

CALCULATION/PROBLEM COVER SHEET

Calculation/Problem No: 1040-001-008

Title: Emergency Core Cooling System Pump Room HVAC 2.5

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

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

Design Input/References:

Design Inputs are outlined in the Cover Report.

Assumptions:

Assumptions are outlined in the Cover Report.

Method:

Methods are outlined in the Cover Report.

Remarks:

EDS Nuclear Report No. 02-1040-1076.

REV. NO.	REVISION	APPROVED	DATE
0	original	Jeffrey S. Hawley	10-2-81
2	GENERAL MANUAL REVISIONS	Nik Woodward	11/2/83

8312200253 831129
PDR ADOCK 05000346
PDR

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

MASTER LIST
HARSH ENVIRONMENT

Index No: 205M-001
Rev.: 2

EMERGENCY CORE COOLING SYSTEM PUMP ROOM HVAC

Prepared by:

W Lewis

Date:

11/1/83

Checked by:

W Lewis

Date:

11/2/83

Worksheet Index No.	Rev.	Plant ID Number	Generic Name	LOCATION		REMARKS
				Inside Primary Containment	Outside Primary Containment	
205H-005	2	MC0311	Cooler Fan Motor		Rm. 115	
205H-006	2	MC0312	Cooler Fan Motor		Rm. 115	
205H-007	2	MC0313	Cooler Fan Motor		Rm. 113	
205H-008	2	MC0314	Cooler Fan Motor		Rm. 105	
205H-009	2	MC0315	Cooler Fan Motor		Rm. 105	
205H-010	2	MV54210	Valve Motor Operator		Rm. 105	
205H-011	2	MV54220	Valve Motor Operator		Rm. 105	
205H-012	2	MV54230	Valve Motor Operator		Rm. 113	
205H-013	2	MV54240	Valve Motor Operator		Rm. 115	
205H-014	2	MV54250	Valve Motor Operator		Rm. 115	
205H-015	2	MV54390	Valve Motor Operator		Rm. 105	
205H-016	2	MV54400	Valve Motor Operator		Rm. 105	
205H-017	2	MV54420	Valve Motor Operator		Rm. 115	
205H-018	2	SV5715	Solenoid Valve		Rm. 105	
205H-019	2	TS5421	Temperature Switch		Rm. 105	
205H-020	2	TS5422	Temperature Switch		Rm. 105	
205H-021	2	TS5423	Temperature Switch		Rm. 113	
205H-022	2	TS5424	Temperature Switch		Rm. 115	
205H-023	2	TS5425	Temperature Switch		Rm. 115	
	0	BE11A	Motor Control Center		Rm. 209	See 2.21
	0	BF11D	Motor Control Center		Rm. 227	See 2.21
	0	CDE11A	Disconnect Switch Cabinet		Rm. 304	See 2.21
	0	CD11D	Disconnect Switch Cabinet		Rm. 227	See 2.21
	0	EV54210	Terminal Block Box		Rm. 105	See 2.21
	0	EV54220	Terminal Block Box		Rm. 105	See 2.21
	0	EV54230	Terminal Block Box		Rm. 113	See 2.21
	0	EV54240	Terminal Block Box		Rm. 115	See 2.21
	0	EV54250	Terminal Block Box		Rm. 115	See 2.21
	0	EV54390	Terminal Block Box		Rm. 105	See 2.21
	0	EV54400	Terminal Block Box		Rm. 105	See 2.21
	0	EV54420	Terminal Block Box		Rm. 115	See 2.21

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MASTER LIST
HARSH ENVIRONMENT

Index No: SM-002
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EMERGENCY CORE COOLING SYSTEM PUMP ROOM HVAC

Prepared by: H Lewis Date: 11/1/03
Checked by: L Malan Date: 11/1/03

Worksheet Index No.	Rev.	Plant ID Number	Generic Name	LOCATION		REMARKS
				Inside Primary Containment	Outside Primary Containment	
	2	NC0311	Push Button Switch		Rm. 115	See 2.21
	2	NC0312	Push Button Switch		Rm. 115	See 2.21
	2	NC0313	Push Button Switch		Rm. 113	See 2.21
	2	NC0314	Push Button Switch		Rm. 105	See 2.21
	2	NC0315	Push Button Switch		Rm. 105	See 2.21
	2	NV54210	Push Button Switch		Rm. 105	See 2.21
	2	NV54220	Push Button Switch		Rm. 105	See 2.21
	2	NV54230	Push Button Switch		Rm. 113	See 2.21
	2	NV54240	Push Button Switch		Rm. 115	See 2.21
	2	NV54250	Push Button Switch		Rm. 115	See 2.21
	2	NV5715	Push Button Switch		Rm. 105	See 2.21
	2	RC2701	Relay Cabinet		Rm. 227	See 2.21
	2	RC3801	Relay Cabinet		Rm. 303	See 2.21

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MASTER LIST
NON-HARSH ENVIRONMENT
EMERGENCY CORE COOLING SYSTEM PUMP ROOM HVAC

Index No: DM-003
Rev.: 2

Prepared by:
Checked by:

J Lewis

Date:
Date:

9/24/87

9/24/87

Worksheet Index No.	Rev.	Plant ID Number	Generic Name	LOCATION		REMARKS
				Inside Primary Containment	Outside Primary Containment	
	0	BE12E	Motor Control Center		Rm. 100	
	0	BF11E	Motor Control Center		Rm. 100	
	0	C5717	Engineering Safety Feature Panel		Rm. 505	
	0	EV54410	Terminal Block Box		Rm. 114	
	0	EV5715	Terminal Block Box		Rm. 100	
	0	EV5716	Terminal Block Box		Rm. 106	
	0	MV54410	Valve Motor Operator		Rm. 114	
	0	NV5716	Push Button Switch		Rm. 114	
	0	SVS716	Solenoid Valve		Rm. 114	

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MASTER TEST

Index No: 5M-004
Rev.: 2

EMERGENCY CORE COOLING SYSTEM PUMP ROOM HVAC

Prepared by:

7 Lewis

Date:

9/10/83

Checked by:

William Bond

Date:

22.2.13

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

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SYSTEM COMPONENT EVALUATION WORKSHEET

Index No. 05H-005
Rev.: 2

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

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification	Outstanding
	Parameter	Specification	Qualification	Specification	Qualification	Method	Items
System: ECCS Pump Room HVAC	Operating Time	1 Year	40 Years	F	Note 1	Analysis	None
Plant ID No. MCC311	Temperature (°F)	177.0	Note 1	C-115	Note 1	Analysis	None
Component: Cooler Fan Motor	Pressure (PSIA)	15.60	Note 1	C-115	Note 1	Analysis	None
Manufacturer: General Electric	Relative Humidity (%)	100.0	Note 1	A	Note 1	Analysis	None
Model Number: 5K215AN6769	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Drives Room Fan Cooler	Radiation	2.67 x 10 ⁶ RADS	8.0 x 10 ⁶ RADS	T	CAL-84 Note 2	Analysis	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	40 Years	I	CAL-84 Note 2	Analysis	None
Service: Emergency Core Cooling System Cooler Fan 1	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 115							
Flood Level Elev: N/A							
Above Flood Level: N/A							
Needed for: Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input checked="" type="checkbox"/>							

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SYSTEM COMPONENT EVALUATION WORKSHEET

Index: 205H-005A
Rev.: 2

NOTES

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

1. This component is a cooler fan motor in the ECCS pump room ventilation system. The ECCS pump room ventilation system's design function is to maintain a suitable environment for the electric motor drivers of high pressure injection pumps, decay heat pumps, and containment spray pumps (FSAR Vol. 5, Ch. 9, p. 102). In performing its function, the system ventilates rooms 105, 113, and 115. Local temperature switches control the system to maintain room temperatures between 80°F and 122°F.

The thermal-hydraulic analysis performed shows that only a postulated main feedwater line break will cause these rooms to be exposed to the elevated temperature, pressure, and relative humidity specified. Additionally, the analysis did not consider the use of any redundant or non-redundant ventilating systems, thus retaining conservatism.

Of the equipment located in these rooms, only the high pressure injection pump motors are required to aid in mitigating the effects of the postulated high energy line break accident. The emergency procedures applicable to the main feedwater line break specify the need for high pressure injection only in response to too rapid a feeding of the steam generators upon auxiliary feed initiation, thus causing primary system depressurization. Furthermore, setpoint changes have been made, lowering the steam generator level maintained to preclude the need for high pressure injection.

The high pressure injection pump motor will be shown to survive the short-term harsh environment in the highly unlikely event of its necessity to operate. The postulated transient only results in an overpressure condition of 1.5 psid which should not affect the motor. The motor is rated NEMA design A with an ambient temperature rating of 70°C/158°F. The postulated transient exceeds the 158°F rating for only 45 seconds of the 6.7-minute transient. This slight temperature excursion will not damage the motor. The motor specification calls for a heat shock acceptance test of the polyesterimide stator winding of 200°C/392°F for 30 minutes. The 6.7-minute transient consists of 100% relative humidity steam sauna environment. The non-metallic materials are moisture resistant and the stator winding is fully varnished and hence should be resistant to the short-term high humidity conditions. The motor leads are spliced using heat shrink tubing which is qualified for 100% relative humidity.

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

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COMPONENT MATERIAL EVALUATION SHEET

Index No. 05H-005B
Rev.: 2

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

Plant I.D. No.: MCO311
Manufacturer: General Electric

Component: ECCS Cooler Fan Motor
Model No.: 5K215AN6769

		THERMAL AGING		RADIATION	
Parts List *	Materials List	Qualification	Reference	Qualification	Reference
Insulation	Polyester Imide	Greater than 40 Years @ 122°F	CAL-84	1.0×10^9 RADS	CAL-84
Joint Insulation and Lead Tape	Glass Cloth Tape	Not Affected	CAL-84	Not Affected	CAL-84
Lacing String	Aramid Cord (Polyurethane Coated)	40 Years @ 383°F	CAL-84	1.0×10^9 RADS	CAL-84
Slot Insulation	Nomex-mylar-nomex Sheet	40 Years @ 122°F	CAL-84	8.7×10^7 RADS	CAL-84
Cable Sleaving	Braided Fiberglass with Silicone Rubber Coating	40 Years @ 302°F	CAL-84	8.0×10^6 RADS	CAL-84
Lead Insulation	Silicone Rubber	40 Years @ 302°F	CAL-84	8.0×10^6 RADS	CAL-84
Varnish	Polyester	40 Years @ 266°F	CAL-84	1.0×10^9 RADS	CAL-84
Grease	See Lubrication Chapter 2.21	See Lubrication Chapter 2.21	See Lubri- cation Chap. 2.21	See Lubrication Chapter 2.21	See Lubri- cation Chap. 2.21
Slot Wedge, Separator, Heater, and End Turn Insulation	Polyamide	Greater than 40 Years @ 122°F	CAL-84	6.0×10^7 RADS	CAL-84

Material & Parts List Reference: V-49A

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

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SYSTEM COMPONENT EVALUATION WORKSHEET

Index No. 05H-006
Rev.: 2

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

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: ECCS Pump Room HVAC	Operating Time	1 Year	40 Years	F	Note 1	Analysis	None
Plant ID No. MC0312	Temperature (°F)	177.0	Note 1	C-115	Notes 1 and 2	Analysis	None
Component: Cooler Fan Motor	Pressure (PSIA)	15.60	Note 1	C-115	Notes 1 and 2	Analysis	None
Manufacturer: General Electric	Relative Humidity (%)	100.0	Note 1	A	Notes 1 and 2	Analysis	None
Model Number: 5K215AN6769	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Drives Room Cooler Fan	Radiation	2.67 x 10 ⁶ RADS	8.0 x 10 ⁶ RADS	T	CAL-84 Note 2	Analysis	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	40 Years	I	CAL-84 Note 2	Analysis	None
Service: Emergency Core Cooling System Cooler Fan 2	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 115							
Flood Level Elev: N/A							
Above Flood Level: N/A							
Needed for:							
Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input checked="" type="checkbox"/>							

Facility: Dabbs Besse Unit 1
Docket: 50-346

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No. 05H-006A
Rev.: 2

NOTES

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

1. This component is a cooler fan motor in the ECCS pump room ventilation system. The ECCS pump room ventilation system's design function is to maintain a suitable environment for the electric motor drivers of high pressure injection pumps, decay heat pumps, and containment spray pumps (FSAR Vol. 5, Ch. 9, p. 102). In performing its function, the system ventilates rooms 105, 113, and 115. Local temperature switches control the system to maintain room temperatures between 80°F and 122°F.

The thermal-hydraulic analysis performed shows that only a postulated main feedwater line break will cause these rooms to be exposed to the elevated temperature, pressure, and relative humidity specified. Additionally, the analysis did not consider the use of any redundant or non-redundant ventilating systems, thus retaining conservatism.

Of the equipment located in these rooms, only the high pressure injection pump motors are required to aid in mitigating the effects of the postulated high energy line break accident. The emergency procedures applicable to the main feedwater line break specify the need for high pressure injection only in response to too rapid a feeding of the steam generators upon auxiliary feed initiation, thus causing primary system depressurization. Furthermore, setpoint changes have been made, lowering the steam generator level maintained to preclude the need for high pressure injection.

The high pressure injection pump motor will be shown to survive the short-term harsh environment in the highly unlikely event of its necessity to operate. The postulated transient only results in an overpressure condition of 1.5 psid which should not affect the motor. The motor is rated NEMA design A with an ambient temperature rating of 70°C/158°F. The postulated transient exceeds the 158°F rating for only 45 seconds of the 6.7-minute transient. This slight temperature excursion will not damage the motor. The motor specification calls for a heat shock acceptance test of the polyesterimide stator winding of 200°C/392°F for 30 minutes. The 6.7-minute transient consists of 100% relative humidity steam sauna environment. The non-metallic materials are moisture resistant and the stator winding is fully varnished and hence should be resistant to the short-term high humidity conditions. The motor leads are spliced using heat shrink tubing which is qualified for 100% relative humidity.

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

Facility: s-Besse Unit 1
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COMPONENT MATERIAL EVALUATION SHEET

Index No. 05H-006B
Rev.: 2

Prepared by: N Lewis
Checked by: [Signature]

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

Plant I.D. No.: MC0312
Manufacturer: General Electric

Component: ECCS Cooler Fan Motor
Model No.: 5K215AN6769

		THERMAL AGING		RADIATION	
Parts List *	Materials List	Qualification	Reference	Qualification	Reference
Insulation	Polyester Imide	Greater than 40 Years @ 122°F	CAL-84	1.0×10^9 RADS	CAL-84
Joint Insulation and Lead Tape	Glass Cloth Tape	Not Affected	CAL-84	Not Affected	CAL-84
Lacing String	Aramid Cord (Polyurethane Coated)	40 Years @ 383°F	CAL-84	1.0×10^9 RADS	CAL-84
Slot Insulation	Nomex-mylar-nomex Sheet	40 Years @ 122°F	CAL-84	8.7×10^7 RADS	CAL-84
Cable Sleaving	Braided Fiberglass with Silicone Rubber Coating	40 Years @ 302°F	CAL-84	8.0×10^6 RADS	CAL-84
Lead Insulation	Silicone Rubber	40 Years @ 302°F	CAL-84	8.0×10^6 RADS	CAL-84
Varnish	Polyester	40 Years @ 266°F	CAL-84	1.0×10^9 RADS	CAL-84
Grease	See Lubrication Chapter 2.21	See Lubrication Chapter 2.21	See Lubri- cation Chap. 2.21	See Lubrication Chapter 2.21	See Lubri- cation Chap. 2.21
Slot Wedge, Separator, Heater, and End Turn Insulation	Polyamide	Greater than 40 Years @ 122°F	CAL-84	6.0×10^7 RADS	CAL-84

Material & Parts List Reference: V-49A

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

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SYSTEM COMPONENT EVALUATION WORKSHEET

Index No. 05H-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: ECCS Pump Room HVAC	Operating Time	1 Year	40 Years	F	Note 1	Analysis	None
Plant ID No. MCO313	Temperature (°F)	155.0	Note 1	C-113	Notes 1 and 2	Analysis	None
Component: Cooler Fan Motor	Pressure (PSIA)	16.06	Note 1	C-113	Notes 1 and 2	Analysis	None
Manufacturer: General Electric	Relative Humidity (%)	100.0	Note 1	A	Notes 1 and 2	Analysis	None
Model Number: 5K215AN6769	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Drives Room Cooler Fan	Radiation	7.1×10^6 RADS	8.0×10^6 RADS	T	CAL-84 Note 2	Analysis	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	40 Years	I	CAL-84 Note 2	Analysis	None
Service: Emergency Core Cooling System Cooler Fan 3	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 113							
Flood Level Elev: N/A							
Above Flood Level: N/A							
Needed for:							
Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input checked="" type="checkbox"/>							

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SYSTEM COMPONENT EVALUATION WORKSHEET

Index No. 05H-007A
Rev.: 2

NOTES

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

1. This component is a cooler fan motor in the ECCS pump room ventilation system. The ECCS pump room ventilation system's design function is to maintain a suitable environment for the electric motor drivers of high pressure injection pumps, decay heat pumps, and containment spray pumps (FSAR Vol. 5, Ch. 9, p. 102). In performing its function, the system ventilates rooms 105, 113, and 115. Local temperature switches control the system to maintain room temperatures between 80°F and 122°F.

The thermal-hydraulic analysis performed shows that only a postulated main feedwater line break will cause these rooms to be exposed to the elevated temperature, pressure, and relative humidity specified. Additionally, the analysis did not consider the use of any redundant or non-redundant ventilating systems, thus retaining conservatism.

Of the equipment located in these rooms, only the high pressure injection pump motors are required to aid in mitigating the effects of the postulated high energy line break accident. The emergency procedures applicable to the main feedwater line break specify the need for high pressure injection only in response to too rapid a feeding of the steam generators upon auxiliary feed initiation, thus causing primary system depressurization. Furthermore, setpoint changes have been made, lowering the steam generator level maintained to preclude the need for high pressure injection.

The high pressure injection pump motor will be shown to survive the short-term harsh environment in the highly unlikely event of its necessity to operate. The postulated transient only results in an overpressure condition of 1.5 psid which should not affect the motor. The motor is rated NEMA design A with an ambient temperature rating of 70°C/158°F. The postulated 6.7-minute transient peak of 155°F does not exceed this rating. This slight temperature excursion will not damage the motor. The motor specification calls for a heat shock acceptance test of the polyesterimide stator winding of 200°C/392°F for 30 minutes. The 6.7-minute transient consists of 100% relative humidity steam sauna environment. The non-metallic materials are moisture resistant and the stator winding is fully varnished and hence should be resistant to the short-term high humidity conditions. The motor leads are spliced using heat shrink tubing which is qualified for 100% relative humidity.

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

Prepared by:

Checked by:

Plant I.D. No.: MCO313

Manufacturer: General Electric

		THERMAL AGING		RADIATION	
Parts List *	Materials List	Qualification	Reference	Qualification	Reference
Insulation	Polyester Imide	Greater than 40 Years @ 122°F	CAL-84	1.0×10^9 RADS	CAL-84
Joint Insulation and Lead Tape	Glass Cloth Tape	Not Affected	CAL-84	Not Affected	CAL-84
Lacing String	Aramid Cord (Polyurethane Coated)	40 Years @ 383°F	CAL-84	1.0×10^9 RADS	CAL-84
Slot Insulation	Nomex-mylar-nomex Sheet	40 Years @ 122°F	CAL-84	8.7×10^7 RADS	CAL-84
Cable Sleeving	Eraided Fiberglass with Silicone Rubber Coating	40 Years @ 302°F	CAL-84	8.0×10^6 RADS	CAL-84
Lead Insulation	Silicone Rubber	40 Years @ 302°F	CAL-84	8.0×10^6 RADS	CAL-84
Varnish	Polyester	40 Years @ 266°F	CAL-84	1.0×10^9 RADS	CAL-84
Grease	See Lubrication Chapter 2.21	See Lubrication Chapter 2.21	See Lubri- cation Chap. 2.21	See Lubrication Chapter 2.21	See Lubri- cation Chap. 2.21
Slot Wedge, Separator, Heater, and End Turn Insulation	Polyamide	Greater than 40 Years @ 122°F	CAL-84	6.0×10^7 RADS	CAL-84

Material & Parts List Reference: V-49A

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

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SYSTEM COMPONENT EVALUATION WORKSHEET

Index NO. 05H-008
Rev.: 2

Prepared by:

N. Lewis

Date:

11/1/83

Checked by:

J. Mulford

Date:

11/4/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification	Outstanding
	Parameter	Specification	Qualification	Specification	Qualification	Method	Items
System: ECCS Pump Room HVAC	Operating Time	1 Year	40 Years	F	Note 1	Analysis	None
Plant ID No. MCO314	Temperature (°F)	130.0	Note 1	C-105	Notes 1 and 2	Analysis	None
Component: Cooler Fan Motor	Pressure (PSIA)	16.06	Note 1	C-105	Notes 1 and 2	Analysis	None
Manufacturer: General Electric	Relative Humidity (%)	100.0	Note 1	A	Notes 1 and 2	Analysis	None
Model Number: 5K215AN6769	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Drives Room Cooler Fan	Radiation	1.9×10^6 RADS	8.0×10^6 RADS	T	CAL-84 Note 2	Analysis	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	40 Years	I	CAL-84 Note 2	Analysis	None
Service: Emergency Core Cooling System Cooler Fan 4	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 105							
Flood Level Elev: N/A							
Above Flood Level: N/A							
Needed for: Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input checked="" type="checkbox"/>							

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SYSTEM COMPONENT EVALUATION WORKSHEET

Index No. 05H-008A
Rev.: 2

NOTES

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

1. This component is a cooler fan motor in the ECCS pump room ventilation system. The ECCS pump room ventilation system's design function is to maintain a suitable environment for the electric motor drivers of high pressure injection pumps, decay heat pumps, and containment spray pumps (FSAR Vol. 5, Ch. 9, p. 102). In performing its function, the system ventilates rooms 105, 113, and 115. Local temperature switches control the system to maintain room temperatures between 80°F and 122°F.

The thermal-hydraulic analysis performed shows that only a postulated main feedwater line break will cause these rooms to be exposed to the elevated temperature, pressure, and relative humidity specified. Additionally, the analysis did not consider the use of any redundant or non-redundant ventilating systems, thus retaining conservatism.

Of the equipment located in these rooms, only the high pressure injection pump motors are required to aid in mitigating the effects of the postulated high energy line break accident. The emergency procedures applicable to the main feedwater line break specify the need for high pressure injection only in response to too rapid a feeding of the steam generators upon auxiliary feed initiation, thus causing primary system depressurization. Furthermore, setpoint changes have been made, lowering the steam generator level maintained to preclude the need for high pressure injection.

The high pressure injection pump motor will be shown to survive the short-term harsh environment in the highly unlikely event of its necessity to operate. The postulated transient only results in an overpressure condition of 1.5 psid which should not affect the motor. The motor is rated NEMA design A with an ambient temperature rating of 70°C/158°F. The postulated 24-minute transient peak of 130°F does not exceed this rating. This slight temperature excursion will not damage the motor. The motor specification calls for a heat shock acceptance test of the polyesterimide stator winding of 200°C/392°F for 30 minutes. The 24-minute transient consists of 100% relative humidity steam sauna environment. The non-metallic materials are moisture resistant and the stator winding is fully varnished and hence should be resistant to the short-term high humidity conditions. The motor leads are spliced using heat shrink tubing which is qualified for 100% relative humidity.

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

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COMPONENT MATERIAL EVALUATION SHEET

Index No. 05H-008B
Rev. 2

Prepared by: N Lewis Date: 11/1/93
Checked by: [Signature] Date: 11/2/93

Plant I.D. No.: MC0314
Manufacturer: General Electric

Component: ECCS Cooler Fan Motor
Model No.: 5K215AN6769

		THERMAL AGING		RADIATION	
Parts List *	Materials List	Qualification	Reference	Qualification	Reference
Insulation	Polyester Imide	Greater than 40 Years @ 122°F	CAL-84	1.0×10^9 RADS	CAL-84
Joint Insulation and Lead Tape	Glass Cloth Tape	Not Affected	CAL-84	Not Affected	CAL-84
Lacing String	Aramid Cord (Polyurethane Coated)	40 Years @ 383°F	CAL-84	1.0×10^9 RADS	CAL-84
Slot Insulation	Nomex-mylar-nomex Sheet	40 Years @ 122°F	CAL-84	8.7×10^7 RADS	CAL-84
Cable Sleeving	Braided Fiberglass with Silicone Rubber Coating	40 Years @ 302°F	CAL-84	8.0×10^6 RADS	CAL-84
Lead Insulation	Silicone Rubber	40 Years @ 302°F	CAL-84	8.0×10^6 RADS	CAL-84
Varnish	Polyester	40 Years @ 266°F	CAL-84	1.0×10^9 RADS	CAL-84
Grease	See Lubrication Chapter 2.21	See Lubrication Chapter 2.21	See Lubri- cation Chap. 2.21	See Lubrication Chapter 2.21	See Lubri- cation Chap. 2.21
Slot Wedge, Separator, Heater, and End Turn Insulation	Polyamide	Greater than 40 Years @ 122°F	CAL-84	6.0×10^7 RADS	CAL-84

Material & Parts List Reference: V-49A

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index: 05H-009
Rev.: 2

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

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification	Outstanding
	Parameter	Specification	Qualification	Specification	Qualification	Method	Items
System: ECCS Pump Room HVAC	Operating Time	1 Year	40 Years	F	Note 1	Analysis	None
Plant ID No. MCO315	Temperature (°F)	130.0	Note 1	C-105	Notes 1 and 2	Analysis	None
Component: Cooler Fan Motor	Pressure (PSIA)	16.06	Note 1	C-105	Notes 1 and 2	Analysis	None
Manufacturer: General Electric	Relative Humidity (%)	100.0	Exempt	A	Note 1	N/A	None
Model Number: 5K215AN6769	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Drives Room Cooler Fan	Radiation	1.9 x 10 ⁶ RADS	8.0 x 10 ⁶ RADS	T	CAL-84 Note 2	Analysis	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	40 Years	I	CAL-84 Note 2	Analysis	None
Service: Emergency Core Cooling System Cooler Fan 5	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 105							
Flood Level Elev: N/A							
Above Flood Level: N/A							
Needed for: Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input checked="" type="checkbox"/>							

Facility: Dabbs Besse Unit 1
Docket: 50-346

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No. 05H-009A
Rev.: 2

NOTES

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

1. This component is a cooler fan motor in the ECCS pump room ventilation system. The ECCS pump room ventilation system's design function is to maintain a suitable environment for the electric motor drivers of high pressure injection pumps, decay heat pumps, and containment spray pumps (FSAR Vol. 5, Ch. 9, p. 102). In performing its function, the system ventilates rooms 105, 113, and 115. Local temperature switches control the system to maintain room temperatures between 80°F and 122°F.

The thermal-hydraulic analysis performed shows that only a postulated main feedwater line break will cause these rooms to be exposed to the elevated temperature, pressure, and relative humidity specified. Additionally, the analysis did not consider the use of any redundant or non-redundant ventilating systems, thus retaining conservatism.

Of the equipment located in these rooms, only the high pressure injection pump motors are required to aid in mitigating the effects of the postulated high energy line break accident. The emergency procedures applicable to the main feedwater line break specify the need for high pressure injection only in response to too rapid a feeding of the steam generators upon auxiliary feed initiation, thus causing primary system depressurization. Furthermore, setpoint changes have been made, lowering the steam generator level maintained to preclude the need for high pressure injection.

The high pressure injection pump motor will be shown to survive the short-term harsh environment in the highly unlikely event of its necessity to operate. The postulated transient only results in an overpressure condition of 1.5 psid which should not affect the motor. The motor is rated NEMA design A with an ambient temperature rating of 70°C/158°F. The postulated 24-minute transient peak of 130°F does not exceed this rating. This slight temperature excursion will not damage the motor. The motor specification calls for a heat shock acceptance test of the polyesterimide stator winding of 200°C/392°F for 30 minutes. The 24-minute transient consists of 100% relative humidity steam sauna environment. The non-metallic materials are moisture resistant and the stator winding is fully varnished and hence should be resistant to the short-term high humidity conditions. The motor leads are spliced using heat shrink tubing which is qualified for 100% relative humidity.

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

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

COMPONENT MATERIAL EVALUATION SHEET

Index No. 05H-009B
Rev.: 2

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

Plant I.D. No.: MCO315
Manufacturer: General Electric

Component: ECCS Cooler Fan Motor
Model No.: 5K215AN6769

		THERMAL AGING		RADIATION	
Parts List *	Materials List	Qualification	Reference	Qualification	Reference
Insulation	Polyester Imide	Greater than 40 Years @ 122°F	CAL-84	1.0×10^9 RADS	CAL-84
Joint Insulation and Lead Tape	Glass Cloth Tape	Not Affected	CAL-84	Not Affected	CAL-84
Lacing String	Aramid Cord (Polyurethane Coated)	40 Years @ 383°F	CAL-84	1.0×10^9 RADS	CAL-84
Slot Insulation	Nomex-mylar-nomex Sheet	40 Years @ 122°F	CAL-84	8.7×10^7 RADS	CAL-84
Cable Sleeving	Braided Fiberglass with Silicone Rubber Coating	40 Years @ 302°F	CAL-84	8.0×10^6 RADS	CAL-84
Lead Insulation	Silicone Rubber	40 Years @ 302°F	CAL-84	8.0×10^6 RADS	CAL-84
Varnish	Polyester	40 Years @ 266°F	CAL-84	1.0×10^9 RADS	CAL-84
Grease	See Lubrication Chapter 2.21	See Lubrication Chapter 2.21	See Lubri- cation Chap. 2.21	See Lubrication Chapter 2.21	See Lubri- cation Chap. 2.21
Slot Wedge, Separator, Heater, and End Turn Insulation	Polyamide	Greater than 40 Years @ 122°F	CAL-84	6.0×10^7 RADS	CAL-84

Material & Parts List Reference: V-49A

* 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. 205H-010
Rev.: 2

Prepared by:

N. Lewis
[Signature]

Date:

11/1/83

Checked by:

Date:

11/2/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: ECCS Pump Room HVAC	Operating Time	1 Year	1.1 Years	F	M-28 V-24C Note 1	Simultaneous Test	None
Plant ID No. MV54210	Temperature (°F)	130.0	250.0	C-105	M-28 V-24C	Simultaneous Test	None
Component: Valve Motor Operator	Pressure (PSIA)	16.06	39.7	C-105	M-28 V-24C	Simultaneous Test	None
Manufacturer: Limitorque	Relative Humidity (%)	100.0	100.0	A	M-28 V-24C	Simultaneous Test	None
Model Number: SMB-000 O/N: 366321A	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Operates Service Water Outlet Valve for Cooler E42-5	Radiation	1.9 x 10 ⁶ RADS	2.0 x 10 ⁷ RADS	T	M-28 V-24C	Sequential Test	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	40 Years	I	CAL-93	Sequential Test Analysis	None
Service: Cooler E42-5 Service Water Outlet Valve	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 105							
Flood Level Elev: N/A Above Flood Level: N/A							
Needed for: Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input checked="" type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No. 205H-010A

Rev.: 2

NOTES

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

1. The test subjected the valve motor operator to a transient of 250°F and 39.7 psia for 30 minutes, followed by a cooldown to 120°F in 1.5 hours. The valve motor operator was then exposed to a second transient of 250°F and 39.7 psia for 22 hours, then a cooldown to 200°F and 24.7 psia which was maintained for 15 days. The temperature in Room 105 peaks at 130°F in 19.0 seconds. The pressure in Room 105 peaks at 16.06 psia in 1.75 seconds. The temperature and pressure in Room 105 return to ambient conditions after 24 minutes.

Based on this information, it can be concluded that the laboratory test subjected the valve motor operator to an overall more severe environment than that which would result from the postulated HELB. Since the valve motor operator remained operable throughout the test, it can be concluded that the valve motor operator will remain functional during and after exposure to the accident environment which would result from the postulated HELB. (Reference C-105)

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 205H-011
Rev.: 2

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

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: ECCS Pump Room HVAC	Operating Time	1 Year	1.1 Years	F	M-28 V-24C Note 1	Simultaneous Test	None
Plant ID No. MV54220	Temperature (°F)	130.0	250.0	C-105	M-28 V-24C	Simultaneous Test	None
Component: Valve Motor Operator	Pressure (PSIA)	16.06	39.7	C-105	M-28 V-24C	Simultaneous Test	None
Manufacturer: Limitorque	Relative Humidity (%)	100.0	100.0	A	M-28 V-24C	Simultaneous Test	None
Model Number: SMB-000 O/N: 366321A	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Operates Service Water Outlet Valve for Cooler E42-4	Radiation	1.9×10^6 RADS	2.0×10^7 RADS	T	M-28 V-24C	Sequential Test	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	40 Years	I	CAL-93	Sequential Test Analysis	None
Service: Cooler E42-4 Service Water Outlet Valve	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 105							
Flood Level Elev: N/A Above Flood Level: N/A							
Needed for: Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input checked="" type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No. 205H-011A

Rev.: 2

NOTES

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

1. The test subjected the valve motor operator to a transient of 250°F and 39.7 psia for 30 minutes, followed by a cooldown to 120°F in 1.5 hours. The valve motor operator was then exposed to a second transient of 250°F and 39.7 psia for 22 hours, then a cooldown to 200°F and 24.7 psia which was maintained for 15 days. The temperature in Room 105 peaks at 130°F in 19.0 seconds. The pressure in Room 105 peaks at 16.06 psia in 1.75 seconds. The temperature and pressure in Room 105 return to ambient conditions after 24 minutes.

Based on this information, it can be concluded that the laboratory test subjected the valve motor operator to an overall more severe environment than that which would result from the postulated HELB. Since the valve motor operator remained operable throughout the test, it can be concluded that the valve motor operator will remain functional during and after exposure to the accident environment which would result from the postulated HELE. (Reference C-105)

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Index No. 205H-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: ECCS Pump Room HVAC	Operating Time	1 Year	1.1 Years	F	M-28 V-24F Note 1	Simultaneous Test	None
Plant ID No. MV54230	Temperature (°F)	155.0	250.0	C-113	M-28 V-24F	Simultaneous Test	None
Component: Valve Motor Operator	Pressure (PSIA)	16.06	39.7	C-113	M-28 V-24F	Simultaneous Test	None
Manufacturer: Limitorque	Relative Humidity (%)	100.0	100.0	A	M-28 V-24F	Simultaneous Test	None
Model Number: SMB-000 O/N: 366863A	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Operates Service Water Outlet Valve for Cooler E42-3	Radiation	7.1 x 10 ⁶ RADS	2.0 x 10 ⁷ RADS	T	M-28 V-24F	Sequential Test	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	40 Years	I	CAL-93	Sequential Test Analysis	None
Service: Cooler E42-3 Service Water Outlet Valve	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 113							
Flood Level Elev: N/A Above Flood Level: N/A							
Needed for: Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input checked="" type="checkbox"/>							

Facility: Davis-Besse Unit 1
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SYSTEM COMPONENT EVALUATION WORKSHEET

Index No. 205H-012A
Rev.: 2

NOTES

Prepared by: N. Kuwis Date 11/1/83
Checked by: E. J. Donald Date 11/2/83

1. The test subjected the valve motor operator to a transient of 250°F and 39.7 psia for 30 minutes, followed by a cooldown to 120°F in 1.5 hours. The valve motor operator was then exposed to a second transient of 250°F and 39.7 psia for 22 hours, then a cooldown to 200°F and 24.7 psia which was maintained for 15 days. The temperature in Room 113 peaks at 155°F in 19.0 seconds. The pressure in Room 113 peaks at 16.06 psia in 1.75 seconds. The temperature and pressure in Room 113 return to ambient conditions after 6.7 minutes.

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No. 205H-013
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: J McDonald Date: 11/6/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: ECCS Pump Room HVAC	Operating Time	1 Year	1.1 Years	F	M-28 V-24C Note 1	Simultaneous Test	None
Plant ID No. MV54240	Temperature (°F)	177.0	250.0	C-115	M-28 V-24C	Simultaneous Test	None
Component: Valve Motor Operator	Pressure (PSIA)	15.60	39.7	C-115	M-28 V-24C	Simultaneous Test	None
Manufacturer: Limitorque	Relative Humidity (%)	100.0	100.0	A	M-28 V-24C	Simultaneous Test	None
Model Number: SMB-000 O/N: 366321A	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Operates Service Water Outlet Valve for Cooler E42-2	Radiation	2.67 x 10 ⁶ RADS	2.0 x 10 ⁷ RADS	T	M-28 V-24C	Sequential Test	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	40 Years	I	CAL-93	Sequential Test Analysis	None
Service: Cooler E42-2 Service Water Outlet Valve	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 115							
Flood Level Elev: N/A Above Flood Level: N/A							
Needed for: Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input checked="" type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 205H-013A
Rev.: 2

Prepared by: H. Levi
Checked by: William D. Long

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

NOTES

1. The test subjected the valve motor operator to a transient of 250°F and 39.7 psia for 30 minutes, followed by a cooldown to 120°F in 1.5 hours. The valve motor operator was then exposed to a second transient of 250°F and 39.7 psia for 22 hours, then a cooldown to 200°F and 24.7 psia which was maintained for 15 days. The temperature in Room 115 peaks at 155°F in 19.0 seconds. The pressure in Room 115 peaks at 16.06 psia in 1.75 seconds. The temperature and pressure in Room 115 return to ambient conditions after 6.7 minutes.

Based on this information, it can be concluded that the laboratory test subjected the valve motor operator to an overall more severe environment than that which would result from the postulated HELB. Since the valve motor operator remained operable throughout the test, it can be concluded that the valve motor operator will remain functional during and after exposure to the accident environment which would result from the postulated HELB. (Reference C-115)

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 205H-014
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: ECCS Pump Room HVAC	Operating Time	1 Year	1.1 Years	F	M-28 V-24C Note 1	Simultaneous Test	None
Plant ID No. MV54250	Temperature (°F)	177.0	250.0	C-115	M-28 V-24C	Simultaneous Test	None
Component: Valve Motor Operator	Pressure (PSIA)	15.60	39.7	C-115	M-28 V-24C	Simultaneous Test	None
Manufacturer: Limitorque	Relative Humidity (%)	100.0	100.0	A	M-28 V-24C	Simultaneous Test	None
Model Number: SMB-000 O/N: 366321A	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Operates Service Water Outlet Valve for Cooler E42-1	Radiation	2.67×10^6 RADS	2.0×10^7 RADS	T	M-28 V-24C	Sequential Test	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	40 Years	I	CAL-93	Sequential Test Analysis	None
Service: Cooler E42-1 Service Water Outlet Valve	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 115							
Flood Level Elev: N/A Above Flood Level: N/A							
Needed for: Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input checked="" type="checkbox"/>							

Facility: Davis-Besse Unit 1

Docket: 50-346

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 205H-014A

Rev.: 2

Prepared by: N. Lewis

Date: 11/1/83

Checked by: [Signature]

Date: 11/2/83

NOTES

1. The test subjected the valve motor operator to a transient of 250°F and 39.7 psia for 30 minutes, followed by a cooldown to 120°F in 1.5 hours. The valve motor operator was then exposed to a second transient of 250°F and 39.7 psia for 22 hours, then a cooldown to 200°F and 24.7 psia which was maintained for 15 days. The temperature in Room 115 peaks at 177°F in 19.0 seconds. The pressure in Room 115 peaks at 15.60 psia in 1.70 seconds. The temperature and pressure in Room 115 return to ambient conditions after 6.7 minutes.

Based on this information, it can be concluded that the laboratory test subjected the valve motor operator to an overall more severe environment than that which would result from the postulated HELB. Since the valve motor operator remained operable throughout the test, it can be concluded that the valve motor operator will remain functional during and after exposure to the accident environment which would result from the postulated HELB. (Reference C-115)

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 205H-015
Rev.: 2

Prepared by: N Lewis
Checked by: [Signature]

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

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: ECCS Pump Room HVAC	Operating Time	1 Year	1.1 Years	K	M-28 V-24C Note 1	Simultaneous Test	None
Plant ID No. MV54390	Temperature (°F)	130.0	250.0	C-105	M-28 V-24C	Simultaneous Test	None
Component: Damper Motor Operator	Pressure (PSIA)	16.06	39.7	C-105	M-28 V-24C	Simultaneous Test	None
Manufacturer: Limitorque	Relative Humidity (%)	100.0	100.0	A	M-28 V-24C	Simultaneous Test	None
Model Number: SMB-000	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
O/N: 370756D	Radiation	1.9 x 10 ⁶ RADS	2.0 x 10 ⁷ RADS	T	M-28 V-24C	Sequential Test	None
S/N: 195579	Aging	40 Years	40 Years	I	CAL-93	Sequential Test Analysis	None
Function: Operates ECCS Pump Room 105 Isolation Damper	Submergence	N/A	N/A	N/A	N/A	N/A	None
Accuracy: Spec: N/A Demon: N/A							
Service: ECCS Pump Room Isolation Damper							
Location: Auxiliary Bldg. Rm. 105							
Flood Level Elev: N/A							
Above Flood Level: N/A							
Needed for: Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input checked="" type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 205H-015A
Rev.: 2

NOTES

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

1. The test subjected the valve motor operator to a transient of 250°F and 39.7 psia for 30 minutes, followed by a cooldown to 120°F in 1.5 hours. The valve motor operator was then exposed to a second transient of 250°F and 39.7 psia for 22 hours, then a cooldown to 200°F and 24.7 psia which was maintained for 15 days. The temperature in Room 105 peaks at 130°F in 19 seconds. The pressure in Room 105 peaks at 16.06 psia in 1.75 seconds. The temperature and pressure in Room 105 return to ambient after 24 minutes.

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No: 205H-016
Rev.: 2

Prepared by: N Lewis
Checked by: Sprouland

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

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: ECCS Pump Room HVAC	Operating Time	1 Year	1.1 Years	K	M-28 V-24G Note 1	Simultaneous Test	None
Plant ID No. MV54400	Temperature (°F)	130.0	250.0	C-105	M-28 V-24G	Simultaneous Test	None
Component: Damper Motor Operator	Pressure (PSIA)	16.06	39.7	C-105	M-28 V-24G	Simultaneous Test	None
Manufacturer: Limitorque	Relative Humidity (%)	100.0	100.0	A	M-28 V-24G	Simultaneous Test	None
Model Number: SMB-000 O/N: 370756B S/N: 191355	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Operates ECCS Pump Room 105 Isolation Damper	Radiation	1.9×10^6 RADS	2.0×10^7 RADS	T	M-28 V-24G	Sequential Test	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	40 Years	I	CAL-93	Sequential Test Analysis	None
Service: ECCS Pump Room Isolation Damper	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 105							
Flood Level Elev: N/A Above Flood Level: N/A							
Needed for: Hot Shutdown <input checked="" type="checkbox"/> Cold Shutdown <input checked="" type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 205H-016A

Rev.: 2

NOTES

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

1. The test subjected the valve motor operator to a transient of 250°F and 39.7 psia for 30 minutes, followed by a cooldown to 120°F in 1.5 hours. The valve motor operator was then exposed to a second transient of 250°F and 39.7 psia for 22 hours, then a cooldown to 200°F and 24.7 psia which was maintained for 15 days. The temperature in Room 105 peaks at 130°F in 19 seconds. The pressure in Room 105 peaks at 16.06 psia in 1.75 seconds. The temperature and pressure in Room 105 return to ambient after 24 minutes.

Based on this information, it can be concluded that the laboratory test subjected the valve motor operator to an overall more severe environment than that which would result from a postulated HELB. Since the valve motor operator remained operable throughout the test and functional after the test, it can be concluded that the valve motor operator will remain functional during and after exposure to the accident environment which would result from the postulated HELB. (Reference C-105)

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 205H-017
Rev.: 2

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

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: ECCS Pump Room HVAC	Operating Time	1 Year	1.1 Years	F	M-28 V-24G Note 1	Simultaneous Test	None
Plant ID No. MV54420	Temperature (°F)	177.0	250.0	C-115	M-28 V-24G	Simultaneous Test	None
Component: Damper Motor Operator	Pressure (PSIA)	15.60	39.7	C-115	M-28 V-24G	Simultaneous Test	None
Manufacturer: Limitorque	Relative Humidity (%)	100.0	100.0	A	M-28 V-24G	Simultaneous Test	None
Model Number: SMB-000 O/N: 370756C S/N: 191572	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Operates ECCS Pump Room 115 Isolation Damper	Radiation	2.67 x 10 ⁶ RADS	2.0 x 10 ⁷ RADS	T	M-28 V-24G	Sequential Test	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	40 Years	I	CAL-93	Sequential Test Analysis	None
Service: ECCS Pump Room Isolation Damper	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 115							
Flood Level Elev: N/A Above Flood Level: N/A							
Needed for: Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input checked="" type="checkbox"/>							

Facility: Davis-Eesse Unit 1

Docket: 50-346

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 205H-017A

Rev.: 2

NOTES

Prepared by: M. Lewis

Date

11/1/83

Checked by: [Signature]

Date

11/2/83

1. The test subjected the valve motor operator to a transient of 325°F and 39.7 psia for 30 minutes, followed by a cooldown to 120°F in 1.5 hours. The valve motor operator was then exposed to a second transient of 250°F and 39.7 psia for 22 hours, then a cooldown to 200°F and 24.7 psia which was maintained for 15 days. The temperature in Room 115 peaks at 177°F in 19 seconds. The pressure in Room 115 peaks at 15.6 psia in 1.7 seconds. The temperature and pressure in Room 115 return to ambient after 6.7 minutes.

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No. 205H-018
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: ECCS Pump Room HVAC	Operating Time	75 Seconds	1 Day	K	V-3I	N/A	None
Plant ID No. SV5715	Temperature (°F)	130.0	180.0 Note 2	C-105	V-3I	N/A	None
Component: Solenoid Valve	Pressure (PSIA)	16.06	16.4 Note 2	C-105	V-3I	N/A	None
Manufacturer: ASCO	Relative Humidity (%)	100.0	100.0 Note 2	A	V-3I	N/A	None
Model Number: HT8316D45	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Isolation of ECCS Room from Normal Ventilation	Radiation	3.94 x 10 ⁵ RADS Note 1	1.2 x 10 ⁶ RADS	T	CAL-80 Note 3	Analysis	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	9 Years Note 4	I	CAL-80 Note 3	Analysis	None
Service: ECCS Room 105 Isolation Damper	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 105							
Flood Level Elev: N/A							
Above Flood Level: N/A							
Needed for: Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input type="checkbox"/>							

Facility: D... Besse Unit 1

Docket: 50-346

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No. 05H-018A

Rev.: 0

Prepared by:

N Lewis

Date

11/1/83

Checked by:

J. McArthur

Date

11/2/83

NOTES

1. The only safety-related function performed by this solenoid valve is the isolation of the ECCS pump rooms from normal ventilation during a loss of coolant accident. The radiation specification noted is the total integrated dose present at one day post-LOCA. Subsequent failure of the solenoid valve will not degrade other safety-related functions because the valve will already be in its desired fail-safe position, thus maintaining isolation of the ECCS pump rooms from the normal ventilation system. This action is required to maintain the negative pressure boundary of the emergency ventilation system. Movement of the valve out of its fail-safe position is not necessary for the duration of the accident.

The air-operated damper's position indicating lights are powered by a 120 v.a.c. essential instrument bus. These lights are operated by the damper's position indicating (limit) switches. Since the solenoid valve is part of a separate 125 v.d.c. control circuit, its failure can not affect the operation of these devices. Solenoid failure will not mislead the operator because damper position indication will be unaffected.

2. Operation of this solenoid valve is not necessary to perform a safety-related function during a high energy line break accident. Its failure will cause isolation of the ECCS pump rooms from normal ventilation. This isolation will not be detrimental to plant safety because the non-safety-related normal ventilation system is not needed to function during accidents (LOCA or HELB). However, operation of normal ventilation in the ECCS pump rooms could be advantageous during a main feedwater line rupture.
3. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.
4. Materials and/or components sensitive to thermal aging will be replaced as per maintenance and replacement schedules to assure that associated component will maintain functional operability in harsh environments.

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

COMPONENT MATERIALS EVALUATION SHEET

Index No. 05H-018B
Rev.: 2

Prepared by:

N Lewis

Date:

11/1/83

Checked by:

[Signature]

Date:

11/2/83

Plant I.D. No.: SV5715

Component: Solenoid Valve

Manufacturer: ASCO

Model No.: HTX8316D45

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Body and Bonnet	Brass	Not Sensitive		Not Affected	
Core Tube	Stainless Steel	Not Sensitive		Not Affected	
Core & Plugnut	Stainless Steel	Not Sensitive		Not Affected	
Shading Coil	Copper	Not Sensitive		Not Affected	
Screw	Steel	Not Sensitive		Not Affected	
Spring, Disc	Stainless Steel	Not Sensitive		Not Affected	
Spring, Core	Stainless Steel	Not Sensitive		Not Affected	
Sol. Base Sub-Assembly	Metallic	Not Sensitive		Not Affected	
Retaining Ring	Brass	Not Sensitive		Not Affected	
Insert	Acetal (Delrin)	9 Years @ 122°F	CAL-80	1.2×10^6 RADS	CAL-80
Pilot Seat Cartridge	Acetal	9 Years @ 122°F	CAL-80	1.2×10^6 RADS	CAL-80
Disc	BUNA-N	15 Years @ 122°F	CAL-80	1.5×10^7 RADS	CAL-80
Diaphragm Assemblies	BUNA-N, Brass	15 Years @ 122°F	CAL-80	1.5×10^7 RADS	CAL-80
Gaskets	BUNA-N	15 Years @ 122°F	CAL-80	1.5×10^7 RADS	CAL-80
Class H Coil:		40 Years @ 140°F	CAL-80	2.0×10^7 RADS	CAL-80
Enclosure	Steel				
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-3B, V-3F, CAT-3A, ROC-3A

Facility: Dabbs Besse Unit 1
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SYSTEM COMPONENT EVALUATION WORKSHEET

Index No. 05H-019
Rev.: 2

Prepared by:

N Lewis

Date:

11/1/83

Checked by:

J. M. Donnell

Date:

11/2/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: ECCS Pump Room HVAC	Operating Time	1 Year	1.1 Years	Note 2	Notes 1 and 4	Analysis	None
Plant ID No. TS5421	Temperature (°F)	130.0	145.0	C-105	Notes 1 and 4	Analysis	None
Component: Temperature Switch	Pressure (PSIA)	16.06	16.2	C-105	Notes 1 and 4	Analysis	None
Manufacturer: Barksdale	Relative Humidity (%)	100.0	100.0	A	Notes 1 and 4	Analysis	None
Model Number: T2H-M155S	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Fan Control	Radiation	1.9 x 10 ⁶ RADS	7.0 x 10 ⁶ RADS	T	CAL-69 Note 3	Analysis	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	15 Years	I	CAL-69 Note 3	Analysis	None
Service: Emergency Core Cooling System Room Cooler Fan 5	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 105							
Flood Level Elev: N/A Above Flood Level: N/A							
Needed for: Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input checked="" type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index # 205H-019A
Rev.: 2

NOTES

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

1. This component is a local temperature switch that automatically controls a cooler fan motor in the ECCS pump room ventilation system. The ECCS pump room ventilation system's design function is to maintain a suitable environment for the electric motor drivers of high pressure injection pumps, decay heat pumps, and containment spray pumps (FSAR Vol. 5, Ch. 9, p. 102). In performing its function, the system ventilates rooms 105, 113, and 115. The local temperature switches control the system to maintain room temperatures between 80°F and 122°F (50°C).

The thermal-hydraulic analysis performed shows that only a postulated main feedwater line break will cause these rooms to be exposed to the elevated temperature, pressure, and relative humidity specified. Additionally, the analysis did not consider the use of any redundant or non-redundant ventilating systems, thus retaining conservatism. The high pressure injection pump and motor heat load has been analyzed into the thermal-hydraulic profiles and has been found to be insignificant.

Of the equipment located in these rooms, only the high pressure injection pump motors are required to aid in mitigating the effects of the postulated high energy line break accident. The emergency procedures applicable to the main feedwater line break specify the need for high pressure injection only in response to too rapid a feeding of the steam generators upon auxiliary feed initiation, thus causing primary system depressurization. Furthermore, setpoint changes have been made, lowering the steam generator level maintained to preclude the need for high pressure injection.

The high pressure injection pump motor will survive the short-term harsh environment in the highly unlikely event of its necessity to operate.

This temperature switch automatically operates a cooler fan to maintain the room temperatures between 80°F and 122°F. Fan operation can be accomplished manually with a pushbutton switch if the temperature switch fails.

2. One year operating time is used as a conservative maximum specification.
3. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

Facility: Davis-Besse Unit 1

Docket: 50-346

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No: 205H-019B

Rev.: 2

NOTES

Prepared by: G. Luni Date 11/1/83
Checked by: Shirley Date 11/2/83

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4. The temperature switch is housed in a NEMA-4 enclosure and is designed to withstand the direct spray of a 1" fire hose nozzle at 65 gpm for a duration of 48 x (length x width x height) seconds from all angles. With an overpressure of 1.5 psid due to a feedline blowdown 2 floors above, the temperature switch and the resulting steam "sauna" environment for approximately 1600 seconds, the temperature switch would function normally in the most severe environment postulated. The temperature switch die cast housing is rigid and will not collapse by engineering judgment. Since the normal ventilating ducting will not collapse with a $P = 1.5$ psig and will not see dampers close for a feedwater line break, the extra margin afforded by this system enhances the operability of the temperature switch. The dampers in the normal ventilating system only close for a high radiation LOCA condition as presently programmed in the Safety Feature Actuating System.

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

COMPONENT MATERIALS EVALUATION SHEET

Index No. 205H-019C
Rev.: 2

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

Plant I.D. No.: TS5421
Manufacturer: Barksdale

Component: Temperature Switch
Model No.: T2H-M155S

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Screws	Steel-Cad Plated	Not Sensitive		Not Affected	
Retainer Rings	Steel-Cad Plated	Not Sensitive		Not Affected	
Washers	Steel-Cad Plated	Not Sensitive		Not Affected	
Bracket, Pivot Pin	Steel-Cad Plated	Not Sensitive		Not Affected	
Pin, Loading Spring	Steel-Cad Plated	Not Sensitive		Not Affected	
Lockwasher, Sensor Nut	Steel-Cad Plated	Not Sensitive		Not Affected	
Plate, Guide	Steel-Cad Plated	Not Sensitive		Not Affected	
Cover, Adjustment	Steel-Cad Plated	Not Sensitive		Not Affected	
Nuts	Steel-Cad Plated	Not Sensitive		Not Affected	
Lever, Manual Reset	Steel-Cad Plated	Not Sensitive		Not Affected	
Spacer, Sensor Housing	Aluminum	Not Sensitive		Not Affected	
Housing, Sensor	Aluminum	Not Sensitive		Not Affected	
Extension	Aluminum	Not Sensitive		Not Affected	
Bushing, Lever Spring	Aluminum	Not Sensitive		Not Affected	
Cover, Housing	Aluminum	Not Sensitive		Not Affected	
Bracket, Terminal Block	Aluminum	Not Sensitive		Not Affected	
Housing	Aluminum	Not Sensitive		Not Affected	
Spacer	Aluminum	Not Sensitive		Not Affected	
Rod, Manual Reset	Aluminum	Not Sensitive		Not Affected	
Washer, Shoulder	Aluminum	Not Sensitive		Not Affected	
Springs	Music Wire Plated	Not Sensitive		Not Affected	
Screw, Adjustment	Brass	Not Sensitive		Not Affected	
Pin, Pivot	Stainless Steel	Not Sensitive		Not Affected	
Lever, Limit Switch	Stainless Steel	Not Sensitive		Not Affected	
Washer, Limit Switch	Spring Steel	Not Sensitive		Not Affected	
Bracket					

Material & Parts List Reference: V-6A, ROC-6A

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

COMPONENT MATERIAL EVALUATION SHEET

Index No. 205H-019D
Rev.: 2

Prepared by:

N. Lewis

Date:

11/1/83

Checked by:

[Signature]

Date:

11/2/83

Plant I.D. No.: TS5421

Component: Temperature Switch

Manufacturer: Barksdale

Model No.: T2H-M155S

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Retainer, Adj. Screw	Spring Steel	Not Sensitive		Not Affected	
Capillary Sensor Ass'y	Metallic	Not Sensitive		Not Affected	
Bracket Assembly, Limit Screw	Metallic	Not Sensitive		Not Affected	
Plunger Assembly	Metallic	Not Sensitive		Not Affected	
Washer, Compensating	Metallic	Not Sensitive		Not Affected	
Insulator, Cover	Fishpaper	Not Sensitive	CAL-69	3.0×10^9 RADS	CAL-69
Marker, Insulator	Fishpaper	Not Sensitive	CAL-69	3.0×10^9 RADS	CAL-69
Terminal Block	Metallic, Phenolic, Thermoplastic	40 Years @ 122°F	CAL-69	2.0×10^7 RADS	CAL-69
Limit Switch Assembly	Metallic, Phenolic, Thermoplastic	40 Years @ 122°F	CAL-69	2.0×10^7 RADS	CAL-69
Insulator, Housing	Mylar	40 Years @ 122°F	CAL-69	1.0×10^7 RADS	CAL-69
Insulator, Limit Switch	Mylar	40 Years @ 122°F	CAL-69	1.0×10^7 RADS	CAL-69
O-Ring, Spacer	BUNA-N	15.1 Years @ 122°F	CAL-69	1.5×10^7 RADS	CAL-69
O-Ring, Housing	BUNA-N	15.1 Years @ 122°F	CAL-69	1.5×10^7 RADS	CAL-69
O-Ring, Adjustment Screw	BUNA-N	15.1 Years @ 122°F	CAL-69	1.5×10^7 RADS	CAL-69
O-Ring, Manual Reset Rod	BUNA-N	15.1 Years @ 122°F	CAL-69	1.5×10^7 RADS	CAL-69
Washer	Nylon	Greater than 40 Years @ 122°F	CAL-69	6.0×10^7 RADS	CAL-69
Gasket, Housing Cover	Neoprene	22 Years @ 122°F	CAL-69	7.0×10^6 RADS	CAL-69
Gasket, Adjustment Cover	Neoprene	22 Years @ 122°F	CAL-69	7.0×10^6 RADS	CAL-69
				Note 1	

Material & Parts List Reference: V-6A, ROC-6A

Notes: 1. At least 50% retention retained.

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No. 205H-020
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: ECCS Pump Room HVAC	Operating Time	1 Year	1.1 Years	Note 2	Notes 1 and 4	Analysis	None
Plant ID No. TS5422	Temperature (°F)	130.0	145.0	C-105	Notes 1 and 4	Analysis	None
Component: Temperature Switch							
Manufacturer: Barksdale	Pressure (PSIA)	16.06	16.2	C-105	Notes 1 and 4	Analysis	None
Model Number: T2H-M155S							
Function: Fan Control	Relative Humidity (%)	100.0	100.0	A	Notes 1 and 4	Analysis	None
Accuracy: Spec: N/A Demon: N/A							
Service: Emergency Core Cooling System Room Cooler Fan 4	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 105	Radiation	1.9×10^6 RADS	7.0×10^6 RADS	T	CAL-69 Note 3	Analysis	None
Flood Level Elev: N/A Above Flood Level: N/A	Aging	40 Years	15 Years	I	CAL-69 Note 3	Analysis	None
Needed for: Hot Shutdown <input checked="" type="checkbox"/> Cold Shutdown <input checked="" type="checkbox"/>	Submergence	N/A	N/A	N/A	N/A	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 205H-020A
Rev.: 2

Prepared by: N. Levin Date: 11/1/83
Checked by: Michael Date: 11/2/83

NOTES

1. This component is a local temperature switch that automatically controls a cooler fan motor in the ECCS pump room ventilation system. The ECCS pump room ventilation system's design function is to maintain a suitable environment for the electric motor drivers of high pressure injection pumps, decay heat pumps, and containment spray pumps (FSAR Vol. 5, Ch. 9, p. 102). In performing its function, the system ventilates rooms 105, 113, and 115. The local temperature switches control the system to maintain room temperatures between 80°F and 122°F (50°C).

The thermal-hydraulic analysis performed shows that only a postulated main feedwater line break will cause these rooms to be exposed to the elevated temperature, pressure, and relative humidity specified. Additionally, the analysis did not consider the use of any redundant or non-redundant ventilating systems, thus retaining conservatism. The high pressure injection pump and motor heat load has been analyzed into the thermal-hydraulic profiles and has been found to be insignificant.

Of the equipment located in these rooms, only the high pressure injection pump motors are required to aid in mitigating the effects of the postulated high energy line break accident. The emergency procedures applicable to the main feedwater line break specify the need for high pressure injection only in response to too rapid a feeding of the steam generators upon auxiliary feed initiation, thus causing primary system depressurization. Furthermore, setpoint changes have been made, lowering the steam generator level maintained to preclude the need for high pressure injection.

The high pressure injection pump motor will survive the short-term harsh environment in the highly unlikely event of its necessity to operate.

This temperature switch automatically operates a cooler fan to maintain the room temperatures between 80°F and 122°F. Fan operation can be accomplished manually with a pushbutton switch if the temperature switch fails.

2. One year operating time is used as a conservative maximum specification.
3. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 205H-020B
Rev.: 2

NOTES

Prepared by: N. Levin Date 11/1/83
Checked by: Donna Dornell Date 11/2/83

4. The temperature switch is housed in a NEMA-4 enclosure and is designed to withstand the direct spray of a 1" fire hose nozzle at 65 gpm for a duration of 48 x (length x width x height) seconds from all angles. With an overpressure of 1.5 psid due to a feedline blowdown 2 floors above, the temperature switch and the resulting steam "sauna" environment for approximately 1600 seconds, the temperature switch would function normally in the most severe environment postulated. The temperature switch die cast housing is rigid and will not collapse by engineering judgment. Since the normal ventilating ducting will not collapse with a $P = 1.5$ psig and will not see dampers close for a feedwater line break, the extra margin afforded by this system enhances the operability of the temperature switch. The dampers in the normal ventilating system only close for a high radiation LOCA condition as presently programmed in the Safety Feature Actuating System.

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

COMPONENT MATERIALS EVALUATION SHEET

Index No.: 205H-020C
Rev.: 2

Prepared by: Nheia Date: 11/1/83
Checked by: L. MacDonell Date: 11/2/83

Plant I.D. No.: TS5422
Manufacturer: Barksdale

Component: Temperature Switch
Model No.: T2H-M155S

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Screws	Steel-Cad Plated	Not Sensitive		Not Affected	
Retainer Rings	Steel-Cad Plated	Not Sensitive		Not Affected	
Washers	Steel-Cad Plated	Not Sensitive		Not Affected	
Bracket, Pivot Pin	Steel-Cad Plated	Not Sensitive		Not Affected	
Pin, Loading Spring	Steel-Cad Plated	Not Sensitive		Not Affected	
Lockwasher, Sensor Nut	Steel-Cad Plated	Not Sensitive		Not Affected	
Plate, Guide	Steel-Cad Plated	Not Sensitive		Not Affected	
Cover, Adjustment	Steel-Cad Plated	Not Sensitive		Not Affected	
Nuts	Steel-Cad Plated	Not Sensitive		Not Affected	
Lever, Manual Reset	Steel-Cad Plated	Not Sensitive		Not Affected	
Spacer, Sensor Housing	Aluminum	Not Sensitive		Not Affected	
Housing, Sensor	Aluminum	Not Sensitive		Not Affected	
Extension	Aluminum	Not Sensitive		Not Affected	
Bushing, Lever Spring	Aluminum	Not Sensitive		Not Affected	
Cover, Housing	Aluminum	Not Sensitive		Not Affected	
Bracket, Terminal Block	Aluminum	Not Sensitive		Not Affected	
Housing	Aluminum	Not Sensitive		Not Affected	
Spacer	Aluminum	Not Sensitive		Not Affected	
Rod, Manual Reset	Aluminum	Not Sensitive		Not Affected	
Washer, Shoulder	Aluminum	Not Sensitive		Not Affected	
Springs	Music Wire Plated	Not Sensitive		Not Affected	
Screw, Adjustment	Brass	Not Sensitive		Not Affected	
Pin, Pivot	Stainless Steel	Not Sensitive		Not Affected	
Lever, Limit Switch	Stainless Steel	Not Sensitive		Not Affected	
Washer, Limit Switch	Spring Steel	Not Sensitive		Not Affected	
Bracket					

Material & Parts List Reference: V-6A, ROC-6A

Facility: As-Besse Unit 1
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COMPONENT MATERIAL EVALUATION SHEET

Index 05H-020D
Rev.: 2

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

Plant I.D. No.: TS5422
Manufacturer: Barksdale

Component: Temperature Switch
Model No.: T2H-M155S

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Retainer, Adj. Screw	Spring Steel	Not Sensitive		Not Affected	
Capillary Sensor Ass'y	Metallic	Not Sensitive		Not Affected	
Bracket Assembly, Limit Screw	Metallic	Not Sensitive		Not Affected	
Plunger Assembly	Metallic	Not Sensitive		Not Affected	
Washer, Compensating	Metallic	Not Sensitive		Not Affected	
Insulator, Cover	Fishpaper	Not Sensitive	CAL-69	3.0×10^9 RADS	CAL-69
Marker, Insulator	Fishpaper	Not Sensitive	CAL-69	3.0×10^9 RADS	CAL-69
Terminal Block	Metallic, Phenolic, Thermoplastic	40 Years @ 122°F	CAL-69	2.0×10^7 RADS	CAL-69
Limit Switch Assembly	Metallic, Phenolic, Thermoplastic	40 Years @ 122°F	CAL-69	2.0×10^7 RADS	CAL-69
Insulator, Housing	Mylar	40 Years @ 122°F	CAL-69	1.0×10^7 RADS	CAL-69
Insulator, Limit Switch	Mylar	40 Years @ 122°F	CAL-69	1.0×10^7 RADS	CAL-69
O-Ring, Spacer	BUNA-N	15.1 Years @ 122°F	CAL-69	1.5×10^7 RADS	CAL-69
O-Ring, Housing	BUNA-N	15.1 Years @ 122°F	CAL-69	1.5×10^7 RADS	CAL-69
O-Ring, Adjustment Screw	BUNA-N	15.1 Years @ 122°F	CAL-69	1.5×10^7 RADS	CAL-69
O-Ring, Manual Reset Rod	BUNA-N	15.1 Years @ 122°F	CAL-69	1.5×10^7 RADS	CAL-69
Washer	Nylon	Greater than 40 Years @ 122°F	CAL-69	6.0×10^7 RADS	CAL-69
Gasket, Housing Cover	Neoprene	22 Years @ 122°F	CAL-69	7.0×10^6 RADS	CAL-69
Gasket, Adjustment Cover	Neoprene	22 Years @ 122°F	CAL-69	7.0×10^6 RADS Note 1	CAL-69

Material & Parts List Reference: V-6A, ROC-6A

Notes: 1. At least 50% retention retained.

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No. 205H-021
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: ECCS Pump Room HVAC	Operating Time	1 Year	1.1 Years	Note 2	Notes 1 and 4	Analysis	None
Plant ID No. TS5423	Temperature (°F)	155.0	170.5	C-113	Notes 1 and 4	Analysis	None
Component: Temperature Switch	Pressure (PSIA)	16.06	16.2	C-113	Notes 1 and 4	Analysis	None
Manufacturer: Barksdale	Relative Humidity (%)	100.0	100.0	A	Notes 1 and 4	Analysis	None
Model Number: T2H-M155S	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Fan Control	Radiation	1.1×10^6 RADS	7.0×10^6 RADS	AS	CAL-69 Note 3	Analysis	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	15 Years	I	CAL-69 Note 3	Analysis	None
Service: Emergency Core Cooling System Room Cooler Fan 3	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 113							
Flood Level Elev: N/A							
Above Flood Level: N/A							
Needed for:							
Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input checked="" type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No. 205H-021A
Rev.: 2

NOTES

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

1. This component is a local temperature switch that automatically controls a cooler fan motor in the ECCS pump room ventilation system. The ECCS pump room ventilation system's design function is to maintain a suitable environment for the electric motor drivers of high pressure injection pumps, decay heat pumps, and containment spray pumps (FSAR Vol. 5, Ch. 9, p. 102). In performing its function, the system ventilates rooms 105, 113, and 115. The local temperature switches control the system to maintain room temperatures between 80°F and 122°F (50°C).

The thermal-hydraulic analysis performed shows that only a postulated main feedwater line break will cause these rooms to be exposed to the elevated temperature, pressure, and relative humidity specified. Additionally, the analysis did not consider the use of any redundant or non-redundant ventilating systems, thus retaining conservatism. The high pressure injection pump and motor heat load has been analyzed into the thermal-hydraulic profiles and has been found to be insignificant.

Of the equipment located in these rooms, only the high pressure injection pump motors are required to aid in mitigating the effects of the postulated high energy line break accident. The emergency procedures applicable to the main feedwater line break specify the need for high pressure injection only in response to too rapid a feeding of the steam generators upon auxiliary feed initiation, thus causing primary system depressurization. Furthermore, setpoint changes have been made, lowering the steam generator level maintained to preclude the need for high pressure injection.

The high pressure injection pump motor will survive the short-term harsh environment in the highly unlikely event of its necessity to operate.

This temperature switch automatically operates a cooler fan to maintain the room temperatures between 80°F and 122°F. Fan operation can be accomplished manually with a pushbutton switch if the temperature switch fails.

2. One year operating time is used as a conservative maximum specification.
3. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 205H-021B
Rev.: 2

NOTES

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

4. The temperature switch is housed in a NEMA-4 enclosure and is designed to withstand the direct spray of a 1" fire hose nozzle at 65 gpm for a duration of 48 x (length x width x height) seconds from all angles. With an overpressure of 1.5 psid due to a feedline blowdown 2 floors above, the temperature switch and the resulting steam "sauna" environment for approximately 1600 seconds, the temperature switch would function normally in the most severe environment postulated. The temperature switch die cast housing is rigid and will not collapse by engineering judgment. Since the normal ventilating ducting will not collapse with a $P = 1.5$ psig and will not see dampers close for a feedwater line break, the extra margin afforded by this system enhances the operability of the temperature switch. The dampers in the normal ventilating system only close for a high radiation LOCA condition as presently programmed in the Safety Feature Actuating System.

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

COMPONENT MATERIALS EVALUATION SHEET

Index No.: 205H-021C
Rev.: 2

Prepared by: N. Lewis Date: 11/1/83
Checked by: B. J. D. Jones Date: 11/1/83

Plant I.D. No.: TS5423
Manufacturer: Barksdale

Component: Temperature Switch
Model No.: T2H-M155S

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Screws	Steel-Cad Plated	Not Sensitive		Not Affected	
Retainer Rings	Steel-Cad Plated	Not Sensitive		Not Affected	
Washers	Steel-Cad Plated	Not Sensitive		Not Affected	
Bracket, Pivot Pin	Steel-Cad Plated	Not Sensitive		Not Affected	
Pin, Loading Spring	Steel-Cad Plated	Not Sensitive		Not Affected	
Lockwasher, Sensor Nut	Steel-Cad Plated	Not Sensitive		Not Affected	
Plate, Guide	Steel-Cad Plated	Not Sensitive		Not Affected	
Cover, Adjustment	Steel-Cad Plated	Not Sensitive		Not Affected	
Nuts	Steel-Cad Plated	Not Sensitive		Not Affected	
Lever, Manual Reset	Steel-Cad Plated	Not Sensitive		Not Affected	
Spacer, Sensor Housing	Aluminum	Not Sensitive		Not Affected	
Housing, Sensor	Aluminum	Not Sensitive		Not Affected	
Extension	Aluminum	Not Sensitive		Not Affected	
Bushing, Lever Spring	Aluminum	Not Sensitive		Not Affected	
Cover, Housing	Aluminum	Not Sensitive		Not Affected	
Bracket, Terminal Block	Aluminum	Not Sensitive		Not Affected	
Housing	Aluminum	Not Sensitive		Not Affected	
Spacer	Aluminum	Not Sensitive		Not Affected	
Rod, Manual Reset	Aluminum	Not Sensitive		Not Affected	
Washer, Shoulder	Aluminum	Not Sensitive		Not Affected	
Springs	Music Wire Plated	Not Sensitive		Not Affected	
Screw, Adjustment	Brass	Not Sensitive		Not Affected	
Pin, Pivot	Stainless Steel	Not Sensitive		Not Affected	
Lever, Limit Switch	Stainless Steel	Not Sensitive		Not Affected	
Washer, Limit Switch	Spring Steel	Not Sensitive		Not Affected	
Bracket					

Material & Parts List Reference: V-6A, ROC-6A

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

COMPONENT MATERIAL EVALUATION SHEET

Index No. 205H-021D
Rev.: 2

Prepared by: N. Lewis

Date: 11/1/83

Checked by: [Signature]

Date: 11/1/83

Plant I.D. No.: TS5423

Component: Temperature Switch

Manufacturer: Barksdale

Model No.: T2H-M155S

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Retainer, Adj. Screw	Spring Steel	Not Sensitive		Not Affected	
Capillary Sensor Ass'y	Metallic	Not Sensitive		Not Affected	
Bracket Assembly, Limit Screw	Metallic	Not Sensitive		Not Affected	
Plunger Assembly	Metallic	Not Sensitive		Not Affected	
Washer, Compensating	Metallic	Not Sensitive		Not Affected	
Insulator, Cover	Fishpaper	Not Sensitive	CAL-69	3.0×10^9 RADS	CAL-69
Marker, Insulator	Fishpaper	Not Sensitive	CAL-69	3.0×10^9 RADS	CAL-69
Terminal Block	Metallic, Phenolic, Thermoplastic	40 Years @ 122°F	CAL-69	2.0×10^7 RADS	CAL-69
Limit Switch Assembly	Metallic, Phenolic, Thermoplastic	40 Years @ 122°F	CAL-69	2.0×10^7 RADS	CAL-69
Insulator, Housing	Mylar	40 Years @ 122°F	CAL-69	1.0×10^7 RADS	CAL-69
Insulator, Limit Switch	Mylar	40 Years @ 122°F	CAL-69	1.0×10^7 RADS	CAL-69
O-Ring, Spacer	BUNA-N	15.1 Years @ 122°F	CAL-69	1.5×10^7 RADS	CAL-69
O-Ring, Housing	BUNA-N	15.1 Years @ 122°F	CAL-69	1.5×10^7 RADS	CAL-69
O-Ring, Adjustment Screw	BUNA-N	15.1 Years @ 122°F	CAL-69	1.5×10^7 RADS	CAL-69
O-Ring, Manual Reset Rod	BUNA-N	15.1 Years @ 122°F	CAL-69	1.5×10^7 RADS	CAL-69
Washer	Nylon	Greater than 40 Years @ 122°F	CAL-69	6.0×10^7 RADS	CAL-69
Gasket, Housing Cover	Neoprene	22 Years @ 122°F	CAL-69	7.0×10^6 RADS	CAL-69
Gasket, Adjustment Cover	Neoprene	22 Years @ 122°F	CAL-69	7.0×10^6 RADS	CAL-69
				Note 1	

Material & Parts List Reference: V-6A, ROC-6A

Notes: 1. At least 50% retention retained.

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index: 205H-022
Rev.: 2

Prepared by:

N. Lewis

Date:

11/1/83

Checked by:

L. J. ...

Date:

11/2/82

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: ECCS Pump Room HVAC	Operating Time	1 Year	1.1 Years	Note 5	Notes 1 and 4	Analysis	None
Plant ID No. TS5424	Temperature (°F)	177.0	194.7	C-115	Notes 1 and 4	Analysis	None
Component: Temperature Switch	Pressure (PSIA)	15.60	17.1	C-115	Notes 1 and 4	Analysis	None
Manufacturer: Barksdale	Relative Humidity (%)	100.0	100.0	A	Notes 1 and 4	Analysis	None
Model Number: T2H-M155S	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Fan Control	Radiation	3.84×10^5 RADS	7.0×10^6 RADS	AS	CAL-69 Note 3	Analysis	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	15 Years	I	CAL-69 Note 3	Analysis	None
Service: Emergency Core Cooling System Room Cooler Fan 2	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 115							
Flood Level Elev: N/A							
Above Flood Level: N/A							
Needed for:							
Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input checked="" type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 205H-022A
Rev.: 2

NOTES

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

1. This component is a local temperature switch that automatically controls a cooler fan motor in the ECCS pump room ventilation system. The ECCS pump room ventilation system's design function is to maintain a suitable environment for the electric motor drivers of high pressure injection pumps, decay heat pumps, and containment spray pumps (FSAR Vol. 5, Ch. 9, p. 102). In performing its function, the system ventilates rooms 105, 113, and 115. The local temperature switches control the system to maintain room temperatures between 80°F and 122°F (50°C).

The thermal-hydraulic analysis performed shows that only a postulated main feedwater line break will cause these rooms to be exposed to the elevated temperature, pressure, and relative humidity specified. Additionally, the analysis did not consider the use of any redundant or non-redundant ventilating systems, thus retaining conservatism. The high pressure injection pump and motor heat load has been analyzed into the thermal-hydraulic profiles and has been found to be insignificant.

Of the equipment located in these rooms, only the high pressure injection pump motors are required to aid in mitigating the effects of the postulated high energy line break accident. The emergency procedures applicable to the main feedwater line break specify the need for high pressure injection only in response to too rapid a feeding of the steam generators upon auxiliary feed initiation, thus causing primary system depressurization. Furthermore, setpoint changes have been made, lowering the steam generator level maintained to preclude the need for high pressure injection.

The high pressure injection pump motor will survive the short-term harsh environment in the highly unlikely event of its necessity to operate.

This temperature switch automatically operates a cooler fan to maintain the room temperatures between 80°F and 122°F. Fan operation can be accomplished manually with a pushbutton switch if the temperature switch fails.

2. One year operating time is used as a conservative maximum specification.
3. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No. 205H-022B
Rev.: 2

NOTES

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

4. The temperature switch is housed in a NEMA-4 enclosure and is designed to withstand the direct spray of a 1" fire hose nozzle at 65 gpm for a duration of 48 x (length x width x height) seconds from all angles. With an overpressure of 1.5 psid due to a feedline blowdown 2 floors above, the temperature switch and the resulting steam "sauna" environment for approximately 1600 seconds, the temperature switch would function normally in the most severe environment postulated. The temperature switch die cast housing is rigid and will not collapse by engineering judgment. Since the normal ventilating ducting will not collapse with a $P = 1.5$ psig and will not see dampers close for a feedwater line break, the extra margin afforded by this system enhances the operability of the temperature switch. The dampers in the normal ventilating system only close for a high radiation LOCA condition as presently programmed in the Safety Feature Actuating System.

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

COMPONENT MATERIALS EVALUATION SHEET

Index No.: 205H-022C
Rev.: 2

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

Plant I.D. No.: TS5424

Component: Temperature Switch

Manufacturer: Barksdale

Model No.: T2H-M155S

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Screws	Steel-Cad Plated	Not Sensitive		Not Affected	
Retainer Rings	Steel-Cad Plated	Not Sensitive		Not Affected	
Washers	Steel-Cad Plated	Not Sensitive		Not Affected	
Bracket, Pivot Pin	Steel-Cad Plated	Not Sensitive		Not Affected	
Pin, Loading Spring	Steel-Cad Plated	Not Sensitive		Not Affected	
Lockwasher, Sensor Nut	Steel-Cad Plated	Not Sensitive		Not Affected	
Plate, Guide	Steel-Cad Plated	Not Sensitive		Not Affected	
Cover, Adjustment	Steel-Cad Plated	Not Sensitive		Not Affected	
Nuts	Steel-Cad Plated	Not Sensitive		Not Affected	
Lever, Manual Reset	Steel-Cad Plated	Not Sensitive		Not Affected	
Spacer, Sensor Housing	Aluminum	Not Sensitive		Not Affected	
Housing, Sensor	Aluminum	Not Sensitive		Not Affected	
Extension	Aluminum	Not Sensitive		Not Affected	
Bushing, Lever Spring	Aluminum	Not Sensitive		Not Affected	
Cover, Housing	Aluminum	Not Sensitive		Not Affected	
Bracket, Terminal Block	Aluminum	Not Sensitive		Not Affected	
Housing	Aluminum	Not Sensitive		Not Affected	
Spacer	Aluminum	Not Sensitive		Not Affected	
Rod, Manual Reset	Aluminum	Not Sensitive		Not Affected	
Washer, Shoulder	Aluminum	Not Sensitive		Not Affected	
Springs	Music Wire Plated	Not Sensitive		Not Affected	
Screw, Adjustment	Brass	Not Sensitive		Not Affected	
Pin, Pivot	Stainless Steel	Not Sensitive		Not Affected	
Lever, Limit Switch	Stainless Steel	Not Sensitive		Not Affected	
Washer, Limit Switch	Spring Steel	Not Sensitive		Not Affected	
Bracket					

Material & Parts List Reference: V-6A, ROC-6A

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

COMPONENT MATERIAL EVALUATION SHEET

Index No. 205H-022D
Rev.: 2

Prepared by:

N Lewis
[Signature]

Date:

11/1/83

Checked by:

Date:

11/4/83

Plant I.D. No.: TS5424

Component: Temperature Switch

Manufacturer: Barksdale

Model No.: T2H-M155S

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Retainer, Adj. Screw	Spring Steel	Not Sensitive		Not Affected	
Capillary Sensor Ass'y	Metallic	Not Sensitive		Not Affected	
Bracket Assembly, Limit Screw	Metallic	Not Sensitive		Not Affected	
Plunger Assembly	Metallic	Not Sensitive		Not Affected	
Washer, Compensating	Metallic	Not Sensitive		Not Affected	
Insulator, Cover	Fishpaper	Not Sensitive	CAL-69	3.0×10^9 RADS	CAL-69
Marker, Insulator	Fishpaper	Not Sensitive	CAL-69	3.0×10^9 RADS	CAL-69
Terminal Block	Metallic, Phenolic, Thermoplastic	40 Years @ 122°F	CAL-69	2.0×10^7 RADS	CAL-69
Limit Switch Assembly	Metallic, Phenolic, Thermoplastic	40 Years @ 122°F	CAL-69	2.0×10^7 RADS	CAL-69
Insulator, Housing	Mylar	40 Years @ 122°F	CAL-69	1.0×10^7 RADS	CAL-69
Insulator, Limit Switch	Mylar	40 Years @ 122°F	CAL-69	1.0×10^7 RADS	CAL-69
O-Ring, Spacer	BUNA-N	15.1 Years @ 122°F	CAL-69	1.5×10^7 RADS	CAL-69
O-Ring, Housing	BUNA-N	15.1 Years @ 122°F	CAL-69	1.5×10^7 RADS	CAL-69
O-Ring, Adjustment Screw	BUNA-N	15.1 Years @ 122°F	CAL-69	1.5×10^7 RADS	CAL-69
O-Ring, Manual Reset Rod	BUNA-N	15.1 Years @ 122°F	CAL-69	1.5×10^7 RADS	CAL-69
Washer	Nylon	Greater than 40 Years @ 122°F	CAL-69	6.0×10^7 RADS	CAL-69
Gasket, Housing Cover	Neoprene	22 Years @ 122°F	CAL-69	7.0×10^6 RADS	CAL-69
Gasket, Adjustment Cover	Neoprene	22 Years @ 122°F	CAL-69	7.0×10^6 RADS	CAL-69
				Note 1	

Material & Parts List Reference: V-6A, ROC-6A

Notes: 1. At least 50% retention retained.

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No. 05H-023
Rev.: 2

Prepared by: N Lewis
Checked by: Atkinson

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

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: ECCS Pump Room HVAC	Operating Time	1 Year	1.1 Years	Note 2	Notes 1 and 4	Analysis	None
Plant ID No. TS5425	Temperature (°F)	177.0	194.0	C-115	Notes 1 and 4	Analysis	None
Component: Temperature Switch	Pressure (PSIA)	15.6	17.1	C-115	Notes 1 and 4	Analysis	None
Manufacturer: Barksdale	Relative Humidity (%)	100.0	100.0	A	Notes 1 and 4	Analysis	None
Model Number: T2H-M155S	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Fan Control	Radiation	1.95 x 10 ⁶ RADS	7.0 x 10 ⁶ RADS	AS	CAL-69 Note 3	Analysis	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	15 Years	I	CAL-69 Note 3	Analysis	None
Service: Emergency Core Cooling System Room Cooler Fan 1	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 115							
Flood Level Elev: N/A							
Above Flood Level: N/A							
Needed for:							
Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input checked="" type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 205H-023A
Rev.: 2

NOTES

Prepared by: N. Lewis Date 11/1/03
Checked by: L. McDonald Date 11/2/03

1. This component is a local temperature switch that automatically controls a cooler fan motor in the ECCS pump room ventilation system. The ECCS pump room ventilation system's design function is to maintain a suitable environment for the electric motor drivers of high pressure injection pumps, decay heat pumps, and containment spray pumps (FSAR Vol. 5, Ch. 9, p. 102). In performing its function, the system ventilates rooms 105, 113, and 115. The local temperature switches control the system to maintain room temperatures between 80°F and 122°F (50°C).

The thermal-hydraulic analysis performed shows that only a postulated main feedwater line break will cause these rooms to be exposed to the elevated temperature, pressure, and relative humidity specified. Additionally, the analysis did not consider the use of any redundant or non-redundant ventilating systems, thus retaining conservatism. The high pressure injection pump and motor heat load has been analyzed into the thermal-hydraulic profiles and has been found to be insignificant.

Of the equipment located in these rooms, only the high pressure injection pump motors are required to aid in mitigating the effects of the postulated high energy line break accident. The emergency procedures applicable to the main feedwater line break specify the need for high pressure injection only in response to too rapid a feeding of the steam generators upon auxiliary feed initiation, thus causing primary system depressurization. Furthermore, setpoint changes have been made, lowering the steam generator level maintained to preclude the need for high pressure injection.

The high pressure injection pump motor will survive the short-term harsh environment in the highly unlikely event of its necessity to operate.

This temperature switch automatically operates a cooler fan to maintain the room temperatures between 80°F and 122°F. Fan operation can be accomplished manually with a pushbutton switch if the temperature switch fails.

2. One year operating time is used as a conservative maximum specification.
3. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 205H-023B
Rev.: 2

NOTES

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

4. The temperature switch is housed in a NEMA-4 enclosure and is designed to withstand the direct spray of a 1" fire hose nozzle at 65 gpm for a duration of 48 x (length x width x height) seconds from all angles. With an overpressure of 1.5 psid due to a feedline blowdown 2 floors above, the temperature switch and the resulting steam "sauna" environment for approximately 1600 seconds, the temperature switch would function normally in the most severe environment postulated. The temperature switch die cast housing is rigid and will not collapse by engineering judgment. Since the normal ventilating ducting will not collapse with a $P = 1.5$ psig and will not see dampers close for a feedwater line break, the extra margin afforded by this system enhances the operability of the temperature switch. The dampers in the normal ventilating system only close for a high radiation LOCA condition as presently programmed in the Safety Feature Actuating System.

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

COMPONENT MATERIALS EVALUATION SHEET

Index No.: 205H-023C
Rev.: 2

Prepared by: N. Livi Date: 11/1/83
Checked by: W. J. ... Date: 11/2/83

Plant I.D. No.: TS5425
Manufacturer: Barksdale

Component: Temperature Switch
Model No.: T2H-M155S

THERMAL AGING

RADIATION

Parts List	Materials List	Qualification	Reference	Qualification	Reference
Screws	Steel-Cad Plated	Not Sensitive		Not Affected	
Retainer Rings	Steel-Cad Plated	Not Sensitive		Not Affected	
Washers	Steel-Cad Plated	Not Sensitive		Not Affected	
Bracket, Pivot Pin	Steel-Cad Plated	Not Sensitive		Not Affected	
Pin, Loading Spring	Steel-Cad Plated	Not Sensitive		Not Affected	
Lockwasher, Sensor Nut	Steel-Cad Plated	Not Sensitive		Not Affected	
Plate, Guide	Steel-Cad Plated	Not Sensitive		Not Affected	
Cover, Adjustment	Steel-Cad Plated	Not Sensitive		Not Affected	
Nuts	Steel-Cad Plated	Not Sensitive		Not Affected	
Lever, Manual Reset	Steel-Cad Plated	Not Sensitive		Not Affected	
Spacer, Sensor Housing	Aluminum	Not Sensitive		Not Affected	
Housing, Sensor	Aluminum	Not Sensitive		Not Affected	
Extension	Aluminum	Not Sensitive		Not Affected	
Bushing, Lever Spring	Aluminum	Not Sensitive		Not Affected	
Cover, Housing	Aluminum	Not Sensitive		Not Affected	
Bracket, Terminal Block	Aluminum	Not Sensitive		Not Affected	
Housing	Aluminum	Not Sensitive		Not Affected	
Spacer	Aluminum	Not Sensitive		Not Affected	
Rod, Manual Reset	Aluminum	Not Sensitive		Not Affected	
Washer, Shoulder	Aluminum	Not Sensitive		Not Affected	
Springs	Music Wire Plated	Not Sensitive		Not Affected	
Screw, Adjustment	Brass	Not Sensitive		Not Affected	
Pin, Pivot	Stainless Steel	Not Sensitive		Not Affected	
Lever, Limit Switch	Stainless Steel	Not Sensitive		Not Affected	
Washer, Limit Switch	Spring Steel	Not Sensitive		Not Affected	
Bracket					

Material & Parts List Reference: V-6A, ROC-6A

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

COMPONENT MATERIAL EVALUATION SHEET

Index No. 05H-023D
Rev.: 2

Prepared by:

N Lewis

Date:

11/1/83

Checked by:

[Signature]

Date:

11/2/83

Plant I.D. No.: TS5425

Component: Temperature Switch

Manufacturer: Barksdale

Model No.: T2H-M155S

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Retainer, Adj. Screw	Spring Steel	Not Sensitive		Not Affected	
Capillary Sensor Ass'y	Metallic	Not Sensitive		Not Affected	
Bracket Assembly, Limit Screw	Metallic	Not Sensitive		Not Affected	
Plunger Assembly	Metallic	Not Sensitive		Not Affected	
Washer, Compensating	Metallic	Not Sensitive		Not Affected	
Insulator, Cover	Fishpaper	Not Sensitive	CAL-69	3.0×10^9 RADS	CAL-69
Marker, Insulator	Fishpaper	Not Sensitive	CAL-69	3.0×10^9 RADS	CAL-69
Terminal Block	Metallic, Phenolic, Thermoplastic	40 Years @ 122°F	CAL-69	2.0×10^7 RADS	CAL-69
Limit Switch Assembly	Metallic, Phenolic, Thermoplastic	40 Years @ 122°F	CAL-69	2.0×10^7 RADS	CAL-69
Insulator, Housing	Mylar	40 Years @ 122°F	CAL-69	1.0×10^7 RADS	CAL-69
Insulator, Limit Switch	Mylar	40 Years @ 122°F	CAL-69	1.0×10^7 RADS	CAL-69
O-Ring, Spacer	BUNA-N	15.1 Years @ 122°F	CAL-69	1.5×10^7 RADS	CAL-69
O-Ring, Housing	BUNA-N	15.1 Years @ 122°F	CAL-69	1.5×10^7 RADS	CAL-69
O-Ring, Adjustment Screw	BUNA-N	15.1 Years @ 122°F	CAL-69	1.5×10^7 RADS	CAL-69
O-Ring, Manual Reset Rod	BUNA-N	15.1 Years @ 122°F	CAL-69	1.5×10^7 RADS	CAL-69
Washer	Nylon	Greater than 40 Years @ 122°F	CAL-69	6.0×10^7 RADS	CAL-69
Gasket, Housing Cover	Neoprene	22 Years @ 122°F	CAL-69	7.0×10^6 RADS	CAL-69
Gasket, Adjustment Cover	Neoprene	22 Years @ 122°F	CAL-69	7.0×10^6 RADS	CAL-69
				Note 1	

Material & Parts List Reference: V-6A, ROC-6A

Notes: 1. At least 50% retention retained.