## CALCULATION/PROBLEM COVER SHEET



Calculation/Problem No: 1040-001-025

Title: Emergency Ventilation System

2.22

ClientToledo Edison Company Project: Davis-Besse Unit 1

I & E Bulletin 79-01B Job No: 1040-001-671

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	Jettrey S. Haverly	10-2-81
2	GENERAL MANUAL REVISIONS	NK loodu and	11/2/83
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	8312200214 831129 PDR ADOCK 05000346 PDR		

Davis-Besse Unit 1 Docket: 50-346

HARSH ENVIRONMENT

Index No: 222M-001 Rev.: 2

## EMERGENCY VENTILATION SYSTEM

Prepared by: Nheuis Date 11/1/83
Checked by: Afficiation Date 11/1/83

	1	1		ILOCA	TION	
Worksheet Index No.		Generic Name	Inside   Primary   Containment	Outside     Primary     Containment	REMARKS	
	1	1		1	1	
222H-005	1 2	IMC0301	Ventilation Pan Motor	- 1	Rm. 515	
222H-006	1 2	IMC0302	Wentilation Pan Motor	1	Rm. 515	
222H-007	1 2	IMC5017	Damper Motor Operator		Rm. 515	
222H-008	1 2	IMC5018	Damper Motor Operator		Rm. 515	
222H-009	1 2	IMC5056	Damper Motor Operator		Rm. 515	
222H-010	1 2	IMC5057	Damper Motor Operator		Rm. 515	
222H-011	1 2	IMV5000A	Damper Motor Operator		Rm. 515	
222H-012	1 2	MV5000B	Damper Motor Operator	111	Rm. 515	
22211-013	1 2	IMV5614A	Damper Motor Operator		Rm. 515	
222H-014	1 2	MV5014B	! Damper Motor Operator		Rm. 515	
222H-015	1 2	MV50240	Valve Motor Operator	Control of the Control	Rm. 515	
222H-016	1 2	IMV50250	Valve Motor Operator	1	I Rm. 515 I	
22H-017	1 2	IPDC5000	Pressure Differential Controller		Rm. 304	
222H-018	1 2	PDIS5017	Pressure Differential Switch		1 Rm. 515 1	
222H-019	1 2	IPDIS5018	Pressure Differential Switch		Rm. 515	
222H-020	1 2	IPDT5000	Pressure Differential Transmitter	The Late of the La	I Rm. 303 1	
222H-021	1 2	IPDT5014	Pressure Differential Transmitter	1	Rm. 515	
222H-022	1 2	IPDY5000C	Current Repeater		Rm. 304	
222H-023	1 2	ISV8446	Solenoid Valve	1 1	I Rm. 427 I	
222H-024	1 2	TSH5022A	Temperature Switch	1	Rm. 515	
222H-025	1 2	ITSH50223	Temperature Switch	- Silver Visite of the	Rm. 515	
222H-026	1 2	TSH5058A	Temperature Switch		Rm. 515	
222H-027	1 2	TSH5058B	Temperature Switch		Rm. 515	
222H-028	1 2	!PDY5000A	Signal Buffer	100	Rm. 304	
222H-029	1 2	IPDY5000B	Power Supply	The second second	1 Rm. 304 1	
	1 2	IBYE2	Motor Control Center	7 M C	Rm. 304	See 2.21
	1 2	IBYF2	Motor Control Center		1 Rm. 427 1	See 2.21
	1 2	IEC5017	I Terminal Block Box	The second second	I Rm. 515 I	See 2.21
	1 2	IEC5018	Terminal Block Box		I Rm. 515 I	See 2.21
	1	1	1		1	

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

HARSH ENVIRONMENT

Index No: 222M-002 Rev.: 2

EMERGENCY VENTILATION SYSTEM

Prepared by: Neuro
Checked by:

		1		LOCA	TION	
Worksheet Index No.	Rev.	Plant  ID Number	 	Inside   Primary   Containment	Outside   Frimary   Containment	REMARKS
	1 2	  EC5056	Terminal Block Box		Rm. 515	See 2.21
	1 2	EC5057	Terminal Block Box		Rm. 515	See 2.21
	1 2	EV50240	Terminal Block Box		Rm. 515	See 2,21
	1 2	EV50250	Terminal Block Box		Rm. 515	See 2.21
	1 2	JT3704	Terminal Block Box		Rm. 304	See 2.21
	1 2	JT3803	Terminal Block Box		Rm. 304	See 2.21
	1 2	NC5017	Push Button Switch		Rm. 515	See 2.21
	1 2	NC5018	Push Button Switch		Rm. 515	See 2.21
	1 2	NC5056	Push Button Switch		Rm. 515	See 2.21
	1 2	NC5057	Push Button Switch	4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Rm. 515	See 2.21
	1					
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	1	1			1	
	1					

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



Index No: 222M-003 Rev.: 2

Prepared by: N Lewis Date 11/1/97
Checked by: Stranger Date 11/47

	T			LOCA	LOCATION		
Worksheet	l l l pau	Plant  ID Number	Generic Name	Inside Primary Containment	Outside   Primary   Containment	REMARKS	
Index No.	Rev.	11D Walniber	Generic Name	Concariment	Concariment		
	1 0	BE12A	Motor Control Center		Rm. 429		
	1 0	BF12A	Motor Control Center		Rm. 428		
	1 0	C5716	Engineering Safety Feature Panel		Rm. 505		
	1 0	IC5717	Engineering Safety Feature Panel		Rm. 505		
	1 0	CDE12A1	Disconnect Switch Cabinet		Rm. 429		
	1 0	CDE12A2	Disconnect Switch Cabinet		Rm. 429		
	1 0	CDF12A1	Disconnect Switch Cabinet		Rm. 428		
	1 0	PDC5014	Pressure Differential Controller		Rm. 310		
	1 0	PDY5014C	Pressure Relay		Rm. 310		
	1 0	RC4604	Relay Cabinet	The second second	Rm. 429		
	1 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: Nheurs Date 11/183
Checked by: Amanomal Date 11/2/83

				LOCA	TION		
Worksheet Index No.	Rev.	Plant    ID Number	Generic Name	Inside   Primary   Containment	Outside   Primary   Containment	REMARKS	
	!	1 1		1			
	1						
	1			1			
	1			1			
	1 -	1 1					
	1						

Facility: Davis-Besse Unit 1 SYSTEM COMPONENT EVALUATION WORKSHEET Docket: 50-346

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

Prepared by:

Checked by: 47 mine

Date: 11/18

EQUIPMENT DESCRIPTION	i	ENVIRONMENT		DOCUMENTATION REF.		Qualification	Outstanding
	Parameter	Specification	Qualification	Specification	Qualification	Method	Items
	Operating	1 Year	40 Years	F	Note 1	N/A	   None 
Component: Ventilation	  Temperature    (°F)	203.0	311.0	C-515	Note 1	N/A	None
Fan Motor    Manufacturer: General	-		1	-			
Electric	Pressure    (PSIA)	15.60	Greater than   15.7	c-515	Note 1	N/A	None
Model Number: 5K254AN6359	!		!	!	!!		<u> </u>
		100.0	100.0	λ	Note 1	N/A	None
		N/A	N/A	   N/A 		N/A	None
Location: Auxiliary Bldg.	1	9.0 x 10 <sup>2</sup> RADS	15.0 x 10 <sup>7</sup> 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:			1	1	1		
Cold Shutdown   X	Submergence	N/A	I N/A	I N/A	N/A	N/A	None

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

SYSTEM COMPONENT E

222H-005A Rev.:

NOTES

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 SYSTEM COMPONENT BYALUATION WORKSHEET Docket: 50-346

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

		ENVIRONMENT		DOCUMENTATION REF.		Qualification	Outstanding
	Parameter	Specification	Qualification	Specification	Qualification	Method	Items
System: Emergency Ven-		1 Year	   40 Years 	P	Note 2	Analysis	None
Component: Ventilation		203.0	   Exempt 	   C~515 		Analysis	None
Manufacturer: General   Electric		15.60	   Exempt	   C-515		Analysis	None
		100.0	   Exempt 	   A 	Note 1	Analysis	None
		N/A	   N/A 	   N/A 		N/A	None
Location: Auxiliary Bldg.	And the second of the second o	9x10 <sup>2</sup> Rads	5x10 <sup>7</sup> Rads	T	CAL 84 Note 2	Analysis	None
Flood Level Elev: N/A    Above Flood Level: N/A		40 Years	40 Years	I	!	Analysis	None
		N/A	 	   N/A		N/A	   None

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

SYSTEM COMPONENT EV

Rev.:

NOTES

Prepared by:

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-005B

Prepared by: \_\_\_\_\_ Checked by: \_\_\_\_\_

1 Marchald

Date:

1/1/3

Plant T.D. No.:	MCO301	Component:	Ventilation Fan Motor	
Manufacturer:	General Electric	Model No.:	5K254AN6359	

	J	THERMAL AGIS	NG I	RADIATION	
Parts List *	Materials List	Qualification	Reference	Qualification	Reference
nsulation	Dacro-Mylar	40 Years @ 122°F	CAL-84	8.7 x 10 <sup>7</sup> RADS	CAL-84
	Polyester Glass	40 Years @ 266°F	CAL-84	1.0 x 109 RADS	1 CAL-84
	Polyester Varnish	40 Years @ 266°F	CAL-84	1.0 x 109 RADS	1 CAL-84
nsulation	EPDM	40 Years @ 172°F	CAL-84	5.0 x 107 RADS	CAL-84
edge	Polyester Glass	1 40 Years @ 266°F	CAL-84	1.0 x 109 RADS	1 CAL-84
ire Insulation	Alkanex (Polyester)	40 Years @ 266°F	CAL-84	1.6 x 109 RADS	CAL-84
	i e		i i		i

Material & Parts List Reference: ROC-18A

<sup>\*</sup> 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 ELLUATION WORKSHEET Docket: 50-346

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

Prepared by:

Date: 4/2/5

EQUIPMENT DESCRIPTION		ENVIRONMENT		DOCUMENTA	TION REF.	Qualification	Outstanding
	Parameter	Specification	Qualification	Specification Qualification		Method	Items
And the control of th		1 Year	40 Years	) F	Note 1	N/A	None
Plant ID No. MCU392 Component: Ventilation Fan Motor		203.0	   311.0 	   C-515 		N/A	   None 
		15.60	Greater than	C-515	Note 1	N/A	None
		100.0	1 100.0	l A	Note 1	N/A	None
		N/A	N/A	   N/A 		N/A	   None 
Location: Auxiliary Bldg.	1	9.0 x 10 <sup>2</sup> RADS	15.0 x 10 <sup>7</sup> RADS	T	CAL-84     Note 2	Analysis	None
Above Flood Level: N/A	  Aging 	40 Years	40 Years	I	CAL-84     Note 2	Analysis	None
Needed for:   Hot Shutdown   X       Cold Shutdown   X	  Submergence	N/A	   N/A			N/A	   None

Facility: Davis-Besse Unit 1 50-346

Docket:

SYSTEM COMPONENT E TION WORKSHEET

Rev. .

Index No. 222H-006A

NOTES

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 P 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.

Pacility: Davis-Besse Unit 1 SYSTEM COMPONENT EVALUATION WORKSHEET Docket: 50-346

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

Prepared by: Mlais Date: 11/1/87 Checked by: Affice On Date: 11/0/83

EQUIPMENT DESCRIPTION	11	ENVIRONMENT		DOCUMENTATION REF.		Qualification	Outstanding
		Specification	Qualification		Qualification		Items
System: Emergency Ven- tilation System	   Operating     Time   	1 Year	   40 Years 	l P	Note 2	Analysis	   None
		203.0	Exempt	l C-515	Note 1	Analysis	l None
	!!			i	<u>i</u>		
Electric		15.60	Exempt	C-515	Note 1	Analysis	None
Model Number: 5K254AN6359	!!			1	<u> </u>		
	Relative     Humidity	190.0	Exempt	1 A	Note 1	Analysis	None
Demon: N/A		N/A	N/A	   N/A 		N/A	None
Location: Auxiliary Bldg.		9x10 <sup>2</sup> Rads	5x10 <sup>7</sup> Rads	T	CAL 84   Note 2	Analysis	None
Above Flood Level: N/A		40 Years	40 Years	I I	Note 2	Analysis	None
Needed for: Hot Shutdown   X     Cold Shutdown   X		N/A	N/A	I I N/A		N/A I	None

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

SYSTEM COMPONENT EV

Index No. 222H-006A Rev.:

NOTES

- 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.

Pacility: Bavis-Besse Unit 1 Docket: 50-346

COMPONENT MATERIAGE EVALUATION SHEET

Index No.: 222H-0:5B

Prepared by:

Date Date

Pate: 11/1/85

Plant I.D. No.: MCO302 Component: Ventilation Fan Motor

Manufacturer: General Electric Model No.: 5K254AN6359

	THERMAL AGI	NG I	RADIATION		
Materials List	Qualification	Reference	Qualification	Reference	
Dacro-Mylar	1 40 Years @ 122°F	CAL-84	8.7 x 10 <sup>7</sup> RADS	CAL-84	
		7		CAL-84	
			1.0 x 109 RADS	CAL-84	
EPDM	40 Years @ 172°F	CAL-84		CAL-84	
Polyester Glass	40 Years @ 266°F	CAL-84	1.0 x 109 RADS	CAL-84	
Alkanex (Polyester)	40 Years @ 266°F	1. CAL-84 1	1.0 x 109 RADS	CAL-84	
				1	
	Dacro-Mylar   Polyester Glass   Polyester Varnish   EPDM   Polyester Glass	Materials List   Qualification	Dacro-Mylar	Materials List	

Material & Parts List Reference: ROC-18A

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

Facility: Da Ts-Besse Unit 1 SYSTEM COMPONENT EXACUATION WORKSHEET

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

Docket: 50-346

Prepared by: N Louis Date: 11/183
Checked by: Lemont Date: 11/183

EQUIPMENT DESCRIPTION		ENVIRONMENT		1 DOCUMENTA	ZION REF.	Qualification	Outstanding
	Parameter	Specification	Qualification	Specification	Qualification	Method	Items
		l Year	l 1.1 Years	P	M-26   V-24G   Note 1	Simultaneous Test	None
Plant ID No. MC5017     Component: Damper Motor     Operator	Temperature    (°F)   	203.0	300.0	C-515	M-26   V-24G	Simultaneous Test	None
		15.60	84.7	C-515	M-26   V-24G	Sámultaneous Test	None
		100.9	   100.0 	A	M-26   V-24G	Simultaneous Test	None
Demon: N/A   Service: Emergency Ven-   tilation Fan No. 1		N/A	   N/A   	N/A	I N/A	N/A	   None 
Location: Auxiliary Bldg.		N/A	N/A	I N/A	I N/A	N/A	None
		40 Years	   40 Years 	   I	CAL-93	Sequential Test	None
Needed for:  Hot Shutdown   X      Cold Shutdown   X		N/A	   N/A	N/A		E/A	None

Facility: Pavis-Besse Unit 1 50-346

Docket:

SYSTEM COMPONENT EVALUATION WORKSHEET

NOTES

Index No.: 222H-007A

: 2

Rev.:

Prepared by: Nheurs

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 Rocm 515 peaks at 15.5 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)

Pacility: Davis-Besse Unit 1

Docket: 59-346

## SYSTEM COMPONENT EVALUATION WORKSHEET

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

Prepared by:	Nheens	Date:	11/1/82
Checked by:	Dru Soul	Date:	11/4/1

EQUIPMENT DESCRIPTION	11	ENVIRONMENT		DOCUMENT	ATION REF.	1 0001/6/	
	Parameter	specification	Qualification	Specification	n Qualification	Qualification     Method	Outstanding
	Operating     Time	l Year	1.1 Years	   P 	M-26   V-24G   Note 1	Simultaneous	None
Component: Damper Motor Operator	Temperature     ^°F)   	203.0	300.0	C-515	M-26 V-24G	Simultaneous   Test	None
		15.60	84.7	i   C-515 	M-26   V-24G		None
Function: Operates Emer- gency Ventilation Fan No. 2 Inlet Damper		105.0	100.0	Α .	M-26   V-24G	Simultaneous   Test	None
Accuracy: Spec: N/A Demon: N/A Service: Emergency Ven- tilation Fan No. 2 Inlet Damper	1	N/A	N/A	N/A		N/A	None
		N/A I	N/A	N/A	N/A	N/A I	None
Plood Level Elev: N/A   Above Flood Level: N/A   Needed for:		40 Years	40 Years	1	CAL-93	Sequential Test!	None
Hot Shutdown   X	  Submergence	N/A I	N/A I	N/A	N/A I	N/A I	None

acility: Davis-Besse Unit 1

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SYSTEM COMPONENT EVALUATION WORKSHEET

NOTES

Index No.: 222H-008A

Rev.: 2

repared by: Nheuris Date 11/1/83
necked by: Date 11/1/83

The test subjected the motor operator to a transient of 300°F and 84.7 paia 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)

Docket: 50-346

Pacility: Daris-Sesse Unit 1 SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 222H-009 Rev.:

Prepared by: Nlauri Date: 11/183 Checked by: Strange Dornel Date: 11/2/63

EQUIPMENT DESCRIPTION	11	ENVIRONMENT		DOCUMENTA	TION REF.		Outstanding
	Parameter	Specification	Qualification	Specification	Qualification	Method	Itoms
tilation System	   Operating     Time	1 Year	   1.1 Years 	   P 	M-26 V-24G Note 1		#one
Component: Damper Motor Operator		203.0	300.0	   C-515 	M-26 V-24G	Simultaneous     Test	None
	   Pressure	15.60	84.7	C-515	   M-26   V-24G	Simultaneous     Test	None
Gency Ventilation Fan Inlet Cross-Over Damper	Humidity	100.0	100.0	   A 	M-26 V-24G	Simultaneous     Test	None
Service: Emergency Ven- tilation Fan Inlet Cross-Over Damper	11	N/A	N/A		N/A	N/A	None
Location: Auxiliary Bldg.  Rm. 515	   Radiation	N/A	N/A	I N/A	N/A	N/A I	None
		40 Years	40 Years	1	CAL-93	Sequential Test   Analysis	None
		N/A	N/A	I N/A I	N/A	N/A	None

icility: Davis-Besse Unit 1

SYSTEM COMPONENT EVALUATION WORKSHEET

Rev.:

Index No.: 222H-009A

ocket: 50-346

repared by:

recked by: "Allewards

MOTES

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)

Pacility: Daws-Besse Unit 1 SYSTEM COMPONENT EXCUATION WORKSHEET Docket: 50-346

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

Prepared by: Nhours Date: 11/1/89
Checked by: Sauconal Date: 11/2/03

EQUIPMENT DESCRIPTION	11	ENVIRONMENT		DOCUMENTAT	TION REF.	Qualification	Outstanding
	Parameter	Specification	Qualification	Specification	Qualification	Method	Items
tilation System	   Operating     Time   	1 Year	1.1 Years 	P 	M-26 V-24G Note 1	Simultaneous     Test	None
Component: Damper Motor Operator	111	203.0	300.0	   C-515 	   M-26   V-24G	Simultaneous     Test	None
		15.60	84.7   84.7	   C-515 	M-26   V-24G	Simultaneous     Test	None
Function: Operates Emer- gency Ventilation Fan Inlet Cross-Over Damper	Humidity	100.0	100.0	   A 	   M-26   V-24G	Simultaneous     Test	None
The state of the s		N/A	N/A	N/A	   N/A   		None
Location: Auxiliary Bldg. Rm. 515	   Radiation	N/A	N/A	I N/A	N/A	N/A	None
Above Flood Level: N/A	   Aging   	40 Years	40 Years	I I	CAL-93	  Sequential Test    Analysis	None
Needed for: Hot Shutdown   X    Cold Shutdown   X		N/A	I I N/A	   N/A 	 	N/A	None

Pacility: Davis-Besse Unit 1

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 222H-010A

repared by: Nheura hecked by: Anadores

Date 11/1/83

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 92 hours, then a cooldown to 200°F and 24.7 psia, which was maintained for 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 peaks at 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 and after exposure to the accident environment which would result from the postulated HELB. (Reference C-515)

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

SYSTEM COMPONENT EVALUATION WORKS EET

Index Ho.: 222H-011 Rev.: 2

Prepared by: Nleurs Date: 11/1/83 Checked by: Date: 11/4/83

EQUIPMENT DESCRIPTION	11	ENVIRONMENT		l pogument			
	Parameter	Specification	Qualification	Specification	ATION REF.	Qualification	Outstanding
tilation System 1	Operating     Time	1 Year	40 Years	Note 1	Note 2	Method	Items
Component: Damper Motor	1	203.0	Exempt	C-515		N/A	None
Controls	Pressure    (PSIA)	15.60	Exempt	C-515		N/A	None
		100.0	Exempt	A	Note 3	N/A	None
tilation Fan #1    Discharge Damper		N/A	N/A	N/A	N/A	N/A	None
Rm. 515    lood Level Elev: N/A	Radiation	9x10 <sup>2</sup>	1.0x10 <sup>7</sup> Rads	T	CAL-86   Note 2	Analysis	None
bove Flood Level: N/A	Aging	40 Years	40 Years	I	CAL-86   Note 2	Analysis	None
Hot Shutdown   X	Submergence!	N/A	N/A	N/A I	N/A I	N/A	None

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

SYSTEM COMPONENT ALUATION WORKSHEET

Prepared by: Checked by:

NOTES

Index No.: 222H-011A

Rev.:

- One-year operating time is used as a conservative maximum specification.
- 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 MCO301. 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.

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

EVALUATION SHEET

Component:

222H-011B Rev.:

Prepared by:

Checked by:

Plant I.D. No .: MV5000A Manufacturer: ITT General Controls Damper Motor Operator

Model No.: AH-91

	1	THERMAL AGIN	IG I	RADIATIO	N
Parts List *	Materials List	Qualification	Reference	Qualification	Reference
nsulation	Teflon	40 Years @ 288°F	CAL-86	1x10 <sup>7</sup> Rads	CAL-85
alve Seat Ring	Polyimide	1 40 Years @ 288°F	CAL-86	1x10 <sup>7</sup> Rads	1 CAL-86
-Ring Seal	Buna-N	40 Years @ 104°F	CAL-86	1.5x10 <sup>7</sup> Rads	CAL-86
eal .	Polymyte	Greater than 40 Years	CAL-86	1.0x10 <sup>7</sup> Rads	CAL-86
iaphragm	Buna-N (nylon coated)	40 Years @ 104°F	CAL-86	1.5x10 <sup>7</sup> Rads	I CAL-86

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

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

Docket: 50-346

Pacility: Davis-Besse Unit 1 SYSTEM COMPONENT EVALUATION WORKSHEET

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

Prepared by: Nhouse Date: 11/1/93
Checked by: Attention Date: 11/2/13

EQUIPMENT DESCRIPTION		ENVIRONMENT		DOCUMENTA	TICE REF.	Qualification	Outstanding
	Parameter	Specification	Qualification	Specification	Qualification	Method	Items
		l Year	40 Years	Note 1	Note 2	Analysis	None
Component: Damper Motor		203.0	   Exempt	C-515	Note 3	N/A	None
Actuator   Manufacturer: ITT General  Controls   Model Number: AH-91		15.60	   Exempt 	   c-515 	Note 3	N/A	None
Function: Operates Emer-   gency Ventilation Fan #1  Recirculation Damper		100.0	   Exempt 	   A 	Note 3	N/A	   None 
Service: Emergency Ven-		N/A	   N/A   	N/A	N/A	N/A	   None 
Location: Auxiliary Bldg.	THE REAL PROPERTY AND ADDRESS OF THE PERSON NAMED IN COLUMN TWO IS NOT THE PERSON NAMED IN COLUMN TWO IS	9x10 <sup>2</sup>	   1.0x10 <sup>7</sup> Rads	T	CAL-86 Note 2	Analysis	None
		40 Years	   40 Years	   I	CAL-86 Note 2	Analysis	None
Needed for:  Hot Shutdown   X      Cold Shutdown   X		N/A	 			N/A	   None

is-Besse Unit 1 Pacility: Da 50-346

SYSTEM COMPONENT ALUATION WORKSHEET

NOTES

Prepared by:

Docket:

Checked by:

Date:

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

- 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 MCO301. 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.

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

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

COMPONENT MATERIALS EVALUATION SHEET

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

Prepared by: Checked by:

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

Component: Damper Motor Operator

	. III General Controls	Model No.:		AH-91	
Parts List *	Materials List	THERMAL AGI	NG	RADIATIO Qualification	N   Reference
Insulation Valve Seat Ring O-Ring Seal Seal Diaphragm	Teflon Polyimide Buna-N Polymyte Buna-N (nylon coated)	40 Years @ 288°F   40 Years @ 288°P   40 Years @ 104°F  Greater than 40 Years   @ 122°P   40 Years @ 104°F	CAL-86   C	1x10 <sup>7</sup> Rads 1x10 <sup>7</sup> Rads 1.5x10 <sup>7</sup> Rads 1.0x10 <sup>7</sup> Rads	CAL-86   CAL-86   CAL-86   CAL-86   CAL-86   CAL-86

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

<sup>\*</sup> Only non-metallic parts are listed. Metallic parts are not considered to be sensitive to thermal aging and are not affected

Pacility: Davis-Besse Unit 1 SYSTEM COMPONENT BALLUATION WORKSHEET Docket: 50-346

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

Prepared by: N Lauis Date: 11/1/93 Checked by: Amazon Date: 11/4/13

EQUIPMENT DESCRIPTION		ENVIRONMENT		DOCUMENTA	TION REF.	Qualification	Outstanding
	Parameter	Specification	Qualification	Specification	Qualification	Method	Items
System: Emergency Ven-   tilation System 2	Operating    Time	1 Year	   40 Years 	Note 1	Note 2	Analysis	None
Plant ID No. MV5014A   Component: Damper Motor   Operator		203.0	   Exempt 	   C-515 	Note 3	N/A	   None 
Manufacturer: ITT General  Controls       Model Number: AH-91		15.60	   Exempt 	   C-515 		N/A	   None 
Function: Operates Emer-   gency Ventilation Fan #2  Discharge Damper		100.0	Exempt	   A 	Note 3       Note 3	N/A	   None 
Service: Emergency Ven-		N/A	N/A			N/A	   None 
Location: Auxiliary Bldg.	Company of the Control of the Contro	9x10 <sup>2</sup>	1.0x10 <sup>7</sup> Rads	   T	CAL-86   Note 2	Analysis	l None
Above Flood Level: N/A		40 Years	   40 Years	1 1	CAL-86     Note 2	Analysis	   None
Needed for:		N/A	I I N/A	   N/A		N/A	   None

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

SYSTEM COMPONENT ALUATION WORKSHEET Index No.: 222H-013A Rev . .

NOTES

Checked by:

Date:

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

- Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging surmarized on attached evaluation.
- 3. This component is a linear hydramotor actuator controlling the discharge damper on emergency ventilation system fan MCO302. 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 lose of power and/or control signal, failure of this actuator will not degrade any other safety-related functions or mislead the operator.

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

COMPONENT MATERIA EVALUATION SHEET

Index No. 222H-013B

Prepared by: Checked by: Hlouis

Date: 11/1/5

Plan: I.D. No.: MV5014A

Component: Damper Motor Operator

Manufacturer: ITT General Controls

Model No.: AH-91

		THERMAL AGIN	IG I	RADIATIO)	N
Parts List *	! Materials List	Qualification	Reference	Qualification	Reference
	!	40 V 0 2000F	1 011 05	1x107 Rads	1 631 96
nsulation	Teflon	40 Years @ 288°F	CAL-86	1x10 Rads	CAL-86
Valve Seat Ring	Polyimide	40 Years @ 288°F	CAL-86		CAL-86
-Ring Seal	Buna-N	40 Years @ 104°F	CAL-86	1.5x10 <sup>7</sup> Rads	CAL-36
Geal	Polymyte	Greater than 40 Years	CAL-86	1.0x10 <sup>7</sup> Rads	CAL-86
		1 @ 122°F		1.5x10 <sup>7</sup> Rads	
Diaphragm	Buna-N (Nylon coated)	1 40 years @ 104°F	CAL-86	1.5XIU Rads	CAL-86
			!!!		1
					1
			1 1		

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

<sup>\*</sup> 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

Rev.: 2

Docket: 50-346

Prepared by: Nlewis Date: 11/1/87
Checked by: Strandard Date: 11/1/187

EQUIPMENT DESCRIPTION	i	ENVIRONMENT		DOCUMENTA	TION REF.	Qualification	Outstanding
	Parameter	Specification	Qualification	Specification	Qualification	Method	Items
System: Emergency Ven-   tilation System 2		1 Year	40 Years	Note 1	Note 2	Analysis	None
Plant ID No. MV5014B   Component: Damper Motor   Actuator	Temperature	203.0	   Exempt 	C-515	Note 3	N/A	None
Manufacturer: ITT General  Controls   Model Number: AH-91		15.60	   Exempt 	   C-515 		N/A	   None 
Punction: Operates Emer-   gency Ventilation Fan #2  Recirculation Damper		100.0	Exempt   Exempt	1 A 1		N/A	None
		N/A	 	N/A		N/A	   None   
Location: Auxiliary Bldg.  Rm. 515		9x10 <sup>2</sup>	   1.0x10 <sup>7</sup> Rads	T	CAL-86 Note 2	Analysis	l None
		40 Years	   40 Years	I I	CAL-86   Note 2	Analysis	None
		N/A	 	   N/A 		N/A	I I None

Facility: Day is-Besse Unit 1 Docket: 50-346

SYSTEM COMPONENT ALUATION WORKSHEET

NOTES

Prepared by: Checked by:

Date: 1/1/P3

222H-014A Index No. Rev.:

- 1. One-year operating time is used as a conservative maximum specification.
- 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 MCO302. 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-014B Rev.: 2

Docket: 50-Prepared by:

Checked by:

N Lewis

Date: 11/1/83

Plant I.D. No.: MV5014B Component: Damper Motor Operator

Manufacturer: ITT General Controls Model No.: AH-91

Materials List	Qualification	Reference	Qualification	Reference
Teflon	40 Years @ 288°F	CAL-86	1x10 <sup>7</sup> Rads	CAL-86
Polyimide	40 Years @ 288°F	CAL-86	1x10 <sup>7</sup> Rads	I CAL-86
	40 Years @ 104°F	CAL-86	1.5x10 <sup>7</sup> Rads	I CAL-86
Polymyte	Greater than 40 Years	CAL-86	1.0x10 <sup>7</sup> Rads	CAL-86
Buna-N (nylon coated)		CAL-86	1.5x10 <sup>7</sup> Rads	I CAL-86
	Bana-N	Polymyte   40 Years @ 104°F   Greater than 40 Years   @ 122°F	40 Years @ 104°F   CAL-86     Polymyte	Polymyte   40 Years @ 104°F   CAL-86   1.5×10 <sup>7</sup> Rads   Greater than 40 Years   CAL-86   1.0×10 <sup>7</sup> Rads   @ 122°F   1

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

<sup>\*</sup> 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-015 Rev.: 2

Prepared by: NLA wis Date: 11/183 Checked by: Amorbord Date: 11/183

LEQUIPMENT DESCRIPTION	11	ENVIRONMENT		DOCUMENTATION REF.    Specification Qualification		Qualification   Method	
	Parameter   Specification		Qualification				
System: Emergency Ven-   tilation System    Plant ID No. MV50240	Operating     Time   	75 Seconds	l 30 Days	K	M-26   V-24G   Note 1	Simultaneous	Items   None
	Temperature     (°F)   	203.0	300.0	   C-515 	M-26 V-24G	Simultaneous	None
Model West	Pressure     (PSIA)	15.60	84.7	C-515	M-26 V-24G	Simultaneous     Test	None
Handling Area		100.0	100.0	A	M-26   V-24G	Simultaneous   Test	None
Service: Puel Handling   Area Bypass Valve		N/A	N/A	N/A		N/A	None
		N/A I	N/A	N/A		N/A	None
Needed for:		40 Years	40 Years	I		Sequential Test  Analysis	None
Hot Shutdown   X	Submergence	N/A	N/A	N/A	N/A I	N/A	None

'acility: Davis-Besse Unit 1

SYSTEM COMPONENT EVALUATION WORKSHEET

bcket: 50-346

NOTES

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

repared by: Nheura Date 11/1/83
hecked by: Smalland 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)

Pacility: Davis-Besse Unit 1 SYSTEM COMPONENT EVALUATION WORKSHEET Docket: 50-346

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

Prepared by: News Date: 11/1/19 Checked by: Date: 11/1/19

EQUIPMENT DESCRIPTION	11	ENVIRONMENT		DOCUMENTAL		Qualification	Outstanding
	Parameter	Specification	Qualification	Specification	Qualification	Method	Items
tilation System		75 Seconds	   30 Days 	K	M-26 V-24G Note 1	Simultaneous     Test	None
Component: Valve Motor Operator	Temperature     (°F)	203.0	300.0	C-515	M-26 V-24G	Simultaneous     Test	None
		15.60	84.7	C-515	M-26 V-24G		None
Handling Area		100.0	100.0	Α	M-26 V-24G	Simultaneous     Test	None
		N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary 31dg. Rm. 515		N/A	N/A	N/A	N/A	N/A I	None
Flood Level Elev: N/A Above Flood Level: N/A Needed for:	   Aging   	40 Years	40 Years	   I   	CAL-93	  Sequential Test    Analysis	None
Hot Shutdown   X		N/A	N/A	! ! !! !! !! !!	N/A		None

repared by:

'acility: Davis-Besse Unit 1

SYSTEM COMPONENT EVALUATION WORKSHEET

bcket: 50-346

hecked by: Mine Cone

NOTES

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

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 SYSTEM COMPONENT EVALUATION WORKSHEET 50-346 Docket:

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

Prepared by:

Checked by: Breas Do

EQUIPMENT DESCRIPTION	1	ENVIRONMENT		DOCUMENTAT	TION REF.	Qualification	Outstanding
	Parameter	Specification	Qualification	Specification	Qualification	Method	Items
		1 Year	Exempt	Note 2	Note 3	Analysis	Note 1
Plant ID No. PDC5000   Component: Differential		208.0	Exempt	C-304	Note 3	Analysis	l None
Pressure Controller				-			
	Pressure    (PSIA)	15.83	Exempt	C-304	Note 3	Analysis	None
Pressure		100.0	Exempt	   A 	Note 3	Analysis	None
Demon: N/A		N/A	N/A		N/A	N/A	   None
Location: Auxiliary Bldg.   Rm. 304		3.91 x 10 <sup>2</sup> RADS	Exempt	CAL-61	Note 3	Analysis	None
		40 Years	Exempt	   I	Note 3	Analysis	None
Needed for:  Hot Shutdown   X      Cold Shutdown   X		N/A	N/A			N/A	None

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

SYSTEM COMPONENT F MATION WORKSHEET

NOTES

Index No. : 222H-0178 Rev. .

Checked by:

- 1. Relocate this component to Room 304 in accordance with FCR 83-062.
- 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 x 10<sup>2</sup> 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 104 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.

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

SYSTEM COMPONENT EVALUATION WORKSHEET

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

repared by: The Date: 1/1/87 Checked by: Date: 1/1/87

EQUIPMENT DESCRIPTION	1	ENVIRONMENT		DOCUMENTA	TION REF.	Qualification	Outstanding
	Parameter	Specification	Qualification	Specification	Qualification	Method	Items
	Operating	l Year	40 Years	Note 1	Note 3	Analysis	None
Plant ID No. PDIS5017  Component: Differential   Pressure Indicating	  Temperature   (°F)	203.0	Exempt	C-515	Note 2	N/A	None
Switch   Manufacturer: ITT Barton   Model Number: 289A	Pressure   (PSIA)	15.6	Exempt	C-515	Note 2	N/A	None
Accuracy: Spec: N/A	Relative   Humidity   (%)	100.0	Exempt	A	Note 2	N/A	None
Demon: N/A   		N/A	   N/A 	N/A	N/A	N/A	None
Location: Auxiliary Bldg.   Rm. 515		2.0 x 10 <sup>2</sup> RADS	  3.0 x 10 <sup>6</sup> RADS	T	J-26	Sequential Test	None
Flood Level Elev: N/A   Above Flood Level: N/A   Needed for:	Aging	40 Years	40 Years	I	CAL-90 Note 3	Analysis	None
Hot Shutdown   X	Submergence	N/A	l N/A	N/A	N/A	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

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

NOTES

Prepared by:

Simone

Date: 11/1/8

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 the actuator. When the actuator de-energizes, spring force moves the damper to its fail-safe closed position. When the 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 safety-related functions because the emergency ventilation system is not needed during a high energy line break accident. 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, 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

Prepared by: Checked by: Lomerond

Manufacturer:

Date: 11/1/8.

ITT Barton

Plant I.D. No.: PDIS5017

Component: Dif:

Differential Pressure Switches

Model No.: 288 & 289

		THERMAL AGIN	NG I	RADIATION		
Parts List *	Materials List	Qualification	Reference	Qualification	Reference	
iring Insulation	PVC	40 Years @ 140°F	CAL-90	N/A	N/A	
Case/Covers	Phenolic	40 Years @ 230°F	CAL-90	N/A	I N/A	
Button	Diallyl Phthalate	Greater than 40 Years @ 122°F	CAL-90	N/A	N/A	
-Rings	Viton	40 Years @ 265°F	CAL-90	N/A	I N/A	
ill Fluid	Hydrocarbon Oil	40 Years	V-20B	N/A	N/A	
					1	

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

<sup>\*</sup> 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: Aku Date: 1/1/03
Checked by: Date: 1/1/03

EQUIPMENT DESCRIPTION	!!	ENVIRONMENT	r	I DOCUMENTO			1
	Parameter	Specification	1 Qualification	DOCUMENTA	Qualification	Qualification	Outstanding
System: Emergency Ven-	Operating	1 Year	40 Years	Note 1	Note 3	Method	None
Plant ID No. PDIS5018     Component: Differential   Pressure Indicating   Switch	Temperature	203.0	Exempt	C-515	Note 2	N/A	None
Manufacturer: ITT Barton Model Number: 289A	Pressure   (PSIA)	15.6	Exempt	C-515	Note 2	N/A	None
	Relative  Humidity  (%)	100.0	Exempt	A	Note 2	N/A	None
		N/A	N/A	N/A	N/A	N/A	None
Rm. 515	Radiation	2.0 x 10 <sup>2</sup> RADS	  3.0 x 10 <sup>6</sup> RADS	T	J-26	Test	None
Above Flood Level: N/A	Aging	40 Years	40 Years	I	CAL 90   Note 3	Analysis	None
	Submergence	N/A	N/A	N/A	N/A	N/A	None

Davis-Besse Unit 1 'acility: 50-346

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 222H-019A

NOTES

repared by

locket :

- 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 y.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

Prepared by: Checked by: 1) ofun

Date: 11/1/83

Plant I.D. No.: PD

PDIS5018

Component:

Differential Pressure Switches

Manufacturer:

ITT Barton

Model No.:

288 & 289

	A CONTRACTOR OF THE CONTRACTOR	THERMAL AGT	NG I	RADIATION		
Parts List *	Materials List	Qualification	Reference	Qualification	Reference	
iring Insulation witch:	PVC	40 Years @ 140°F	CAL-90	N/A	N/A	
Case/Covers	Phenolic	40 Years @ 230°F	CAL-90	N/A	N/A	
Button	Diallyl Phthalate	Greater than	1 1	N/A	N/A	
		40 Years @ 122°F	CAL-90			
-Rings	Viton	40 Years @ 265°F	CAL-90	N/A	N/A	
ill Fluid	Hydrocarbon Oil	40 Years	CAL-90	N/A	N/A	
					1	
			1			

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

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

Pacility: Davis-Besse Unit 1 )ocket: 50-346

SYSTEM COMPONENT EVALUATION WORKSHEET

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

repared by:

checked by: 57/14/11

EQUIPMENT DESCRIPTION	11	ENVIRONMENT		DOCUMENTA	TON DEE	Qualification	
-	Parameter	Specification	Qualification	Specification	Qualification	Method	Outstanding Items
	Operating   Time	l Year	1.87 Years	Note 1	J-8, CAL-38	Analysis	None
Plant ID No. PDT5000  Component: Differential Pressure Transmitter	  Temperature   (°F)	218.0	   Exempt	C-303	Note 2	N/A	None
	Pressure  (PSIA)	17.16	Exempt	C~303	Note 2	N/A	None
Function: Transmits Pres-    sure Differential Signals	Relative    Humidity	100.0	Exempt	A	Note 2	N/ž.	None
Service: Annulus and   Mechanical   Penetration Rooms		N/A	N/A	N/A	N/A	N/A	None
		1.16 x 10 <sup>6</sup> RADS	5.0 x 10 <sup>6</sup> RADS	T	J-8	Sequential Test	None
Needed for:	Aging	40 Years	1.87 Years   Note 4	1	CAL-64   Note 3	Analysis	None
Hot Shutdown   X	Submergence	N/A	N/A	N/A	N/A	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

NOTES

Index No.: 222H- 020A

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

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

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

COMPONENT MATERIALS EVALUATION SHEET

222H-020B

Prepared by: Checked by:

Manufacturer:

Rosemount

Plant I.D. No.: PDT5000

Component: Differential Pressure Transmitter

1152DP13E22PB Model No. :

		THERM'L AGIN	3 1	RADIATIO	N
Parts List	Materials List	Qualification	Reference	Qualification	Referenc
ousing and Cover	Aluminum	Not Sensitive		N/A	I N/A
rocess Flange	316 Stainless Steel	Not Sensitive	CAL-64	N/A	I N/A
lank Flange	316 Stainless Steel	Not Sensitive	CAL-64	N/A	N/A
alve Stem and Seat	316 Stainless Steel	Not Sensitive	CAL-64	N/A	N/A
djustment Screw	Steel	Not Sensitive	CAL-64	N/A	N/A
etaining Ring	Steel	Not Sensitive	CAL-64	N/A	I N/A
Rings	BUNA N	40 Years @ 104°F	CAL-64	N/A	I N/A
-Ring (Process Flange)	Ethylene Propylene	40 Years @ 172°F	CAL-64	N/A	I N/A
lectronics Assembly	Steel	Not Sensitive	CAL-64	N/A	I N/A
lardware		1	1	N/A	I N/A
olts	Steel	Not Sensitive	CAL-64	N/A	N/A
its	Steel	Not Sensitive	CAL-64	N/A	I N/A
ounting Bracket	Steel	Not Sensitive	CAL-64	N/A	N/A
rcuit Boards	Electronic Assemblies	1.87 Years @ 104°F	CAL-64	N/A	N/A
ensor Module	316 Stainless Steel	Not Sensitive	CAL-64	N/A	I N/A
ensor Module Oil Fill	Silicone Oil	40 Years	CAL-64	N/A	N/A

Pacility: Davis-Besse Unit 1 SYSTEM COMPONENT EVALUATION WORKSHEET

locket: 50-346

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

Prepared by:

EQUIPMENT DESCRIPTION	1	ENVIRONMENT		DOCUMENTA	TION REF.	Qualification	Outstanding
	Parameter	Specification	Qualification	Specification	Qualification	Method	Items
	  Operating  Time	l Year	10.83 Years	Note 1	CAL-38	Analysis	None
Plant ID No. PDT5014  Component: Differential  Pressure Transmitter	  Temperature   (°F)	203.0	Exempt	C-515	Note 2	N/A	None
and the second s		15.60	Exempt	C-515   	Note 2	N/A	None
1152DP13E22MB    Function: Transmits Pres-   sure Differential Signals    Accuracy: Spec: 2.0%     Demon: .5%    Service: Annulus and     Mechanical		100.0	Exempt	1 A !	Note 2 !	N/A	None
		N/A	   N/A 		N/A	N/A	None
Penetration Rooms Location: Auxiliary Bldg. Rm. 515		2.0 x 10 <sup>2</sup> RADS	  5.0 x 10 <sup>6</sup> RADS	T T	J-8	Sequential Test	None
Needed for:	  Aging   	40 Years	1.87 Years   Note 4	I I	CAL-64   Note 3	Analysis	None
		N/A	I 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:

Martrald

Date: //

11/1/0>

- . 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 Docket: 50-346 COMPONENT MATERIALS EVALUATION SHEET

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

Prepared by: Checked by: MacDrald

Manufacturer:

Date: 11

ate: 7/2/3

Rosemount

Plant I.D. No.: PDT5000

Component: Differential Pressure Transmitter

Model No.:

1152DP13E22PB

		THERMAL AGIN	G	RADIATIO	N
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Housing and Cover	Aluminum	Not Sensitive		N/A	I N/A
Process Flange	316 Stainless Steel	Not Sensitive	CAL-64	N/A	I N/A
Blank Flange	316 Stainless Steel	Not Sensitive	CAL-64	N/A	I N/A
Valve Stem and Seat	316 Stainless Steel	Not Sensitive	CAL-64	N/A	I N/A
Adjustment Screw	Steel	Not Sensitive	CAL-64	N/A	I 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	I N/A
Electronics Assembly	Steel	Not Sensitive	CAL-64	N/A	I N/A
Hardware				N/A	N/A
Bolts	Steel	Not Sensitive	CAL-64	N/A	I N/A
Nuts	Steel	Not Sensitive	CAL-64	N/A	I N/A
Mounting Bracket	Steel	Not Sensitive	CAL-64	N/A	I N/A
Circuit Boards	Electronic Assemblies	1.87 Years @ 104°F	CAL-64	N/A	I N/A
Sensor Module	316 Stainless Steel	Not Sensitive	CAL-64	N/A	I N/A
Sensor Module Oil Fill	Silicone Oil	40 Years	CAI-64	N/A	N/A
					1

Facility: Davis-Besse Unit 1 SYSTEM COMPONENT EVALUATION WORKSHEET Docket: 50-346

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

Prepared by: Jun Date: W//s Date: 14/2/19

EQUIPMENT DESCRIPTION	1	ENVIRONMENT		I DOCUMENTA	TION REF.	Qualification	Outstanding
	Parameter	Specification	Qualification	Specification	[Qualification]	Method	Items
System: Emergency		l Year	Exempt	Note 2	Note 3	Analysis	Note 1
Plant ID No. PDY5000C     Component: Current     Repeater	  Temperature    (°F)	208.0	Exempt	1 C-304		Analysis	None
  Manufacturer: Foxboro		15.83	Exempt	C-304	Note 3	Analysis	None
Function: Relays Pressure	Relative	100.0	Exempt	A		Analysis	None
Demon: N/A      Service: Annulus and		N/A	N/A	   N/A   		N/A	   None 
Location: Auxiliary Bldg.    Rm. 304		3.91 x 10 <sup>2</sup> RADS	Exempt	CAL-61	Note 3	Analysis	None
		40 Years	Exempt	1 1	Note 3	Analysis	None
Hot Shutdown   X	  Submergence	N/A	N/A	N/A		N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 222H-022A

NOTES

Prepared by:

tomas mor

Date: 11/1/9

- 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 x 10<sup>2</sup> 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<sup>4</sup> 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.

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

SYSTEM COMPONENT EVALUATION WORKSHEET

NOTES

Index No.: 222H-022B

Prepared by: Checked by: Dacadoned

Date:

1/483

Each train of the EVS consists of a fan and filter unit, associated dampers, ductwork, instrumentation, and controls. A annulus. The controller signal feeds directly to the exhaust damper and through the ppy5000c 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 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 BALUATION WORKSHEET Docket: 50-346

Rev.: 2

Prepared by: Thou The

EQUIPMENT DESCRIPTION	1	ENVIRONMENT		DOCUMENTAT	ION REF.	Qualification	Outstanding
	Parameter	Specification	Qualification	Specification	Qualification	Method	Items
		75 Seconds	   40 Years 	K	Note 2	Analysis	None
Plant ID No. SV8446 Component: Solenoid Valve	   Temperature    (°F)	N/A	N/A	Note 1	N/A I	N/A	None
		N/A	N/A	Note 1	N/A I	N/A	None
		N/A	I N/A	Note 1	N/A I	N/A	None
Demon: N/A		N/A	 		N/A	N/A	None
		3.12 x 10 <sup>5</sup> RADS	  1.2 x 10 <sup>6</sup> RADS	T	CAL-80   Note 2	Analysis	None
Above Flood Level: N/A	   Aging   	40 Years	17 Years   Note 3	I I	CAL-80   Note 2	Analysis	None
Needed for:   Hot Shutdown   X	      Submergence	N/A	   N/A 		N/A I	N/A	   None

Facility: Davis-Besse Unit 1

SYSTEM COMPONENT LUATION WORKSHEET

Index No. 222H-023A Rev.:

NOTES

Prepared by: NLews
Checked by: Small

Date: 11/1/93

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

Facility: Avis-Besse Unit 1.
Docket: 50-346

COMPONENT MATERIALS EVALUATION SHE

Index Rev.: 222H-023B

Prepared by: News D

Date: 11/1/93

SHULL Date: 11/2/13

Plant I.D. No.: SV8446 Component: Solenoid Valve

Manufacturer: ASCO Model No.: HTX831655

		THERMAL AGIN	IG I	RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Gaskets	BUNA-N	40 Years @ 104°F	CAL- 80	1.5 x 107RADS	CAL-80
Body	Brass	Not Sensitive	1 1	Not Affected	1
Bonnet	Brass	Not Sensitive	1	Not Affected	1
Adapter	Brass	Not Sensitive	1 1.	Not Affected	1
Retaining Rings	Brass	Not Sensitive	1 1	Not Affected	1
Screw	Steel	Not Sensitive	1	Not Affected	1
Spring, Disc	Stainless Steel	Not Sensitive	1	Not Affected	1
Spring, Core	Metallic	Not Sensitive	1	Not Affected	1
Sol. Base Sub-Assembly	Metallic	Not Sensitive	1 1	Not Affected	1
Insert.	Acetal (Delrin)	17 Years @ 104°F	CAL-80	1.2 x 106 RADS	CAL-80
Pilot Seat Cartridge	Acetal	17 Years @ 104°F	CAL-80	1.2 x 10 <sup>6</sup> RADS	CAL-80
Disc	BUNA-N	40 Years @ 104°F	CAL-80	$1.5 \times 10^7 \text{RADS}$	CAL-80
Diaphragm Assemblies	BUNA-N, Brass	40 Years @ 104°F	CAL-80	1.5 x 10 <sup>7</sup> RADS	CAL-80
Core Tube	Stainless Steel	Not Sensitive	1 1	Not Affected	1
Core & Plugnut	Stainless Steel	Not Sensitive	1 1	Not Affected	1
Shading Coil	Copper	Not Sensitive	1 1	Not Affected	1
Class H Coil: *		40 Years @ 140°F	CAL-80	2.0 x 10 <sup>7</sup> RADS	CAL-80
Outerwrap	Fiberglass	1	1		1
Varnish	Silicone		1 1		1
Lead Wire Insulation	Silicone Rubber, Glass		1 1		1
	Braid		1		1
Magnet Wire Insulation	Enamel		1		1
Insulation	Nomex		1 - 1		1
Insulation	Iso-Mica	A CONTRACTOR OF THE CONTRACTOR	1 1		1
	Ероху		1 1		1
Insulation	Silicone Resin	1	1 1		1
	Mica		1 1		1

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

<sup>\*</sup> Coil is scheduled for replacement in accordance with manufacturer's recommendations.

Pacility: 08-Besse Unit 1 SYSTEM COMPONENT Docket: 50-346

LUATION WORKSHEET

Rev.: 2

Prepared by: 87. Havis Date: 1/1/83
Checked by: April Date: 1/1/8

EQUIPMENT DESCRIPTION	1	ENVIRONMENT		DOCUMENTAT	TION REF.	Qualification	Outstanding
	Parameter	Specification	Qualification	Specification	Qualification	Method	Items
	Operating    Time	1 Year	40 Years	Note 1	Note 2	Analysis	None
Component: Temperature	Temperature   (°F)	203.0	Exempt	'C-515	Note 3	N/A	None
CONTRACTOR OF THE PROPERTY OF	  Pressure	15.60	   Exempt	C-515	Note 3	N/A	None
Model Number: 27120-22	(PSIA)						
a management of the state of th	Relative	100.0	Exempt	A	Note 3	N/A	None
Accuracy: Spec: N/A Demon: N/A Service: Emergency Vent Fan 1 FLT C1	   Chemical     Spray	N/A	N/A	   N/A 	N/A	N/A	   None 
Location: Auxiliary Bldg. Rm. 515	Radiation	9 x 10 <sup>2</sup> RADS		T	CAL-81 Note 2	Analysis	None
Flood Level Elev: N/A Above Flood Level: N/A		40 Years	8.6 Years	I	Cal-81 Note 2	Analysis	None
Needed for: Hot Shutdown   X    Cold Shutdown   X	 	N/A	   N/A	   N/A		N/A	None

Facility: 5-Besse Unit 1
Docket: 50-346

SYSTEM COMPONEN LUATION WORKSHEET

Index Rev.: 222H-024A

NOTES

Prepared by: M. Jewin Checked by: Symuland Date: 11/1/8)

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.

Pacility: Avis-Besse Unit 1 Docket: 50-346 COMPONENT MATER EVALUATION

Index Rev.: 222H-024B

Prepared by: News

Date: 11/183

Plant I.D. No.: TSH5022A

Manufacturer: Fenwal

Component: Temperature Switch

Model No.: 27120-22

		THERMAL AGIN	IG I	RADIATION	
Parts List *	Materials List	Qualification	Reference	Qualification	Reference
Insulation	Teflon	Greater than   40 Years @ 120°F	CAL-81	3.7 x 10 <sup>4</sup> RADS	CAL-81
Insulation	Teflon Asbestos   Glass Teflon (TAGT)	Greater than 40 Years @ 120°F	CAL-81	3.7 x 104 RADS	CAL-81
Black Thermofit Tubing	Polyethylene	1 8.6 Years @ 104°F	CAL-81	4.0 x 107 RADS	CAL-81
Insulation	Mica	1 40 Years @ 140°F	CAL-81	Not Affected	CAL-81
Resin	Ероху	1 40 Years @ 147°C	CAL-81	1.0 x 109 RADS	CAL-81
Glass	Glass	Not Affected	1	Not Affected	CAL-81

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

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

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

Prepared by: 11. fevro Date: 11/1/16 Checked by: Date: 11/2/17

EQUIPMENT DESCRIPTION	Parameter	ENVIRONME					
System: Emergency	11	Specification	on   Qualification	Specification	TATION REF.	Qualification	1 24-1
Ventilation	Operating	1 Year	40 Years	Note 1		Method	Outstanding Items
Plant ID No. TSH5022B		1		1	Note 2	Analysis	None
Component: Temperature Switch	Temperatur	el 203.0	Exempt	C-515	Note 3	N/A	
Manufacturer: Fenwal	   Pressure	1 15.60	1	<u> </u>		"/"	None
Model Number: 27120-22	(PSIA)	1 15.60	Exempt	C-515	Note 3	N/A	None
Coursen	Relative   Humidity   _(%)	1 100.0	Exempt	A	Note 3	N/A	
Demon: N/A			1				None
Fan 1 FLT C2	1	N/A	N/A	N/A	N/A	N/A	None
ocation: Auxiliary Bldg.			1				None
lood Level Elev.	Radiation	9 % 10 <sup>2</sup> RADS	3.7 x 10 <sup>4</sup> RADS	T	CAL-81		
OVE Flood r	Aging	40 Years			Note 2	Analysis	None
eded for:		rolears	8.6 Years	1	CAL-81 Note 2	Analysis	None
	Submergence	N/A	N/A	1			
il	i			N/A	N/A	N/A	None

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

SYSTEM COMPONEN LUATION WORKSHEET

Index Rev.: 222H-025A

NOTES

Prepared by: h. fewis
Checked by:

Date: 11/1/83

- 1. One-year operating time is used as a conservative maximum specification.
- 2. Materials evaluation conducted. Materials sensitive to radiation . rd/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.

Pacility: wis-Besse Unit 1 Docket: 50-346

COMPONENT MATERIALS EVALUATION SHEET

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

Prepared by: N

Newig

Date: 11/183

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

	J	THERMAL AGIN	NG I	RADIATIO	N
Parts List *	Materials List	Qualification	Reference	Qualification	Reference
Insulation	Teflon	Greater than 40 Years @ 120°P	CAL-81	3.7 x 10 <sup>4</sup> RADS	CAL-81
Insulation	Teflon Asbestos   Glass Teflon (TAGT)	Greater than 40 Years @ 120°F	CAL-81	3.7 x 10 <sup>4</sup> RADS	CAL-81
Black Thermofit Tubing Insulation Resin	Polyethylene   Mica	8.6 Years @ 104°F 40 Years @ 140°F	CAL-81   CAL-81	4.0 x 10 <sup>7</sup> RADS Not Affected	CAL-81
Glass	Epoxy   Glass	40 Years @ 147°C   Not Affected	CAL-81	1.0 x 10 <sup>9</sup> RADS Not Affected	CAL-81   CAL-81

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

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

Facility: De-Besse Unit 1 SYSTEM COMPONENT
Docket: 50-346

UATION WORKSHEET

Rev.: 2

Prepared by: N. Kuis Date: 11/1/8)
Checked by: Date: 11/1/3

EQUIPMENT DESCRIPTION	1	ENVIRONMENT		DOCUMENTAT	TION REF.	Qualification	Outstanding
	Parameter	Specification	Qualification	Specification	Qualification	Method	Items
	Operating     Time	1 Year	40 Years	Note 1	Note 2	Analysis	None
Plant ID No. TSH5058A  Component: Temperature Switch	Temperature     (°F)	203.0	Exempt	C-515	Note 3	N/A	None
Manufacturer: Fenwal		15.60	Exempt	C-515	Note 3	N/A	None
Function: Input to Valve for Cross-Tie Damper		100.0	Exempt	I A	Note 3	N/A	None
Accuracy: Spec: N/A Demon: N/A Service: Emergency Vent Fan 2 FLT C1		N/A	N/A	N/A	N/A	N/A	   None 
Location: Auxiliary Bldg. Rm. 515		9 x 10 <sup>2</sup> RADS	3.7 x 10 <sup>4</sup> RADS	T	CAL-81 Note 2	Analysis	None
Flood Level Elev: N/A Above Flood Level: N/A	   Aging   	40 Years	8.6 Years	1	CAL-81 Note 2	Analysis	None
Needed for: Hot Shutdown   X    Cold Shutdown   X	 	N/A	   N/A	   N/A		N/A	   None

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

SYSTEM COMPONEN ALUATION WORKSHEET

Index Rev.: 222H-026A

NOTES

Prepared by:

n. fewis

Date: //

11/1/20

- 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.

Pacility: Savis-Besse Unit 1
Docket: 50-346

COMPONENT MATERIALS EVALUATION SHEET

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

Prepared by: Nheura Date: 11/18
Checked by: Anacome Date: 11/18

Plant I.D. No.: TSH5058A Component: Temperature Switch

Manufacturer: Fenwal Model No.: 27120-22

		THERMAL AGIN	IG I	RADIATION	
Parts List *	Materials List	Qualification	Reference	Qualification	Reference
Insulation	Teflon	Greater than 40 Years @ 120°P	CAL-81	3.7 x 10 <sup>4</sup> RADS	CAL-81
nsulation	Teflon Asbestos   Glass Teflon (TAGT)	Greater than 40 Years @ 120°F	CAL-31	3.7 x 10 <sup>4</sup> RADS	CAL-81
Black Thermofit Tubing	Polyethylene   Mica	8.6 Years @ 104°? 40 Years @ 140°F	CAL-81     CAL-81	4.0 x 10 <sup>7</sup> RADS Not Affected	CAL-81   CAJ-81
esin	Epoxy   Glass	40 Years @ 147°C   Not Affected	CAL-81	1.0 x 10 <sup>9</sup> RADS Not Affected	I CAL-81
					CAL-81

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

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

Facility: System COMPONENT EVALUATION WORKSHEET

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

Prepared by: N. Jewis Date: 11/1/83
Checked by: Date: 11/1/83

EQUIPMENT DESCRIPTION	!!	ENVIRONMENT		DOCUMENTS			
	Parameter	Specification	Qualification	DOCUMENTAT	Oualification	Qualification	Outstanding
System: Emergency Ventilation	Operating	l 1 Year	40 Years	Note 1	Note 2	Method	None
Plant ID No. TSH5058B  Component: Temperature Switch	Temperature	203.0	Exempt	C-515	Note 3	N/A	None
Manufacturer: Fenwal Model Number: 27120-22	   Pressure   (PSIA)	15.60	Exempt	C-515	Note 3	N/A	None
Function: Input to Valve for Cross-Tie Damper Accuracy: Spec: N/A		100.0	Exempt	A	Note 3	N/A	None
Demon: N/A		N/A	N/A	N/A	N/A	N/A	None
Rm. 515 Plood Level Elev: N/A	Radiation	9 x 10 <sup>2</sup> RADS	3.7 x 10 <sup>4</sup> RADS	T	CAL-81   Note 2	Analysis	None
L	Aging	40 Years	8.6 Years	1	CAL-81 Note 2	Analysis	None
	Submergence	N/A	N/A	N/A	N/A	N/A	None

Pacility: De-Besse Unit 1
Docket: 50-346

SYSTEM COMPONENT JUATION WORKSHEET

Index No. 3222H-027A Rev.: 2

NOTES

Prepared by: N. J

Mr. fews

Date:

11/1/83

- 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.

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

COMPONENT MATERIALS EVALUATION SHEET

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

Prepared by: Checked by:

Plant I.D. No .: TSH5058B Manufacturer:

Fenwal

Component:

Temperature Switch

Model No ::

		Model No.:	2	7120-22	
Parts List *	Materials List	THERMAL AGII		RADIATION	
Insulation  Insulation  Black Thermofit Tubing Insulation Resin Glass	Teflon  Teflon Asbestos Glass Teflon (TAGT) Polyethylene Mica Epoxy Glass	Qualification  Greater than  40 Years @ 120°P  Greater than  40 Years @ 120°P  8.6 Years @ 104°P  40 Years @ 147°C  Not Affected	Reference	Qualification  3.7 x 10 <sup>4</sup> RADS  3.7 x 10 <sup>4</sup> RADS  4.0 x 10 <sup>7</sup> RADS  Not Affected  1.0 x 10 <sup>9</sup> RADS  Not Affected	Reference     CAL-81   CAL-8

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

<sup>\*</sup> Only non-metallic parts are listed. Metallic parts are not considered sensitive to thermal aging and are not affected by

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

SYSTEM COMPONERT EVALUATION WORKSHEET

Prepared by: Date: 11/16
Checked by: Date: 11/1/19

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

EQUIPMENT DESCRIPTION	II_	ENVIRONMENT		DOCUMENT	ATION REF.		1
	Parameter	Specification	Qualification	Specification	n Qualification	Qualification	Outstanding
System: Emergency Ventilation	Operating	l Year	   Exempt	Note 2	Note 3	Method	Items Note 1
Plant ID No. PDY5000A	   Temperature			!	<del> </del>		
Component: Signal Buffer	(°F)	298.0	Exempt	C-304	Note 3	Analysis	None
Manufacturer: G.E.	   Pressure   (PSIA)	1 15.83	Exempt	C-304		Analysis	None
Model Number: 740						Analysis	None
Isolation	Relative   Humidity   (%)	1 100.0	Exempt	Α	Note 3	Analysis	None
Demon: N/A Service: Annulus and Mechanical Penetration Rooms	  Chemical  Spray 		N/A	N/A		N/A	None
lood Level Plans	Radiation	3.91 x 10 <sup>2</sup> RADS	Exempt	CAL-61	Note 3	Analysis	None
bove Flood Level: N/A   eeded for:	Aging	40 Years	Exempt	I	Note 3	Analysis	None
Hot Shutdown   X	  Submergence	N/A	N/A	N/A	N/A I	N/A	None

Facility: Davis-Besse Unit 1 50-346

SYSTEM COMPONENT VALUATION WORKSHEET

NOTES

Docket:

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

- 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 IE 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 x 102 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 104 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.

Davis-Besse Unit 1 Facility: 50-346

SYSTEM COMPONENT WALUATION WORKSHEET

222H-028B Rev.:

NOTES

Prepared by: Checked by:

Docket:

Date:

Date: 1/2

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.

Pacility: Davis-Besse Unit 1 SYSTEM COMPONENT EVALUATION WORKSHEET Docket: 50-346

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

Prepared by: Date: 1/1/A
Checked by: Date: 1/1/A
Date: 1/1/A

EQUIPMENT DESCRIPTION	1	ENVIRONMENT		DOCUMENTAT	TION REF.	Qualification	Outstanding
	Parameter	Specification	Qualification	Specification	Qualification	Method	Items
		l Year	Exempt	Note 2	Note 3	Analysis	Note 1
	Temperature	208.0	Exempt	C-304	Note 3	Analysis	None
		15.83	Exempt	C-304	Note 3	Analysis	None
Function: Power Supply		100.0	Exempt	   A 	Note 3	Analysis	None
Service: Annulus and		N/A	N/A			N/A	   None 
Location: Auxiliary Bldg.  Rm. 304		3.91 x 10 <sup>2</sup> RADS	Exempt	CAL-61	Note 3	Analysis	None
Flood Level Elev: N/A Above Flood Level: N/A		40 Years	Exempt	III	Note 3	Analysis	None
	 	N/A	N/A			N/A	I I None

Index Nov: 222H-029A

NOTES

Prepared by:

stimbond !

Pate: 11/1/8-

- 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 IE 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 x 10<sup>2</sup> 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<sup>4</sup> 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.

Pacility: Davis-Besse Unit 1 Docket:

50-346

SYSTEM COMPONENT EVALUATION WORKSHEET

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

Date:

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.