 2

NOTES

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

1. The harsh environment seen by this component is due to a main steam to auxiliary feed pump turbine line break. The component is exempted from qualification since its function is to maintain negative pressure in the annulus penetration room area and it would not be required to mitigate the high energy line break of concern. Failure of the component in the harsh environment would not impact safety-related functions or mislead the operator.

2. This motor is a part of the normal preventive maintenance program.

Facility: Davis-Besse Unit 1 — COMPONENT MATERIALS EVALUATION SHEET — Index No.: 222H-005B
Docket: 50-346 — Rev.: 2

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

Plant I.D. No.: MC0301 — Component: Ventilation Fan Motor
Manufacturer: General Electric — Model No.: 5K254AN6359

		THERMAL AGING		RADIATION	
Parts List *	Materials List	Qualification	Reference	Qualification	Reference
Insulation	Dacro-Mylar	40 Years @ 122°F	CAL-84	8.7×10^7 RADS	CAL-84
	Polyester Glass	40 Years @ 266°F	CAL-84	1.0×10^9 RADS	CAL-84
	Polyester Varnish	40 Years @ 266°F	CAL-84	1.0×10^9 RADS	CAL-84
Insulation	EPDM	40 Years @ 172°F	CAL-84	5.0×10^7 RADS	CAL-84
Wedge	Polyester Glass	40 Years @ 266°F	CAL-84	1.0×10^9 RADS	CAL-84
Wire Insulation	Alkanex (Polyester)	40 Years @ 266°F	CAL-84	1.0×10^9 RADS	CAL-84

Material & Parts List Reference: ROC-18A

* Only non-metallic parts are listed. Metallic parts are not considered sensitive to thermal aging and are not affected by radiation.

Facility: Davis-Besse Unit 1 SYSTEM COMPONENT EVALUATION WORKSHEET Index No.: 222H-006
Docket: 50-346 Rev.: 2

Prepared by: _____ Date: 4/1/83
Checked by: _____ Date: 4/12/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Emergency Ventilation System	Operating Time	1 Year	40 Years	F	Note 1	N/A	None
Plant ID No. MCU302	Temperature (°F)	203.0	311.0	C-515	Note 1	N/A	None
Component: Ventilation Fan Motor							
Manufacturer: General Electric	Pressure (PSIA)	15.60	Greater than 15.7	C-515	Note 1	N/A	None
Model Number: 5K254AN6359							
	Relative Humidity (%)	100.0	100.0	A	Note 1	N/A	None
Function: Drives Ventilation Fan							
Accuracy: Spec: N/A Demon: N/A	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Service: Emergency Ventilation Fan 1							
Location: Auxiliary Bldg. Rm. 515	Radiation	9.0×10^2 RADS	5.0×10^7 RADS	T	CAL-84 Note 2	Analysis	None
Flood Level Elev: N/A Above Flood Level: N/A	Aging	40 Years	40 Years	I	CAL-84 Note 2	Analysis	None
Needed for:							
Hot Shutdown [X]	Submergence	N/A	N/A	N/A	N/A	N/A	None
Cold Shutdown [X]							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index NO.: 222H-006A
Rev.: 2

NOTES

Prepared by: D Lunn Date 11/1/83
Checked by: G Rodbuld Date 11/3/83

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1. This motor is a 2 horsepower, continuous duty, totally enclosed, air over cooled motor, rated NEMA design B with a Class F high temperature insulation system. This motor is not utilized during normal plant operation and is operated only during emergency conditions. Room 515 conditions peak at 203°F and 15.6 psia in 40 seconds and return to ambient in approximately 18 minutes. The low pressure of less than 1.0 psig and the 100% relative humidity will not affect this totally enclosed motor. Class F insulation systems are rated at 155°C (311°F) continuous duty. An 18-minute transient peaking at 203°F will not be approaching the thermal limit of the insulation system. The motor leads are attached with qualified heat shrink connections. Bearing lubrication is addressed through normal plant maintenance procedures. (Reference V-18A)

2. The materials used in this review are from motors in the same series as those being qualified. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on the attached evaluation.

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 222H-006
Rev.: 2

Prepared by: N Lewis Date: 11/1/87
Checked by: [signature] Date: 11/3/87

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Emergency Ventilation System Plant ID No. MC0302 Component: Ventilation Fan Motor Manufacturer: General Electric Model Number: 5K254AN6359 Function: Drives Ventilation Fan Accuracy: Spec: N/A Demon: N/A Service: Emergency Ventilation Fan 2 Location: Auxiliary Bldg. Rm. 515 Flood Level Elev: N/A Above Flood Level: N/A Needed for: Hot Shutdown | X | Cold Shutdown | X |	Operating Time	1 Year	40 Years	P	Note 2	Analysis	None
	Temperature (°F)	203.0	Exempt	C-515	Note 1	Analysis	None
	Pressure (PSIA)	15.60	Exempt	C-515	Note 1	Analysis	None
	Relative Humidity (%)	100.0	Exempt	A	Note 1	Analysis	None
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
	Radiation	9×10^2 Rads	5×10^7 Rads	T	CAL 84 Note 2	Analysis	None
	Aging	40 Years	40 Years	I	Note 2	Analysis	None
	Submergence	N/A	N/A	N/A	N/A	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 222H-006A
Rev.: 2

NOTES

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

1. The harsh environment seen by this component is due to a main steam to auxiliary feed pump turbine line break. The component is exempted from qualification since its function is to maintain negative pressure in the annulus penetration room area and it would not be required to mitigate the high energy line break of concern. Failure of the component in the harsh environment would not impact safety-related functions or mislead the operator.

2. This motor is a part of the normal preventive maintenance program.

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

COMPONENT MATERIALS EVALUATION SHEET

Index No.: 222H-006B
Rev.: 2

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

Plant I.D. No.: MC0302
Component: Ventilation Fan Motor
Manufacturer: General Electric
Model No.: 5K254AN6359

Parts List *	Materials List	THERMAL AGING Qualification	THERMAL AGING Reference	RADIATION Qualification	RADIATION Reference
Insulation	Dacro-Mylar	40 Years @ 122°F	CAL-84	8.7×10^7 RADS	CAL-84
	Polyester Glass	40 Years @ 266°F	CAL-84	1.0×10^9 RADS	CAL-84
	Polyester Varnish	40 Years @ 266°F	CAL-84	1.0×10^9 RADS	CAL-84
Insulation	EPDM	40 Years @ 172°F	CAL-84	5.0×10^7 RADS	CAL-84
Wedge	Polyester Glass	40 Years @ 266°F	CAL-84	1.0×10^9 RADS	CAL-84
Wire Insulation	Alkanex (Polyester)	40 Years @ 266°F	CAL-84	1.0×10^9 RADS	CAL-84

Material & Parts List Reference: ROC-18A

* Only non-metallic parts are listed. Metallic parts are not considered sensitive to thermal aging and are not affected by radiation.

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 222H-007
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: Emergency Ventilation System	Operating Time	1 Year	1.1 Years	F	M-26 V-24G Note 1	Simultaneous Test	None
Plant ID No. MC5017	Temperature (°F)	203.0	300.0	C-515	M-26 V-24G	Simultaneous Test	None
Component: Damper Motor Operator							
Manufacturer: Limitorque	Pressure (PSIA)	15.60	84.7	C-515	M-26 V-24G	Simultaneous Test	None
Model Number: SMB-000-5							
O/N: 381631A							
S/N: 212003	Relative Humidity (%)	100.0	100.0	A	M-26 V-24G	Simultaneous Test	None
Function: Operates Emergency Ventilation Fan No. 1 Inlet Damper							
Accuracy: Spec: N/A Demon: N/A	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Service: Emergency Ventilation Fan No. 1 Inlet Damper							
Location: Auxiliary Bldg. Rm. 515	Radiation	N/A	N/A	N/A	N/A	N/A	None
Flood Level Elev: N/A							
Above Flood Level: N/A	Aging	40 Years	40 Years	I	CAL-93	Sequential Test Analysis	None
Needed for:							
Hot Shutdown [X]	Submergence	N/A	N/A	N/A	N/A	N/A	None
Cold Shutdown [X]							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 222H-007A
Rev.: 2

NOTES

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

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1. The test subjected the 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 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 515 peaks at 203°F in 35.2 seconds. The pressure in Room 515 peaks at 15.6 psia in 9.4 seconds. The conditions in Room 515 return to ambient after 19 minutes.

   Based on this information, it can be concluded that the laboratory test subjected the motor operator to an overall more severe environment than that which would result from a postulated HELB. Since the motor operator remained operable throughout the test and functional after the test, it can be concluded that the motor operator will remain functional during and after exposure to the accident environment which would result from the postulated HELB. (Reference C-515)

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 222H-008
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: Emergency Ventilation System Plant ID No. MC5018 Component: Damper Motor Operator Manufacturer: Limitorque Model Number: SMB-000-5 O/N: 381631A S/N: 212008 Function: Operates Emergency Ventilation Fan No. 2 Inlet Damper Accuracy: Spec: N/A Demon: N/A Service: Emergency Ventilation Fan No. 2 Inlet Damper Location: Auxiliary Bldg. Rm. 515 Flood Level Elev: N/A Above Flood Level: N/A Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	1.1 Years	F	M-26 V-24G Note 1	Simultaneous Test	None
	Temperature (°F)	203.0	300.0	C-515	M-26 V-24G	Simultaneous Test	None
	Pressure (PSIA)	15.60	84.7	C-515	M-26 V-24G	Simultaneous Test	None
	Relative Humidity (%)	100.0	100.0	A	M-26 V-24G	Simultaneous Test	None
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
	Radiation	N/A	N/A	N/A	N/A	N/A	None
	Aging	40 Years	40 Years	I	CAL-93	Sequential Test Analysis	None
	Submergence	N/A	N/A	N/A	N/A	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 222H-008A
Rev.: 2

NOTES

repared by: N Lewis Date 11/1/83
hecked by: D MacDonald Date 11/2/83

- The test subjected the 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 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 515 peaks at 203°F in 35.2 seconds. The pressure in Room 515 peaks at 15.6 psia in 9.4 seconds. The conditions in Room 515 return to ambient after 19 minutes.

  Based on this information, it can be concluded that the laboratory test subjected the motor operator to an overall more severe environment than that which would result from a postulated HELB. Since the motor operator remained operable throughout the test and functional after the test, it can be concluded that the motor operator will remain functional during and after exposure to the accident environment which would result from the postulated HELB. (Reference C-515)

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 222H-009
Rev.: 2

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

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Emergency Ventilation System Plant ID No. MC5056 Component: Damper Motor Operator Manufacturer: Limitorque Model Number: O/N: 381631A Function: Operates Emergency Ventilation Fan Inlet Cross-Over Damper Accuracy: Spec: N/A Demon: N/A Service: Emergency Ventilation Fan Inlet Cross-Over Damper Location: Auxiliary Bldg. Rm. 515 Flood Level Elev: N/A Above Flood Level: N/A Needed for: Hot Shutdown | X | Cold Shutdown | X |	Operating Time	1 Year	1.1 Years	F	M-26 V-24G Note 1	Simultaneous Test	None
	Temperature (°F)	203.0	300.0	C-515	M-26 V-24G	Simultaneous Test	None
	Pressure (PSIA)	15.60	84.7	C-515	M-26 V-24G	Simultaneous Test	None
	Relative Humidity (%)	100.0	100.0	A	M-26 V-24G	Simultaneous Test	None
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
	Radiation	N/A	N/A	N/A	N/A	N/A	None
	Aging	40 Years	40 Years	I	CAL-93	Sequential Test Analysis	None
	Submergence	N/A	N/A	N/A	N/A	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 222H-009A
Rev.: 2

NOTES

repared by: N Lewis Date 11/9/83
hecked by: [signature] Date 11/2/83

. The test subjected the 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 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 515 peaks at 203°F in 35.2 seconds. The pressure in Room 515 peaks at 15.6 psia in 9.4 seconds. The conditions in Room 515 return to ambient after 19 minutes.

Based on this information, it can be concluded that the laboratory test subjected the motor operator to an overall more severe environment than that which would result from a postulated HELB. Since the motor operator remained operable throughout the test and functional after the test, it can be concluded that the motor operator will remain functional during and after exposure to the accident environment which would result from the postulated HELB. (Reference C-515)

Facility: Davis-Besse Unit 1 SYSTEM COMPONENT EVALUATION WORKSHEET Index No.: 222H-010
Docket: 50-346 Rev.: 2

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

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Emergency Ventilation System	Operating Time	1 Year	1.1 Years	F	M-26 V-24G Note 1	Simultaneous Test	None
Plant ID No. MC5057	Temperature (°F)	203.0	300.0	C-515	M-26 V-24G	Simultaneous Test	None
Component: Damper Motor Operator							
Manufacturer: Limitorque	Pressure (PSIA)	15.60	84.7	C-515	M-26 V-24G	Simultaneous Test	None
Model Number:							
C/N: 38163iA							
Function: Operates Emergency Ventilation Fan Inlet Cross-Over Damper	Relative Humidity (%)	100.0	100.0	A	M-26 V-24G	Simultaneous Test	None
Accuracy: Spec: N/A Demon: N/A	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Service: Emergency Ventilation Fan Inlet Cross-Over Damper							
Location: Auxiliary Bldg. Rm. 515	Radiation	N/A	N/A	N/A	N/A	N/A	None
Flood Level Elev: N/A Above Flood Level: N/A	Aging	40 Years	40 Years	I	CAL-93	Sequential Test Analysis	None
Needed for:							
Hot Shutdown [X]	Submergence	N/A	N/A	N/A	N/A	N/A	None
Cold Shutdown [X]							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 222H-010A
Rev.: 2

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

NOTES

- The test subjected the 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 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 515 peaks at 203°F in 35.2 seconds. The pressure in Room 515 peaks at 15.6 psia in 9.4 seconds. The conditions in Room 515 return to ambient after 19 minutes.

  Based on this information, it can be concluded that the laboratory test subjected the motor operator to an overall more severe environment than that which would result from a postulated HELB. Since the motor operator remained operable throughout the test and functional after the test, it can be concluded that the motor operator will remain functional during and after exposure to the accident environment which would result from the postulated HELB. (Reference C-515)

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 222H-011
Rev.: 2

Prepared by: N Lewis Date: 11/16/83
Checked by: [illegible] Date: 11/21/83

EQUIPMENT DESCRIPTION	ENVIRONMENT Parameter	Specification	Qualification	DOCUMENTATION REF. Specification	Qualification	Qualification Method	Outstanding Items
System: Emergency Ventilation System 1 Plant ID No. MV5000A Component: Damper Motor Operator Manufacturer: ITT General Controls Model Number: AH-91 Function: Operates Emergency Ventilation Fan Discharge Damper Accuracy: Spec: N/A Demon: N/A Service: Emergency Ventilation Fan #1 Discharge Damper Location: Auxiliary Bldg. Rm. 515 Flood Level Elev: N/A Above Flood Level: N/A Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	40 Years	Note 1	Note 2	Analysis	None
	Temperature (°F)	203.0	Exempt	C-515	Note 3	N/A	None
	Pressure (PSIA)	15.60	Exempt	C-515	Note 3	N/A	None
	Relative Humidity (%)	100.0	Exempt	A	Note 3	N/A	None
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
	Radiation	$9x10^2$	$1.0x10^7$ Rads	T	CAL-86 Note 2	Analysis	None
	Aging	40 Years	40 Years	I	CAL-86 Note 2	Analysis	None
	Submergence	N/A	N/A	N/A	N/A	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

NOTES

Index No.: 222H-011A
Rev.: 2

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

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

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

3. This component is a linear hydramotor actuator controlling the discharge damper on emergency ventilation system fan MC0301. The actuator is energized when the fan is energized and fan differential pressure is sensed by a PDIS. The actuator modulates the damper to maintain a negative pressure in the containment annulus and penetration rooms from a controller signal sensing annulus pressure. The actuator has proportional control with positive spring return and is designed so that actuator failure results in closure of the damper. The actuator is exempt from qualification because it does not perform a safety-related function in the harsh environment resulting from a high energy line break. This actuator/damper is normally closed and de-energized. The emergency ventilation system is normally de-energized. Loss of power and/or control signal will cause the actuator/damper to return to its closed position by means of an external spring. The emergency ventilation system, including this actuator/damper, would not be required during the accident. Since the actuator/damper is already in the closed position, and further would remain in this position given a loss of power and/or control signal, failure of this actuator will not degrade any other safety-related functions or mislead the operator.

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

COMPONENT MATERIALS EVALUATION SHEET

Index No.: 222H-011B
Rev.: 2

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

Plant I.D. No.: MV5000A
Component: Damper Motor Operator
Manufacturer: ITT General Controls
Model No.: AH-91

		THERMAL AGING		RADIATION	
Parts List *	Materials List	Qualification	Reference	Qualification	Reference
Insulation	Teflon	40 Years @ 288°F	CAL-86	$1x10^7$ Rads	CAL-86
Valve Seat Ring	Polyimide	40 Years @ 288°F	CAL-86	$1x10^7$ Rads	CAL-86
O-Ring Seal	Buna-N	40 Years @ 104°F	CAL-86	$1.5x10^7$ Rads	CAL-86
Seal	Polymyte	Greater than 40 Years @ 122°F	CAL-86	$1.0x10^7$ Rads	CAL-86
Diaphragm	Buna-N (nylon coated)	40 Years @ 104°F	CAL-86	$1.5x10^7$ Rads	CAL-86

Material & Parts Reference List: M-29, M-30, M-31, ROC-21A, and V-21A

* Only non-metallic parts are listed. Metallic parts are not considered to be sensitive to thermal aging and are not affected by radiation.

Facility: Davis-Besse Unit 1
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SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 222H-012
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: Emergency Ventilation System 1 Plant ID No. MV5000B Component: Damper Motor Actuator Manufacturer: ITT General Controls Model Number: AH-91 Function: Operates Emergency Ventilation Fan #1 Recirculation Damper Accuracy: Spec: N/A Demon: N/A Service: Emergency Ventilation Fan #1 Recirculation Damper Location: Auxiliary Bldg. Rm. 515 Flood Level Elev: N/A Above Flood Level: N/A Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	40 Years	Note 1	Note 2	Analysis	None
	Temperature (°F)	203.0	Exempt	C-515	Note 3	N/A	None
	Pressure (PSIA)	15.60	Exempt	C-515	Note 3	N/A	None
	Relative Humidity (%)	100.0	Exempt	A	Note 3	N/A	None
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
	Radiation	9×10^2	1.0×10^7 Rads	T	CAL-86 Note 2	Analysis	None
	Aging	40 Years	40 Years	I	CAL-86 Note 2	Analysis	None
	Submergence	N/A	N/A	N/A	N/A	N/A	None

Facility: Davis-Besse Unit 1 SYSTEM COMPONENT EVALUATION WORKSHEET Index No.: 222H-012A
Docket: 50-346 Rev.: 2

NOTES

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

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

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

3. This component is a linear hydramotor actuator controlling the recirculation damper on emergency ventilation system fan MC0301. The actuator is energized when the fan is energized and fan differential pressure is sensed by a PDIS. The actuator modulates the damper to maintain a negative pressure in the containment annulus and penetration rooms from a controller signal sensing annulus pressure. The actuator has proportional control with positive spring return and is designed so that actuator failure results in closure of the damper. The actuator is exempt from qualification because it does not perform a safety-related function in the harsh environment resulting from a high energy line break. This actuator/damper is normally closed and de-energized. The emergency ventilation system is normally de-energized. Loss of power and/or control signal will cause the actuator/damper to return to its closed position by means of an external spring. The emergency ventilation system, including this actuator/damper, would not be required during the accident. Since the actuator/damper is already in the closed position, and further would remain in this position given a loss of power and/or control signal, failure of this actuator will not degrade any other safety-related functions or mislead the operator.

Facility: Davis-Besse Unit 1
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COMPONENT MATERIALS EVALUATION SHEET

Index No.: 222H-012B
Rev.: 2

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

Plant I.D. No.: MV5000B
Manufacturer: ITT General Controls

Component: Damper Motor Operator
Model No.: AH-91

Parts List *	Materials List	THERMAL AGING Qualification	Reference	RADIATION Qualification	Reference
Insulation	Teflon	40 Years @ 288°F	CAL-86	$1x10^7$ Rads	CAL-86
Valve Seat Ring	Polyimide	40 Years @ 288°F	CAL-86	$1x10^7$ Rads	CAL-86
O-Ring Seal	Buna-N	40 Years @ 104°F	CAL-86	$1.5x10^7$ Rads	CAL-86
Seal	Polymyte	Greater than 40 Years @ 122°F	CAL-86	$1.0x10^7$ Rads	CAL-86
Diaphragm	Buna-N (nylon coated)	40 Years @ 104°F	CAL-86	$1.5x10^7$ Rads	CAL-86

Material & Parts Reference List: M-29, M-30, M-31, ROC-21A, and V-21A

* Only non-metallic parts are listed. Metallic parts are not considered to be sensitive to thermal aging and are not affected by radiation.

Facility: Davis-Besse Unit 1 SYSTEM COMPONENT EVALUATION WORKSHEET Index No.: 222H-013
Docket: 50-346 Rev.: 2

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

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Emergency Ventilation System 2	Operating Time	1 Year	40 Years	Note 1	Note 2	Analysis	None
Plant ID No. MV5014A Component: Damper Motor Operator	Temperature (°F)	203.0	Exempt	C-515	Note 3	N/A	None
Manufacturer: ITT General Controls	Pressure (PSIA)	15.60	Exempt	C-515	Note 3	N/A	None
Model Number: AH-91 Function: Operates Emergency Ventilation Fan #2 Discharge Damper	Relative Humidity (%)	100.0	Exempt	A	Note 3	N/A	None
Accuracy: Spec: N/A Demon: N/A Service: Emergency Ventilation Fan #2 Discharge Damper	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 515	Radiation	9×10^2	1.0×10^7 Rads	T	CAL-86 Note 2	Analysis	None
Flood Level Elev: N/A Above Flood Level: N/A	Aging	40 Years	40 Years	I	CAL-86 Note 2	Analysis	None
Needed for: Hot Shutdown [X] Cold Shutdown [X]	Submergence	N/A	N/A	N/A	N/A	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 222H-013A
Rev.: 2

NOTES

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

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

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

3. This component is a linear hydramotor actuator controlling the discharge damper on emergency ventilation system fan MC0302. The actuator is energized when the fan is energized and fan differential pressure is sensed by a PDIS. The actuator modulates the damper to maintain a negative pressure in the containment annulus and penetration rooms from a controller signal sensing annulus pressure. The actuator has proportional control with positive spring return and is designed so that actuator failure results in closure of the damper. The actuator is exempt from qualification because it does not perform a safety-related function in the harsh environment resulting from a high energy line break. This actuator/damper is normally closed and de-energized. The emergency ventilation system is normally de-energized. Loss of power and/or control signal will cause the actuator/damper to return to its closed position by means of an external spring. The emergency ventilation system, including this actuator/damper, would not be required during the accident. Since the actuator/damper is already in the closed position, and further would remain in this position given a loss of power and/or control signal, failure of this actuator will not degrade any other safety-related functions or mislead the operator.

Facility: Davis-Besse Unit 1 COMPONENT MATERIAL EVALUATION SHEET Index No.: 222H-013B
Docket: 50-346 Rev.: 2

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

Plant I.D. No.: MV5014A Component: Damper Motor Operator
Manufacturer: ITT General Controls Model No.: AH-91

		THERMAL AGING		RADIATION	
Parts List *	Materials List	Qualification	Reference	Qualification	Reference
Insulation	Teflon	40 Years @ 288°F	CAL-86	$1x10^7$ Rads	CAL-86
Valve Seat Ring	Polyimide	40 Years @ 288°F	CAL-86	$1x10^7$ Rads	CAL-86
O-Ring Seal	Buna-N	40 Years @ 104°F	CAL-86	$1.5x10^7$ Rads	CAL-86
Seal	Polymyte	Greater than 40 Years @ 122°F	CAL-86	$1.0x10^7$ Rads	CAL-86
Diaphragm	Buna-N (Nylon coated)	40 years @ 104°F	CAL-86	$1.5x10^7$ Rads	CAL-86

Material & Parts Reference List: M-29, M-30, M-31, ROC-21A, and V-21A

* Only non-metallic parts are listed. Metallic parts are not considered to be sensitive to thermal aging and are not affected by radiation.

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 222H-014
Rev.: 2

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

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Emergency Ventilation System 2	Operating Time	1 Year	40 Years	Note 1	Note 2	Analysis	None
Plant ID No. MV5014B Component: Damper Motor Actuator	Temperature (°F)	203.0	Exempt	C-515	Note 3	N/A	None
Manufacturer: ITT General Controls Model Number: AH-91	Pressure (PSIA)	15.60	Exempt	C-515	Note 3	N/A	None
Function: Operates Emergency Ventilation Fan #2 Recirculation Damper	Relative Humidity (%)	100.0	Exempt	A	Note 3	N/A	None
Accuracy: Spec: N/A Demon: N/A Service: Emergency Ventilation Fan #2 Recirculation Damper	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 515	Radiation	9×10^2	1.0×10^7 Rads	T	CAL-86 Note 2	Analysis	None
Flood Level Elev: N/A Above Flood Level: N/A	Aging	40 Years	40 Years	I	CAL-86 Note 2	Analysis	None
Needed for: Hot Shutdown [X] Cold Shutdown [X]	Submergence	N/A	N/A	N/A	N/A	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 222H-014A
Rev.: 2

NOTES

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

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

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

3. This component is a linear hydramotor actuator controlling the recirculation damper on emergency ventilation system fan MC0302. The actuator is energized when the fan is energized and fan differential pressure is sensed by a PDIS. The actuator modulates the damper to maintain a negative pressure in the containment annulus and penetration rooms from a controller signal sensing annulus pressure. The actuator has proportional control with positive spring return and is designed so that actuator failure results in closure of the damper. The actuator is exempt from qualification because it does not perform a safety-related function in the harsh environment resulting from a high energy line break. This actuator/damper is normally closed and de-energized. The emergency ventilation system is normally de-energized. Loss of power and/or control signal will cause the actuator/damper to return to its closed position by means of an external spring. The emergency ventilation system, including this actuator/damper, would not be required during the accident. Since the actuator/damper is already in the closed position, and further would remain in this position given a loss of power and/or control signal, failure of this actuator will not degrade any other safety-related functions or mislead the operator.

Facility: Davis-Besse Unit 1
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COMPONENT MATERIALS EVALUATION SHEET

Index No.: 222H-014B
Rev.: 2

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

Plant I.D. No.: MV5014B
Component: Damper Motor Operator
Manufacturer: ITT General Controls
Model No.: AH-91

Parts List *	Materials List	THERMAL AGING Qualification	THERMAL AGING Reference	RADIATION Qualification	RADIATION Reference
Insulation	Teflon	40 Years @ 288°F	CAL-86	$1x10^7$ Rads	CAL-86
Valve Seat Ring	Polyimide	40 Years @ 288°F	CAL-86	$1x10^7$ Rads	CAL-86
O-Ring Seal	Buna-N	40 Years @ 104°F	CAL-86	$1.5x10^7$ Rads	CAL-86
Seal	Polymyte	Greater than 40 Years @ 122°F	CAL-86	$1.0x10^7$ Rads	CAL-86
Diaphragm	Buna-N (nylon coated)	40 Years @ 104°F	CAL-86	$1.5x10^7$ Rads	CAL-86

Material & Parts Reference List: M-29, M-30, M-31, ROC-21A, and V-21A

* Only non-metallic parts are listed. Metallic parts are not considered to be sensitive to thermal aging and are not affected by radiation.

Facility: Davis-Besse Unit 1
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SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 222H-015
Rev.: 2

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

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Emergency Ventilation System Plant ID No. MV50240 Component: Valve Motor Operator Manufacturer: Limitorque Model Number: O/N: 381631A Function: Operates Fuel Handling Area Bypass Valve Accuracy: Spec: N/A Demon: N/A Service: Fuel Handling Area Bypass Valve Location: Auxiliary Bldg. Rm. 515 Flood Level Elev: N/A Above Flood Level: N/A Needed for: Hot Shutdown [X] Cold Shutdown [ ]	Operating Time	75 Seconds	30 Days	K	M-26 V-24G Note 1	Simultaneous Test	None
	Temperature (°F)	203.0	300.0	C-515	M-26 V-24G	Simultaneous Test	None
	Pressure (PSIA)	15.60	84.7	C-515	M-26 V-24G	Simultaneous Test	None
	Relative Humidity (%)	100.0	100.0	A	M-26 V-24G	Simultaneous Test	None
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
	Radiation	N/A	N/A	N/A	N/A	N/A	None
	Aging	40 Years	40 Years	I	CAL-93	Sequential Test Analysis	None
	Submergence	N/A	N/A	N/A	N/A	N/A	None

Facility: Davis-Besse Unit 1
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SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 222II-015A
Rev.: 2

NOTES

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

- The test subjected the valve motor operator to a transient of 300°F and 84.7 psia for 32 minutes, followed by a cooldown to 120°F in 3.2 hours. The valve motor operator was then subjected to a second transient of 300°F and 44.7 psia, which was maintained for 92 hours, then a cooldown to 200°F and 24.7 psia, which was maintained for 24 days. The temperature in Room 515 peaks at 203°F in 35.2 seconds. The pressure in Room 515 peaks at 15.6 psia in 9.4 seconds. The conditions in Room 515 return to ambient after 19 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-515)

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 222H-016
Rev.: 2

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

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Emergency Ventilation System	Operating Time	75 Seconds	30 Days	K	M-26 V-24G Note 1	Simultaneous Test	None
Plant ID No. MV50250	Temperature (°F)	203.0	300.0	C-515	M-26 V-24G	Simultaneous Test	None
Component: Valve Motor Operator							
Manufacturer: Limitorque	Pressure (PSIA)	15.60	84.7	C-515	M-26 V-24G	Simultaneous Test	None
Model Number: O/N: 381631A							
Function: Operates Fuel Handling Area Bypass Valve	Relative Humidity (%)	100.0	100.0	A	M-26 V-24G	Simultaneous Test	None
Accuracy: Spec: N/A Demon: N/A	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Service: Fuel Handling Area Bypass Valve							
Location: Auxiliary Bldg. Rm. 515	Radiation	N/A	N/A	N/A	N/A	N/A	None
Flood Level Elev: N/A							
Above Flood Level: N/A	Aging	40 Years	40 Years	I	CAL-93	Sequential Test Analysis	None
Needed for:							
Hot Shutdown [X]	Submergence	N/A	N/A	N/A	N/A	N/A	None
Cold Shutdown [ ]							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 222H-016A
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 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 515 peaks at 203°F in 35.2 seconds. The pressure in Room 515 peaks at 15.6 psia in 9.4 seconds. The conditions in Room 515 return to ambient after 19 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-515)

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Docket: 50-346

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 222H-017
Rev.: 2

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

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Emergency Ventilation System	Operating Time	1 Year	Exempt	Note 2	Note 3	Analysis	Note 1
Plant ID No. PDC5000 Component: Differential Pressure Controller	Temperature (°F)	208.0	Exempt	C-304	Note 3	Analysis	None
Manufacturer: Bailey-Meter	Pressure (PSIA)	15.83	Exempt	C-304	Note 3	Analysis	None
Model Number: 701							
Function: Controls Pressure	Relative Humidity (%)	100.0	Exempt	A	Note 3	Analysis	None
Accuracy: Spec: N/A Demon: N/A							
Service: Annulus & Mechanical Penetration Rooms	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 304	Radiation	3.91 x 10^2 RADS	Exempt	CAL-61	Note 3	Analysis	None
Flood Level Elev: N/A Above Flood Level: N/A	Aging	40 Years	Exempt	I	Note 3	Analysis	None
Needed for:							
Hot Shutdown [X]	Submergence	N/A	N/A	N/A	N/A	N/A	None
Cold Shutdown [X]							

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NOTES

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

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1. Relocate this component to Room 304 in accordance with FCR 83-062.

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

3. This component is a differential pressure controller which receives annulus/atmospheric pressure differential signals from a differential pressure transmitter. The controller compares this input to its set point value and modulates the emergency ventilation system modulating dampers to maintain a negative pressure in the annulus and penetration rooms.

   The controller is exempt from qualification for the following reasons:

   a. It does not perform essential safety-related functions in the harsh steam environment resulting from a high energy line break. Failure of the controller may cause improper operation of the modulating damper; however, since the emergency ventilation system is not needed to mitigate a HELB, its failure will not degrade other safety-related functions or mislead the operator.

   b. This device will be exposed to a total integrated dose of only 3.91×10^2 rads after a LOCA. Analysis of existing literature on the effects of radiation on non-metallic materials (WCAP-8587, Appendix C) demonstrates that materials typical to nuclear power plant construction would not be significantly affected by radiation doses less than 10^4 rads. Therefore, this is considered a mild environment. 10CFR50.49 does not require qualification of mild environment equipment.

   c. Only one of the two redundant emergency ventilation system (EVS) trains is exposed to the radiation levels resulting from a LOCA. Each train can independently maintain a negative pressure in the annulus and penetration rooms. Following a LOCA, this action is necessary so that high radiation air can be discharged through HEPA and charcoal filters to reduce doses at the site boundary. Per FSAR Section 9.4.3.3, a single failure of any component of the emergency ventilation system will not result in damage to any safety-related systems.

   Each train of the EVS consists of a fan and filter unit, associated dampers, ductwork, instrumentation, and controls. The controller operates exhaust and recirculation modulating dampers to maintain a negative pressure in the containment annulus. The controller signal feeds directly to the exhaust damper and through a current repeater (PDY5000C) to the recirculation damper. Failure of the controller may cause erroneous signals to be sent to both dampers.

   The two parallel fan inlets can be connected by opening a cross tie ductwork damper. This action allows either fan to draw air through both suction lines and therefore both sets of filter units. Since each fan is rated at 100% of the required design capacity, one train can safely be utilized in performing the function of the EVS. Based upon the above discussion, safe interim plant operation is justified while this equipment is being relocated.

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 222H-018
Rev.: 2

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

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Emergency Ventilation System Plant ID No. PDIS5017 Component: Differential Pressure Indicating Switch Manufacturer: ITT Barton Model Number: 289A Function: Modulation Accuracy: Spec: N/A Demon: N/A Service: Emergency Ventilation Fan 1 Modulating Dampers Location: Auxiliary Bldg. Rm. 515 Flood Level Elev: N/A Above Flood Level: N/A Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	40 Years	Note 1	Note 3	Analysis	None
	Temperature (°F)	203.0	Exempt	C-515	Note 2	N/A	None
	Pressure (PSIA)	15.6	Exempt	C-515	Note 2	N/A	None
	Relative Humidity (%)	100.0	Exempt	A	Note 2	N/A	None
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
	Radiation	2.0×10^2 RADS	3.0×10^6 RADS	T	J-26	Sequential Test	None
	Aging	40 Years	40 Years	I	CAL-90 Note 3	Analysis	None
	Submergence	N/A	N/A	N/A	N/A	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 222H-018A
Rev.: 2

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

NOTES

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

2. This differential pressure switch is part of the 120 v.a.c. control circuit of the linear hydramotor actuator for an emergency ventilation system modulating damper. The switch measures the pressure differential across the damper's associated emergency ventilation fan. When no differential pressure is sensed, the switch's contacts open to de-energize the actuator. When the actuator de-energizes, spring force moves the damper to its fail-safe closed position. When the actuator is energized, a control signal from a pressure controller modulates the damper. The actuator's power circuit is supplied directly from its 120 v.a.c. supply bus. A 2.5 ampere fuse protects the control circuit.

   The differential pressure indicating switch is exempt from qualification because it does not perform an essential safety-related function in the harsh steam environment caused by a high energy line break. Failure of the switch in the steam environment may result in erroneous control of the modulating damper. This failure will not degrade other safety-related functions because the emergency ventilation system is not needed during a high energy line break accident. If a switch failure causes a loss of power in the control circuit (due to fuse blowing), the supply bus will not be affected because the fault would thus be isolated.

   The motor operator's indicating lights are operated by auxiliary contacts off the actuator's energizing relay. Loss of power in the control circuit will cause a loss of indicating lights. This condition correctly indicates that the actuator is de-energized and the damper is closed. For other switch failures, indication will be unaffected. Furthermore, indication is only provided locally and the operator will not be concerned with the modulating damper position during a high energy line break.

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.: 222H-018B
Rev.: 2

Prepared by: J Lux Date: 11/18/92
Checked by: [signature] Date: 11/20/92

Plant I.D. No.: PDIS5017 Component: Differential Pressure Switches
Manufacturer: ITT Barton Model No.: 288 & 289

		THERMAL AGING		RADIATION	
Parts List *	Materials List	Qualification	Reference	Qualification	Reference
Wiring Insulation	PVC	40 Years @ 140°F	CAL-90	N/A	N/A
Switch:					
Case/Covers	Phenolic	40 Years @ 230°F	CAL-90	N/A	N/A
Button	Diallyl Phthalate	Greater than 40 Years @ 122°F	CAL-90	N/A	N/A
O-Rings	Viton	40 Years @ 265°F	CAL-90	N/A	N/A
Fill Fluid	Hydrocarbon Oil	40 Years	V-20B	N/A	N/A

Material & Parts List Reference: V-20A, V-20B, V-20C

* Only non-metallic parts are listed. Metallic parts are not considered to be sensitive to thermal aging and are not affected by radiation.

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 222H-019
Rev.: 2

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

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Emergency Ventilation System Plant ID No. PDIS5018 Component: Differential Pressure Indicating Switch Manufacturer: ITT Barton Model Number: 289A Function: Modulation Accuracy: Spec: N/A Demon: N/A Service: Emer. Ventl. Fan 2 Modulating Dampers Location: Auxiliary Bldg. Rm. 515 Flood Level Elev: N/A Above Flood Level: N/A Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	40 Years	Note 1	Note 3	Analysis	None
	Temperature (°F)	203.0	Exempt	C-515	Note 2	N/A	None
	Pressure (PSIA)	15.6	Exempt	C-515	Note 2	N/A	None
	Relative Humidity (%)	100.0	Exempt	A	Note 2	N/A	None
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
	Radiation	2.0×10^2 RADS	3.0×10^6 RADS	T	J-26	Test	None
	Aging	40 Years	40 Years	I	CAL 90 Note 3	Analysis	None
	Submergence	N/A	N/A	N/A	N/A	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 222H-019A
Rev.: 2

NOTES

'repared by: J Lum Date: 11/1/83
:hecked by: [signature] Date: 11/2/83

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

:. This differential pressure switch is part of the 120 v.a.c. control circuit of the linear hydramotor actuator for an emergency ventilation system modulating damper. The switch measures the pressure differential across the damper's associated emergency ventilation fan. When no differential pressure is sensed, the switch's contacts open to de-energize the actuator. When the actuator de-energizes, spring force moves the damper to its fail-safe closed position. When the actuator is energized, a control signal from a pressure controller modulates the damper. The actuator's power circuit is supplied directly from its 120 v.a.c. supply bus. A 2.5 ampere fuse protects the control circuit.

The differential pressure indicating switch is exempt from qualification because it does not perform an essential safety-related function in the harsh steam environment caused by a high energy line break. Failure of the switch in the steam environment may result in erroneous control of the modulating damper. This failure will not degrade other safety-related functions because the emergency ventilation system is not needed during a high energy line break accident. If a switch failure causes a loss of power in the control circuit (due to fuse blowing), the supply bus will not be affected because the fault would thus be isolated.

The motor operator's indicating lights are operated by auxiliary contacts off the actuator's energizing relay. Loss of power in the control circuit will cause a loss of indicating lights. This condition correctly indicates that the actuator is de-energized and the damper is closed. For other switch failures, indication will be unaffected. Furthermore, indication is only provided locally and the operator will not be concerned with the modulating damper position during a high energy line break.

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.: 222H-019B
Rev.: 0

Prepared by: [signature] Date: 11/18/93
Checked by: [signature] Date: 11/18/93

Plant I.D. No.: PDIS5018 Component: Differential Pressure Switches
Manufacturer: ITT Barton Model No.: 288 & 289

		THERMAL AGING		RADIATION	
Parts List *	Materials List	Qualification	Reference	Qualification	Reference
Wiring Insulation	PVC	40 Years @ 140°F	CAL-90	N/A	N/A
Switch:					
Case/Covers	Phenolic	40 Years @ 230°F	CAL-90	N/A	N/A
Button	Diallyl Phthalate	Greater than 40 Years @ 122°F	CAL-90	N/A	N/A
O-Rings	Viton	40 Years @ 265°F	CAL-90	N/A	N/A
Fill Fluid	Hydrocarbon Oil	40 Years	CAL-90	N/A	N/A

Material & Parts List Reference: V-20A, V-20B, V-20C

* Only non-metallic parts are listed. Metallic parts are not considered to be sensitive to thermal aging and are not affected by radiation.

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SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 222H-020
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: Emergency Ventilation Plant ID No. PDT5000 Component: Differential Pressure Transmitter Manufacturer: Rosemount Model Number: 1152DP13E22MB Function: Transmits Pressure Differential Signals Accuracy: Spec: 2.0% Demon: .5% Service: Annulus and Mechanical Penetration Rooms Location: Auxiliary Bldg. Rm. 303 Flood Level Elev: N/A Above Flood Level: N/A Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	1.87 Years	Note 1	J-8, CAL-38	Analysis	None
	Temperature (°F)	218.0	Exempt	C-303	Note 2	N/A	None
	Pressure (PSIA)	17.16	Exempt	C-303	Note 2	N/A	None
	Relative Humidity (%)	100.0	Exempt	A	Note 2	N/A	None
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
	Radiation	1.16 x 10^6 RADS	5.0 x 10^6 RADS	T	J-8	Sequential Test	None
	Aging	40 Years	1.87 Years Note 4	I	CAL-64 Note 3	Analysis	None
	Submergence	N/A	N/A	N/A	N/A	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

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

NOTES

Index No.: 222H-020A
Rev.: 2

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

. This component is a differential pressure transmitter that transmits annulus/atmospheric pressure differential signals to a differential pressure controller. The controller modulates the emergency ventilation system modulating dampers to maintain a negative pressure in the annulus and penetration rooms.

The transmitter is exempt from qualification because it does not perform an essential safety-related function in the harsh steam environment resulting from a high energy line break. Failure of the transmitter in the steam environment may cause erroneous signals to be sent to the differential pressure controller. Since the emergency ventilation system is not needed to mitigate a HELB, this failure will not degrade other safety-related functions or mislead the operator. 1152DP transmitters have successfully passed type testing in a saturated steam environment enveloping the specified environmental conditions.

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

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

The 1.87 year qualified life is the best analytically supported estimate of qualified life for this transmitter. There is significant operating experience at Davis-Besse and at other nuclear power plants to support a longer qualified life. The surveillance and maintenance programs will ensure that no aging related failures occur and the surveillance and maintenance program frequency will be adjusted as necessary to ensure that the associated component will maintain functional operability.

Facility: Davis-Besse Unit 1
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COMPONENT MATERIALS EVALUATION SHEET

Index No.: 222H-020B
Rev.: 2

Prepared by: D Lum Date: 11/1/82
Checked by: D MacDonald Date: 11/2/83

Plant I.D. No.: PDT5000 Component: Differential Pressure Transmitter

Manufacturer: Rosemount Model No.: 1152DP13E22PB

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Housing and Cover	Aluminum	Not Sensitive		N/A	N/A
Process Flange	316 Stainless Steel	Not Sensitive	CAL-64	N/A	N/A
Blank Flange	316 Stainless Steel	Not Sensitive	CAL-64	N/A	N/A
Valve Stem and Seat	316 Stainless Steel	Not Sensitive	CAL-64	N/A	N/A
Adjustment Screw	Steel	Not Sensitive	CAL-64	N/A	N/A
Retaining Ring	Steel	Not Sensitive	CAL-64	N/A	N/A
O-Rings	BUNA N	40 Years @ 104°F	CAL-64	N/A	N/A
O-Ring (Process Flange)	Ethylene Propylene	40 Years @ 172°F	CAL-64	N/A	N/A
Electronics Assembly	Steel	Not Sensitive	CAL-64	N/A	N/A
Hardware				N/A	N/A
Bolts	Steel	Not Sensitive	CAL-64	N/A	N/A
Nuts	Steel	Not Sensitive	CAL-64	N/A	N/A
Mounting Bracket	Steel	Not Sensitive	CAL-64	N/A	N/A
Circuit Boards	Electronic Assemblies	1.87 Years @ 104°F	CAL-64	N/A	N/A
Sensor Module	316 Stainless Steel	Not Sensitive	CAL-64	N/A	N/A
Sensor Module Oil Fill	Silicone Oil	40 Years	CAL-64	N/A	N/A

Materials & Parts Reference List: AA, V-34B, J-8

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 222H-021
Rev.: 2

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

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Emergency Ventilation Plant ID No. PDT5014 Component: Differential Pressure Transmitter Manufacturer: Rosemount Model Number: 1152DP13E22MB Function: Transmits Pressure Differential Signals Accuracy: Spec: 2.0% Demon: .5% Service: Annulus and Mechanical Penetration Rooms Location: Auxiliary Bldg. Rm. 515 Flood Level Elev: N/A Above Flood Level: N/A Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	10.83 Years	Note 1	CAL-38	Analysis	None
	Temperature (°F)	203.0	Exempt	C-515	Note 2	N/A	None
	Pressure (PSIA)	15.60	Exempt	C-515	Note 2	N/A	None
	Relative Humidity (%)	100.0	Exempt	A	Note 2	N/A	None
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
	Radiation	2.0×10^2 RADS	5.0×10^6 RADS	T	J-8	Sequential Test	None
	Aging	40 Years	1.87 Years Note 4	I	CAL-64 Note 3	Analysis	None
	Submergence	N/A	N/A	N/A	N/A	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 222H-021A
Rev.: 2

NOTES

repared by: [signature] Date: 11/1/83
hecked by: [signature] Date: 11/3/83

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

. This component is a differential pressure transmitter that transmits annulus/atmospheric pressure differential signals to a differential pressure controller. The controller modulates the emergency ventilation system modulating dampers to maintain a negative pressure in the annulus and penetration rooms.

The transmitter is exempt from qualification because it does not perform an essential safety-related function in the harsh steam environment resulting from a high energy line break. Failure of the transmitter in the steam environment may cause erroneous signals to be sent to the differential pressure controller. Since the emergency ventilation system is not needed to mitigate a HELB, this failure will not degrade other safety-related functions or mislead the operator. 1152DP transmitters have successfully passed type testing in a saturated steam environment enveloping the specified environmental conditions.

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

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

The 1.87 year qualified life is the best analytically supported estimate of qualified life for this transmitter. There is significant operating experience at Davis-Besse and at other nuclear power plants to support a longer qualified life. The surveillance and maintenance programs will ensure that no aging related failures occur and the surveillance and maintenance program frequency will be adjusted as necessary to ensure that the associated component will maintain functional operability.

Facility: Davis-Besse Unit 1
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COMPONENT MATERIALS EVALUATION SHEET

Index No.: 222H-021B
Rev.: 2

Prepared by: D. Lum Date: 11/1/87
Checked by: D. MacDonald Date: 11/2/87

Plant I.D. No.: PDT5000 Component: Differential Pressure Transmitter

Manufacturer: Rosemount Model No.: 1152DP13E22PB

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Housing and Cover	Aluminum	Not Sensitive		N/A	N/A
Process Flange	316 Stainless Steel	Not Sensitive	CAL-64	N/A	N/A
Blank Flange	316 Stainless Steel	Not Sensitive	CAL-64	N/A	N/A
Valve Stem and Seat	316 Stainless Steel	Not Sensitive	CAL-64	N/A	N/A
Adjustment Screw	Steel	Not Sensitive	CAL-64	N/A	N/A
Retaining Ring	Steel	Not Sensitive	CAL-64	N/A	N/A
O-Rings	BUNA N	40 Years @ 104°F	CAL-64	N/A	N/A
O-Ring (Process Flange)	Ethylene Propylene	40 Years @ 172°F	CAL-64	N/A	N/A
Electronics Assembly	Steel	Not Sensitive	CAL-64	N/A	N/A
Hardware				N/A	N/A
Bolts	Steel	Not Sensitive	CAL-64	N/A	N/A
Nuts	Steel	Not Sensitive	CAL-64	N/A	N/A
Mounting Bracket	Steel	Not Sensitive	CAL-64	N/A	N/A
Circuit Boards	Electronic Assemblies	1.87 Years @ 104°F	CAL-64	N/A	N/A
Sensor Module	316 Stainless Steel	Not Sensitive	CAL-64	N/A	N/A
Sensor Module Oil Fill	Silicone Oil	40 Years	CAL-64	N/A	N/A

Materials & Parts Reference List: AA, V-34B, J-8

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 222H-022
Rev.: 2

Prepared by: [signature] Date: 4/1/93
Checked by: [signature] Date: 11/2/93

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Emergency Ventilation	Operating Time	1 Year	Exempt	Note 2	Note 3	Analysis	Note 1
Plant ID No. PDY5000C	Temperature (°F)	208.0	Exempt	C-304	Note 3	Analysis	None
Component: Current Repeater							
Manufacturer: Foxboro	Pressure (PSIA)	15.83	Exempt	C-304	Note 3	Analysis	None
Model Number: 66BT S/N 335-222	Relative Humidity (%)	100.0	Exempt	A	Note 3	Analysis	None
Function: Relays Pressure Differential Signals							
Accuracy: Spec: N/A Demon: N/A	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Service: Annulus and Mechanical Penetration Rooms							
Location: Auxiliary Bldg. Rm. 304	Radiation	3.91×10^2 RADS	Exempt	CAL-61	Note 3	Analysis	None
Flood Level Elev: N/A Above Flood Level: N/A	Aging	40 Years	Exempt	I	Note 3	Analysis	None
Needed for: Hot Shutdown [X] Cold Shutdown [X]	Submergence	N/A	N/A	N/A	N/A	N/A	None

Facility: Davis-Besse Unit 1
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SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 222H-022A
Rev.: 2

NOTES

Prepared by: [signature] Date: 11/1/93
Checked by: [signature] Date: 11/01/93

1. Relocate this component to Room 304 in accordance with FCR 83-062.

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

3. This component is a current repeater that conditions electrical signals from a differential pressure controller (PDC5000) and relays them to the linear hydramotor actuator for an emergency ventilation system modulating damper (MV5000B). These signals control the actuator so that the damper modulates to maintain a negative pressure in the annulus and penetration rooms. This action occurs once the actuator has been energized. Actuator energization is accomplished automatically upon the initiation of emergency ventilation. The actuator energizing circuit and the actuator modulating circuit are separate and independent of each other.

   The current repeater is exempt from qualification for the following reasons:

   a. It does not perform a safety-related function in the harsh steam environment resulting from a high energy line break. Failure of the repeater in the steam environment may result in erroneous signals being sent to the linear actuator. Since the emergency ventilation system is not operated or needed during high energy line break accidents, repeater failure will not degrade other safety-related functions.

      The damper's indicating lights are operated by auxiliary contacts off the actuator's energizing coil. Since the modulating and energizing circuits are separate and independent, repeater failure cannot affect indication or mislead the operator. Furthermore, the operator will not be concerned with the emergency ventilation system status during a high energy line break accident.

   b. This device will be exposed to a total integrated dose of only 3.91×10^2 rads after a LOCA. Analysis of existing literature on the effects of radiation on non-metallic materials (WCAP-8587, Appendix C) demonstrates that materials typical to nuclear power plant construction would not be significantly affected by radiation doses less than 10^4 rads. Therefore, this is considered a mild environment. 10CFR50.49 does not require qualification of mild environment equipment.

   c. Only one of the two redundant emergency ventilation system (EVS) trains is exposed to the radiation levels resulting from a LOCA. Each train can independently maintain a negative pressure in the annulus and penetration rooms. Following a LOCA, this action is necessary so that high radiation air can be discharged through HEPA and charcoal filters to reduce doses at the site boundary. Per FSAR Section 9.4.3.3, a single failure of any component of the emergency ventilation system will not result in damage to any safety-related systems.

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Docket: 50-346

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 222H-022B
Rev.: 2

Prepared by: [signature] Date: 11/16
Checked by: [signature] Date: 11/24/83

NOTES

Each train of the EVS consists of a fan and filter unit, associated dampers, ductwork, instrumentation, and controls. A controller operates exhaust and recirculation modulating dampers to maintain a negative pressure in the containment annulus. The controller signal feeds directly to the exhaust damper and through the PDY5000C current repeater to the recirculation damper. Failure of the repeater may cause erroneous signals to be sent to the recirculation damper.

The two parallel fan inlets can be connected by opening a cross tie ductwork damper. This action allows either fan to draw air through both suction lines and therefore both sets of filter units. Since each fan is rated at 100% of the required design capacity, one train can safely be utilized in performing the function of the EVS. Based upon the above discussion, safe interim plant operation is justified while this equipment is being relocated.

Facility: Davis-Besse Unit 1 SYSTEM COMPONENT EVALUATION WORKSHEET Index No.: 222H-023
Docket: 50-346 Rev.: 2

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

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Emergency Ventilation	Operating Time	75 Seconds	40 Years	K	Note 2	Analysis	None
Plant ID No. SV8446	Temperature (°F)	N/A	N/A	Note 1	N/A	N/A	None
Component: Solenoid Valve							
Manufacturer: ASCO	Pressure (PSIA)	N/A	N/A	Note 1	N/A	N/A	None
Model Number: HTX831655							
Function: Isolation	Relative Humidity (%)	N/A	N/A	Note 1	N/A	N/A	None
Accuracy: Spec: N/A Demon: N/A							
Service: Fuel Handling Area Isolation Valve	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 427	Radiation	3.12×10^5 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	CAL-80 Note 2	Analysis	None
Needed for:							
Hot Shutdown [X]	Submergence	N/A	N/A	N/A	N/A	N/A	None
Cold Shutdown [ ]							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 222H-023A
Rev.: 2

NOTES

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

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

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.

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Docket: 50-346 | | Rev.: 2

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

Plant I.D. No.: SV8446 Component: Solenoid Valve
Manufacturer: ASCO Model No.: HTX831655

Parts List	Materials List	THERMAL AGING Qualification	THERMAL AGING Reference	RADIATION Qualification	RADIATION Reference
Gaskets	BUNA-N	40 Years @ 104°F	CAL-80	1.5×10^7 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	Steel	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	1.2×10^6 RADS	CAL-80
Pilot Seat Cartridge	Acetal	17 Years @ 104°F	CAL-80	1.2×10^6 RADS	CAL-80
Disc	BUNA-N	40 Years @ 104°F	CAL-80	1.5×10^7 RADS	CAL-80
Diaphragm Assemblies	BUNA-N, Brass	40 Years @ 104°F	CAL-80	1.5×10^7 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	2.0×10^7 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				

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

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

Facility: [redacted]s-Besse Unit 1 SYSTEM COMPONENT [redacted]LUATION WORKSHEET Index [redacted] 222H-024
Docket: 50-346 Rev.: 2

Prepared by: S. 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: Emergency Ventilation	Operating Time	1 Year	40 Years	Note 1	Note 2	Analysis	None
Plant ID No. TSH5022A Component: Temperature Switch	Temperature (°F)	203.0	Exempt	C-515	Note 3	N/A	None
Manufacturer: Fenwal	Pressure (PSIA)	15.60	Exempt	C-515	Note 3	N/A	None
Model Number: 27120-22 Function: Input to Valve for Cross-Tie Damper	Relative Humidity (%)	100.0	Exempt	A	Note 3	N/A	None
Accuracy: Spec: N/A Demon: N/A Service: Emergency Vent Fan 1 FLT Cl	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 515	Radiation	9 x 10^2 RADS	3.7 x 10^4 RADS	T	CAL-81 Note 2	Analysis	None
Flood Level Elev: N/A Above Flood Level: N/A	Aging	40 Years	8.6 Years	I	Cal-81 Note 2	Analysis	None
Needed for: Hot Shutdown [X] Cold Shutdown [X]	Submergence	N/A	N/A	N/A	N/A	N/A	None

Facility: [redacted]-Besse Unit 1 SYSTEM COMPONEN[redacted]ALUATION WORKSHEET Index [redacted] 222H-024A
Docket: 50-346 Rev.: 2

NOTES

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

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

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

3. The component is a temperature switch which is exposed to a harsh environment as a result of a postulated main steam line break. The temperature switch is used to detect high emergency ventilation filter temperature. When the filter temperature exceeds the temperature switch setpoint value, the cross-tie ductwork damper is opened to allow excess heat to be removed through the redundant emergency ventilation fan.

   The emergency ventilation system is only required to function in response to a LOCA and would not be needed to mitigate the consequences of a high energy line break. Based on the above discussion, the temperature switch is exempted from qualification since its associated valve would not be required to function during the high energy line break of concern. Failure of the temperature switch would not impact safety-related functions nor mislead the operator.

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

COMPONENT MATERIALS EVALUATION SHEET

Index No.: 222H-024B
Rev.: 2

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

Plant I.D. No.: TSH5022A
Component: Temperature Switch
Manufacturer: Fenwal
Model No.: 27120-22

		THERMAL AGING		RADIATION	
Parts List *	Materials List	Qualification	Reference	Qualification	Reference
Insulation	Teflon	Greater than 40 Years @ 120°F	CAL-81	3.7×10^4 RADS	CAL-81
Insulation	Teflon Asbestos Glass Teflon (TAGT)	Greater than 40 Years @ 120°F	CAL-81	3.7×10^4 RADS	CAL-81
Black Thermofit Tubing	Polyethylene	8.6 Years @ 104°F	CAL-81	4.0×10^7 RADS	CAL-81
Insulation	Mica	40 Years @ 140°F	CAL-81	Not Affected	CAL-81
Resin	Epoxy	40 Years @ 147°C	CAL-81	1.0×10^9 RADS	CAL-81
Glass	Glass	Not Affected		Not Affected	CAL-81

Material & Parts List Reference: V-14A, V-32A

* Only non-metallic parts are listed. Metallic parts are not considered sensitive to thermal aging and are not affected by radiation.

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Prepared by: M. Lewis Date: 11/1/8
Checked by: [signature] Date: 11/3/8

Index No.: 222H-025
Rev.: 2

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Emergency Ventilation Plant ID No. TSH5022B Component: Temperature Switch Manufacturer: Fenwal Model Number: 27120-22 Function: Input to Valve for Cross-Tie Damper Accuracy: Spec: N/A Demon: N/A Service: Emergency Vent Fan 1 FLT C2 Location: Auxiliary Bldg. Rm. 515 Flood Level Elev: N/A Above Flood Level: N/A Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	40 Years	Note 1	Note 2	Analysis	None
	Temperature (°F)	203.0	Exempt	C-515	Note 3	N/A	None
	Pressure (PSIA)	15.60	Exempt	C-515	Note 3	N/A	None
	Relative Humidity (%)	100.0	Exempt	A	Note 3	N/A	None
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
	Radiation	9×10^2 RADS	3.7×10^4 RADS	T	CAL-81 Note 2	Analysis	None
	Aging	40 Years	8.6 Years	I	CAL-81 Note 2	Analysis	None
	Submergence	N/A	N/A	N/A	N/A	N/A	None

Facility: [redacted]s-Besse Unit 1 SYSTEM COMPONEN[redacted]ALUATION WORKSHEET Index [redacted] 222H-025A
Docket: 50-346 Rev.: 2

NOTES

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

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

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

3. The component is a temperature switch which is exposed to a harsh environment as a result of a postulated main steam line break. The temperature switch is used to detect high emergency ventilation filter temperature. When the filter temperature exceeds the temperature switch setpoint value, the cross-tie ductwork damper is opened to allow excess heat to be removed through the redundant emergency ventilation fan.

   The emergency ventilation system is only required to function in response to a LOCA and would not be needed to mitigate the consequences of a high energy line break. Based on the above discussion, the temperature switch is exempted from qualification since its associated valve would not be required to function during the high energy line break of concern. Failure of the temperature switch would not impact safety-related functions nor mislead the operator.

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

COMPONENT MATERIALS EVALUATION SHEET

Index No.: 222H-025B
Rev.: 2

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

Plant I.D. No.: TSH5022B
Component: Temperature Switch
Manufacturer: Fenwal
Model No.: 27120-22

		THERMAL AGING		RADIATION	
Parts List *	Materials List	Qualification	Reference	Qualification	Reference
Insulation	Teflon	Greater than 40 Years @ 120°F	CAL-81	3.7×10^4 RADS	CAL-81
Insulation	Teflon Asbestos Glass Teflon (TAGT)	Greater than 40 Years @ 120°F	CAL-81	3.7×10^4 RADS	CAL-81
Black Thermofit Tubing	Polyethylene	8.6 Years @ 104°F	CAL-81	4.0×10^7 RADS	CAL-81
Insulation	Mica	40 Years @ 140°F	CAL-81	Not Affected	CAL-81
Resin	Epoxy	40 Years @ 147°C	CAL-81	1.0×10^9 RADS	CAL-81
Glass	Glass	Not Affected		Not Affected	CAL-81

Material & Parts List Reference: V-14A, V-32A

* Only non-metallic parts are listed. Metallic parts are not considered sensitive to thermal aging and are not affected by radiation.

Facility: D[redacted]-Besse Unit 1 SYSTEM COMPONENT [redacted]UATION WORKSHEET Index N[redacted]222H-026
Docket: 50-346 Rev.: 2

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

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification	Outstanding
	Parameter	Specification	Qualification	Specification	Qualification	Method	Items
System: Emergency Ventilation Plant ID No. TSH5058A Component: Temperature Switch Manufacturer: Fenwal Model Number: 27120-22 Function: Input to Valve for Cross-Tie Damper Accuracy: Spec: N/A Demon: N/A Service: Emergency Vent Fan 2 FLT Cl Location: Auxiliary Bldg. Rm. 515 Flood Level Elev: N/A Above Flood Level: N/A Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	40 Years	Note 1	Note 2	Analysis	None
	Temperature (°F)	203.0	Exempt	C-515	Note 3	N/A	None
	Pressure (PSIA)	15.60	Exempt	C-515	Note 3	N/A	None
	Relative Humidity (%)	100.0	Exempt	A	Note 3	N/A	None
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
	Radiation	9×10^2 RADS	3.7×10^4 RADS	T	CAL-81 Note 2	Analysis	None
	Aging	40 Years	8.6 Years	I	CAL-81 Note 2	Analysis	None
	Submergence	N/A	N/A	N/A	N/A	N/A	None

Facility: [redacted]s-Besse Unit 1 SYSTEM COMPONEN[redacted]ALUATION WORKSHEET Index N[redacted] 222H-026A
Docket: 50-346 Rev.: 2

NOTES

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

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

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

3. The component is a temperature switch which is exposed to a harsh environment as a result of a postulated main steam line break. The temperature switch is used to detect high emergency ventilation filter temperature. When the filter temperature exceeds the temperature switch setpoint value, the cross-tie ductwork damper is opened to allow excess heat to be removed through the redundant emergency ventilation fan.

   The emergency ventilation system is only required to function in response to a LOCA and would not be needed to mit'gate the consequences of a high energy line break. Based on the above discussion, the temperature switch is exempted fror qualification since its associated valve would not be required to function during the high energy line break of concern. Failure of the temperature switch would not impact safety-related functions nor mislead the operator.

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

COMPONENT MATERIALS EVALUATION SHEET

Index No.: 222H-026B
Rev.: 2

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

Plant I.D. No.: TSH5058A
Component: Temperature Switch
Manufacturer: Fenwal
Model No.: 27120-22

		THERMAL AGING		RADIATION	
Parts List *	Materials List	Qualification	Reference	Qualification	Reference
Insulation	Teflon	Greater than 40 Years @ 120°F	CAL-81	3.7×10^4 RADS	CAL-81
Insulation	Teflon Asbestos Glass Teflon (TAGT)	Greater than 40 Years @ 120°F	CAL-81	3.7×10^4 RADS	CAL-81
Black Thermofit Tubing	Polyethylene	8.6 Years @ 104°F	CAL-81	4.0×10^7 RADS	CAL-81
Insulation	Mica	40 Years @ 140°F	CAL-81	Not Affected	CAL-81
Resin	Epoxy	40 Years @ 147°C	CAL-81	1.0×10^9 RADS	CAL-81
Glass	Glass	Not Affected		Not Affected	CAL-81

Material & Parts List Reference: V-14A, V-32A

* Only non-metallic parts are listed. Metallic parts are not considered sensitive to thermal aging and are not affected by radiation.

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 222H-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: Emergency Ventilation Plant ID No. TSH5058B Component: Temperature Switch Manufacturer: Fenwal Model Number: 27120-22 Function: Input to Valve for Cross-Tie Damper Accuracy: Spec: N/A Demon: N/A Service: Emergency Vent Fan 2 FLT C2 Location: Auxiliary Bldg. Rm. 515 Flood Level Elev: N/A Above Flood Level: N/A Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	40 Years	Note 1	Note 2	Analysis	None
	Temperature (°F)	203.0	Exempt	C-515	Note 3	N/A	None
	Pressure (PSIA)	15.60	Exempt	C-515	Note 3	N/A	None
	Relative Humidity (%)	100.0	Exempt	A	Note 3	N/A	None
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
	Radiation	9×10^2 RADS	3.7×10^4 RADS	T	CAL-81 Note 2	Analysis	None
	Aging	40 Years	8.6 Years	I	CAL-81 Note 2	Analysis	None
	Submergence	N/A	N/A	N/A	N/A	N/A	None

Facility: D[redacted]-Besse Unit 1 SYSTEM COMPONENT [redacted]LUATION WORKSHEET Index N[redacted]222H-027A
Docket: 50-346 Rev.: 2

NOTES

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

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

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

3. The component is a temperature switch which is exposed to a harsh environment as a result of a postulated main steam line break. The temperature switch is used to detect high emergency ventilation filter temperature. When the filter temperature exceeds the temperature switch setpoint value, the cross-tie ductwork damper is opened to allow excess heat to be removed through the redundant emergency ventilation fan.

   The emergency ventilation system is only required to function in response to a LOCA and would not be needed to mitigate the consequences of a high energy line break. Based on the above discussion, the temperature switch is exempted from qualification since its associated valve would not be required to function during the high energy line break of concern. Failure of the temperature switch would not impact safety-related functions nor mislead the operator.

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

COMPONENT MATERIALS EVALUATION SHEET

Index No.: 222H-027B
Rev.: 2

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

Plant I.D. No.: TSH5058B
Manufacturer: Fenwal
Component: Temperature Switch
Model No.: 27120-22

Parts List *	Materials List	THERMAL AGING Qualification	Reference	RADIATION Qualification	Reference
Insulation	Teflon	Greater than 40 Years @ 120°F	CAL-81	3.7×10^4 RADS	CAL-81
Insulation	Teflon Asbestos Glass Teflon (TAGT)	Greater than 40 Years @ 120°F	CAL-81	3.7×10^4 RADS	CAL-81
Black Thermofit Tubing	Polyethylene	8.6 Years @ 104°F	CAL-81	4.0×10^7 RADS	CAL-81
Insulation	Mica	40 Years @ 140°F	CAL-81	Not Affected	CAL-81
Resin	Epoxy	40 Years @ 147°C	CAL-81	1.0×10^9 RADS	CAL-81
Glass	Glass	Not Affected		Not Affected	CAL-81

Material & Parts List Reference: V-14A, V-32A

* Only non-metallic parts are listed. Metallic parts are not considered sensitive to thermal aging and are not affected by radiation.

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 222H-028
Rev.: 2

Prepared by: [signature] Date: 11/1/6
Checked by: [signature] Date: 11/4/87

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Emergency Ventilation Plant ID No. PDY5000A Component: Signal Buffer Manufacturer: G.E. Model Number: 740 Function: Signal Isolation Accuracy: Spec: N/A Demon: N/A Service: Annulus and Mechanical Penetration Rooms Location: Auxiliary Bldg. Rm. 304 Flood Level Elev: N/A Above Flood Level: N/A Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	Exempt	Note 2	Note 3	Analysis	Note 1
	Temperature (°F)	298.0	Exempt	C-304	Note 3	Analysis	None
	Pressure (PSIA)	15.83	Exempt	C-304	Note 3	Analysis	None
	Relative Humidity (%)	100.0	Exempt	A	Note 3	Analysis	None
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
	Radiation	3.91×10^2 RADS	Exempt	CAL-61	Note 3	Analysis	None
	Aging	40 Years	Exempt	I	Note 3	Analysis	None
	Submergence	N/A	N/A	N/A	N/A	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 222H-028A
Rev.: 2

NOTES

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

1. Relocate this component to Room 304 in accordance with FCR 83-062.

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

3. This component is a signal buffer that is present in the control loop and isolates the non-class 1E portion of the loop. Electrical signals from a differential pressure controller (PDC5000) are relayed to the linear hydramotor actuator for an emergency ventilation system modulating damper (MV5000B). These signals control the actuator so that the damper modulates to maintain a negative pressure in the annulus and penetration rooms. This action occurs once the actuator has been energized. Actuator energization is accomplished automatically upon the initiation of emergency ventilation. The actuator energizing circuit and the actuator modulating circuit are separate and independent of each other.

   The signal buffer is exempt from qualification for the following reasons:

   a. It does not perform a safety-related function in the harsh steam environment resulting from a high energy line break. Failure of this device in the steam environment may result in erroneous signals being sent to the linear actuator. Since the emergency ventilation system is not operated or needed during high energy line break accidents, component failure will not degrade other safety-related functions.

      The damper's indicating lights are operated by auxiliary contacts off the actuator's energizing coil. Since the modulating and energizing circuits are separate and independent, component failure cannot affect indication or mislead the operator. Furthermore, the operator will not be concerned with the emergency ventilation system status during a high energy line break accident.

   b. This device will be exposed to a total integrated dose of only 3.91×10^2 rads after a LOCA. Analysis of existing literature on the effects of radiation on non-metallic materials (WCAP-8587, Appendix C) demonstrates that materials typical to nuclear power plant construction would not be significantly affected by radiation doses less than 10^4 rads. Therefore, this is considered a mild environment. 10CFR50.49 does not require qualification of mild environment equipment.

   c. Only one of the two redundant emergency ventilation system (EVS) trains is exposed to the radiation levels resulting from a LOCA. Each train can independently maintain a negative pressure in the annulus and penetration rooms. Following a LOCA, this action is necessary so that high radiation air can be discharged through HEPA and charcoal filters to reduce doses at the site boundary. Per FSAR Section 9.4.3.3, a single failure of any component of the emergency ventilation system will not result in damage to any safety-related systems.

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 222H-028B
Rev.: 2

NOTES

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

Each train of the EVS consists of a fan and filter unit, associated dampers, ductwork, instrumentation, and controls. A controller operates exhaust and recirculation modulating dampers to maintain a negative pressure in the containment annulus. The controller signal feeds directly to the exhaust damper and through the PDY5000C current repeater to the recirculation damper. Failure of the repeater may cause erroneous signals to be sent to the recirculation damper.

The two parallel fan inlets can be connected by opening a cross tie ductwork damper. This action allows either fan to draw air through both suction lines and therefore both sets of filter units. Since each fan is rated at 100% of the required design capacity, one train can safely be utilized in performing the function of the EVS. Based upon the above discussion, safe interim plant operation is justified while this equipment is being relocated.

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 22H-029
Rev.: 2

Prepared by: [signature] Date: 11/1/8?
Checked by: [signature] Date: 11/21/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification	Outstanding
	Parameter	Specification	Qualification	Specification	Qualification	Method	Items
System: Emergency Ventilation	Operating Time	1 Year	Exempt	Note 2	Note 3	Analysis	Note 1
Plant ID No. PDY5000B Component: Power Supply	Temperature (°F)	208.0	Exempt	C-304	Note 3	Analysis	None
Manufacturer: G.E. Model Number: 9T66Y987	Pressure (PSIA)	15.83	Exempt	C-304	Note 3	Analysis	None
Function: Power Supply	Relative Humidity (%)	100.0	Exempt	A	Note 3	Analysis	None
Accuracy: Spec: N/A Demon: N/A Service: Annulus and Mechanical Penetration Rooms	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 304	Radiation	3.91×10^2 RADS	Exempt	CAL-61	Note 3	Analysis	None
Flood Level Elev: N/A Above Flood Level: N/A	Aging	40 Years	Exempt	I	Note 3	Analysis	None
Needed for: Hot Shutdown [X] Cold Shutdown [X]	Submergence	N/A	N/A	N/A	N/A	N/A	None

Facility: Davis-Besse Unit 1 SYSTEM COMPONENT EVALUATION WORKSHEET Index No.: 222H-029A
Docket: 50-346 Rev.: 2

NOTES

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

1. Relocate this component to Room 304 in accordance with FCR 83-062.

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

3. This component is a power supply that is present in the control loop and isolates the non-class 1E portion of the loop. Electrical signals from a differential pressure controller (PDC5000) are relayed to the linear hydramotor actuator for an emergency ventilation system modulating damper (MV5000B). These signals control the actuator so that the damper modulates to maintain a negative pressure in the annulus and penetration rooms. This action occurs once the actuator has been energized. Actuator energization is accomplished automatically upon the initiation of emergency ventilation. The actuator energizing circuit and the actuator modulating circuit are separate and independent of each other.

   The power supply is exempt from qualification for the following reasons:

   a. It does not perform a safety-related function in the harsh steam environment resulting from a high energy line break. Failure of this device in the steam environment may result in erroneous signals being sent to the linear actuator. Since the emergency ventilation system is not operated or needed during high energy line break accidents, component failure will not degrade other safety-related functions.

      The damper's indicating lights are operated by auxiliary contacts off the actuator's energizing coil. Since the modulating and energizing circuits are separate and independent, component failure cannot affect indication or mislead the operator. Furthermore, the operator will not be concerned with the emergency ventilation system status during a high energy line break accident.

   b. This device will be exposed to a total integrated dose of only 3.91×10^2 rads after a LOCA. Analysis of existing literature on the effects of radiation on non-metallic materials (WCAP-8587, Appendix C) demonstrates that materials typical to nuclear power plant construction would not be significantly affected by radiation doses less than 10^4 rads. Therefore, this is considered a mild environment. 10CFR50.49 does not require qualification of mild environment equipment.

   c. Only one of the two redundant emergency ventilation system (EVS) trains is exposed to the radiation levels resulting from a LOCA. Each train can independently maintain a negative pressure in the annulus and penetration rooms. Following a LOCA, this action is necessary so that high radiation air can be discharged through HEPA and charcoal filters to reduce doses at the site boundary. Per FSAR Section 9.4.3.3, a single failure of any component of the emergency ventilation system will not result in damage to any safety-related systems.

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 222H-029B
Rev.: 2

Prepared by: _____ Date: 11/1/83
Checked by: _____ Date: 11/2/83

NOTES

Each train of the EVS consists of a fan and filter unit, associated dampers, ductwork, instrumentation, and controls. A controller operates exhaust and recirculation modulating dampers to maintain a negative pressure in the containment annulus. The controller signal feeds directly to the exhaust damper and through the PDY5000C current repeater to the recirculation damper. Failure of the repeater may cause erroneous signals to be sent to the recirculation damper.

The two parallel fan inlets can be connected by opening a cross tie ductwork damper. This action allows either fan to draw air through both suction lines and therefore both sets of filter units. Since each fan is rated at 100% of the required design capacity, one train can safely be utilized in performing the function of the EVS. Based upon the above discussion, safe interim plant operation is justified while this equipment is being relocated.