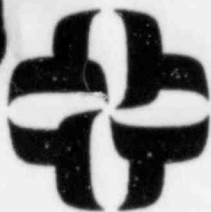


CALCULATION/PROBLEM COVER SHEET



Calculation/Problem No: 1040-001-029
 Title: Display Instrumentation - Technical Specification 3.1
 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. Harty	10-2-81
1	GENERAL MANUAL REVISIONS	NK Woodward	1/3/83
2	GENERAL MANUAL REVISIONS	NK Woodward	11/2/83
8312200305 831129 PDI A00K 0500346 P			

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

MASTER LIST
HARSH ENVIRONMENT

Index No: 501M-001
Rev.: 2

DISPLAY INSTRUMENTATION - TECHNICAL SPECIFICATIONS

Prepared by:

N. Lewis

Date:

11/1/83

Checked by:

A. MacDonell

Date:

11/2/83

Worksheet Index No.	Rev.	Plant ID Number	Generic Name	LOCATION		REMARKS
				Inside Primary Containment	Outside Primary Containment	
301H-006	2	Deleted				
301H-007	2	Deleted				
301H-008	2	FTDH2A	Flow Transmitter		Rm. 236	
301H-009	2	FTDH2B	Flow Transmitter		Rm. 105	
301H-010	2	FTHP3A	Flow Transmitter		Rm. 236	
301H-011	2	FTHP3B	Flow Transmitter		Rm. 236	
301H-012	2	FTHP3C	Flow Transmitter		Rm. 208	
301H-013	2	FTHP3D	Flow Transmitter		Rm. 208	
301H-014	0	Deleted				
301H-015	0	LTRC14-3	Level Transmitter	El. 3		
301H-015	2	LTRC14-3	Level Transmitter	El. 3		
301H-016	2	PTSP12A1	Pressure Transmitter	El. 3		
301H-017	2	PTSP12A2	Pressure Transmitter	El. 3		
301H-018	2	PTSP12B1	Pressure Transmitter	El. 3		
301H-019	2	PTSP12B2	Pressure Transmitter	El. 3		
301H-020	0	ZS1001	Limit Switch		Rm. 602	
301H-020	1	ZS1001	Limit Switch		Rm. 602	
301H-021	0	ZS1011	Limit Switch		Rm. 601	
301H-021	1	ZS1011	Limit Switch		Rm. 601	
301H-022	2	ZS1356	Limit Switch		Rm. 314	
301H-023	2	ZS1357	Limit Switch		Rm. 314	
301H-024	2	ZS1358	Limit Switch		Rm. 314	
301H-025	2	ZS1358A	Limit Switch		Rm. 314	
301H-026	2	ZS1467	Limit Switch		Rm. 113	
301H-027	2	ZS1469	Limit Switch		Rm. 113	
301H-028	2	ZS1542	Limit Switch		Rm. 314	
301H-029	2	ZS1544	Limit Switch		Rm. 303	
301H-030	2	ZS1545	Limit Switch		Rm. 314	
301H-031	0	ZS1719A	Limit Switch	Rm. 220		
301H-031	2	ZS1719A	Limit Switch	Rm. 220		
301H-032	2	ZS1719B	Limit Switch		Rm. 236	

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

MASTER LIST
HARSH ENVIRONMENT

Index No: 50M-002
Rev.: 2

DISPLAY INSTRUMENTATION - TECHNICAL SPECIFICATIONS

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	
301H-033	0	ZS1773A	Limit Switch	Rm. 220		
301H-033	2	ZS1773A	Limit Switch	Rm. 220		
301H-034	2	ZS2010	Limit Switch		Rm. 314	
301H-035	2	ZS2011	Limit Switch		Rm. 314	
301H-036	0	ZS229B	Limit Switch	Rm. 220		
301H-036	2	ZS229B	Limit Switch	Rm. 220		
301H-037	2	ZS232	Limit Switch		Rm. 236	
301H-038	2	ZS235A	Limit Switch		Rm. 314	
301H-039	0	ZS235B	Limit Switch	Rm. 315		
301H-039	2	ZS235B	Limit Switch	Rm. 315		
301H-040	2	ZS236	Limit Switch		Rm. 236	
301H-041	0	ZS375	Limit Switch		Rm. 602	
301H-041	1	ZS375	Limit Switch		Rm. 602	
301H-042	0	ZS394	Limit Switch		Rm. 601	
301H-042	1	ZS394	Limit Switch		Rm. 601	
301H-043	0	ZS5006	Limit Switch	Rm. 407		
301H-043	2	ZS5006	Limit Switch	Rm. 407		
301H-044	0	ZS5007	Limit Switch	Rm. 410		
301H-044	2	ZS5007	Limit Switch	Rm. 410		
301H-045	2	ZS5008	Limit Switch		Rm. 427	
301H-046	2	ZS5715A	Limit Switch		Rm. 105	
301H-047	2	ZS5715B	Limit Switch		Rm. 105	
301H-048	2	ZS5716A	Limit Switch		Rm. 115	
301H-049	2	ZS5716B	Limit Switch		Rm. 115	
301H-050	0	ZS598	Limit Switch		Rm. 314	
301H-050	1	ZS598	Limit Switch		Rm. 314	
301H-051	0	ZS607	Limit Switch		Rm. 314	
301H-051	1	ZS607	Limit Switch		Rm. 314	
301H-052	0	ZS6831A	Limit Switch	Rm. 316		
301H-052	2	ZS6831A	Limit Switch	Rm. 316		
301H-053	2	ZS6831B	Limit Switch		Rm. 208	

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

MASTER LIST
HARSH ENVIRONMENT

Index No: DM-003
Rev.: 2

DISPLAY INSTRUMENTATION - TECHNICAL SPECIFICATIONS

Prepared by:
Checked by:

J. Lewis
[Signature]

Date:
Date:

11/1/83
11/1/83

Worksheet Index No.	Rev.	Plant ID Number	Generic Name	LOCATION		REMARKS
				Inside Primary Containment	Outside Primary Containment	
301H-054	2	ZSDH13A	Limit Switch		Rm. 113	
301H-055	2	ZSDH13B	Limit Switch		Rm. 113	
301H-056	2	ZSDH14A	Limit Switch		Rm. 113	
301H-057	2	ZSDH14A-1	Limit Switch		Rm. 113	
301H-058	2	ZSDH14B	Limit Switch		Rm. 113	
301H-059	2	ZSDH14B-1	Limit Switch		Rm. 113	
301H-060	2	ZSICS11A	Limit Switch		Rm. 602	
301H-060	2	ZSICS11A	Limit Switch		Rm. 602	
301H-061	2	ZSICS11B	Limit Switch		Rm. 601	
301H-061	2	ZSICS11B	Limit Switch		Rm. 601	
301H-062	0	ZSMU03	Limit Switch		Rm. 208	
301H-062	1	ZSMU03	Limit Switch		Rm. 208	
301H-063	0	ZSMU33	Limit Switch		Rm. 236	
301H-063	1	ZSMU33	Limit Switch		Rm. 236	
301H-064	0	ZSMU38	Limit Switch		Rm. 208	
301H-064	1	ZSMU38	Limit Switch		Rm. 208	
301H-065	0	ZSMU66A	Limit Switch		Rm. 208	
301H-065	1	ZSMU66A	Limit Switch		Rm. 208	
301H-066	0	ZSMU66B	Limit Switch		Rm. 208	
301H-066	1	ZSMU66B	Limit Switch		Rm. 208	
301H-067	0	ZSMU66C	Limit Switch		Rm. 208	
301H-067	1	ZSMU66C	Limit Switch		Rm. 208	
301H-068	0	ZSMU66D	Limit Switch		Rm. 208	
301H-068	1	ZSMU66D	Limit Switch		Rm. 208	
301H-069	1	Deleted				
301H-070	2	TERC4A2	Resistance Temperature Detector	El. 2		
301H-071	2	TERC4A4	Resistance Temperature Detector	El. 2		
301H-072	2	TERC4B2	Resistance Temperature Detector	El. 2		
301H-073	2	TERC4B4	Resistance Temperature Detector	El. 2		
301H-074	0	LTRC14-1	Level Transmitter	El. 3		
301H-074	2	LTRC14-1	Level Transmitter	El. 3		

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

MASTER LIST
HARSH ENVIRONMENT

Index No: 501M-004
Rev.: 2

DISPLAY INSTRUMENTATION - TECHNICAL SPECIFICATIONS

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

Worksheet Index No.	Rev.	Plant ID Number	Generic Name	LOCATION		REMARKS
				Inside Primary Containment	Outside Primary Containment	
	2	AE5027	Gas Analyzer Panel		Rm. 304	See 2.23
	2	AE5028	Gas Analyzer Panel		Rm. 304	See 2.23
	2	LTSP9A3	Level Transmitter	Rm. 210		See 2.4
	2	LTSP9A8	Level Transmitter	El. 2		See 2.20
	2	LTSP9B3	Level Transmitter	Rm. 210		See 2.4
	2	LTSP9B8	Level Transmitter	El. 2		See 2.20
	2	NC5017	Push Button Switch Box		Rm. 515	See 2.21
	2	NC5018	Push Button Switch Box		Rm. 515	See 2.21
	2	NC5056	Push Button Switch Box		Rm. 515	See 2.21
	2	NC5057	Push Button Switch Box		Rm. 515	See 2.21
	2	NSV100	Push Button Switch		Rm. 602	See 2.21
	2	NSV100E	Push Button Switch		Rm. 602	See 2.21
	2	NSV101	Push Button Switch		Rm. 601	See 2.21
	2	NSV101E	Push Button Switch		Rm. 601	See 2.21
	2	PTRC2A3	Pressure Transmitter	Rm. 410		See 2.19
	2	PTRC2A4	Pressure Transmitter	Rm. 410		See 2.19
	2	PTRC2B3	Pressure Transmitter	Rm. 407		See 2.19
	2	PTRC2B4	Pressure Transmitter	Rm. 407		See 2.19
	2	RC2701	Relay Cabinet		Rm. 227	See 2.21
	2	RC3703	Relay Cabinet		Rm. 314	See 2.21
	2	RC3706	Relay Cabinet		Rm. 304	See 2.21
	2	RC3801	Relay Cabinet		Rm. 303	See 2.21

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

MASTER LIST
NON-HARSH ENVIRONMENT

Index No: 301M-005
Rev.: 2

DISPLAY INSTRUMENTATION - TECHNICAL SPECIFICATIONS

Prepared by:
Checked by:

N Lewis

Date:

11/1/83

Date:

11/2/83

Worksheet Index No.	Rev.	Plant ID Number	Generic Name	LOCATION		REMARKS
				Inside Primary Containment	Outside Primary Containment	
	0	C3630	Auxiliary Shutdown Panel		Rm. 324	
	0	C5705	Control Console		Rm. 505	
	0	C5706	Control Console		Rm. 505	
	0	C5709	Control Console		Rm. 505	
	0	C5712	Control Console		Rm. 505	
	0	C5715	Engineering Safety Features Panel		Rm. 505	
	0	C5716	Engineering Safety Features Panel		Rm. 505	
	0	C5717	Engineering Safety Features Panel		Rm. 505	
	0	C5721	Feedwater Panel		Rm. 505	
	0	C5755B	Radiation Monitoring System 2		Rm. 505	
	0	C5755C	Safety Features Actuation Panel		Rm. 505	
	0	C5755E	RPS Panel Ch. 2		Rm. 505	
	0	C5755F	RPS Panel Ch. 2		Rm. 505	
	0	C5756D	Safety Features Actuation Panel		Rm. 505	
	0	C5756E	RPS Panel Ch. 4		Rm. 505	
	0	C5756F	RPS Panel Ch. 4		Rm. 505	
	0	C5759B	Non-Nuclear Instrumentation Cabinet		Rm. 505	
	0	C5762B	Radiation Monitoring System 1		Rm. 505	
	0	C5762C	Safety Features Actuation Panel		Rm. 505	
	0	C5762E	RPS Panel Ch. 1		Rm. 505	
	0	C5762F	RPS Panel Ch. 1		Rm. 505	
	0	C5763D	Safety Features Actuation Panel		Rm. 505	
	0	C5763E	RPS Panel Ch. 3		Rm. 505	
	0	C5763F	RPS Panel Ch. 3		Rm. 505	
	0	C6705	Control Room A/C Panel		Rm. 603	
	0	TDI4950	RCS TSAT Meter		Rm. 505	
	0	TDI4951	RCS TSAT Meter		Rm. 505	
	0	ZS1424	Limit Switch		Rm. 328	
	0	ZS1429	Limit Switch		Rm. 328	
	0	ZS1429A	Limit Switch		Rm. 328	
	0	ZS1434	Limit Switch		Rm. 328	

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

MASTER LIST
NON-HARSH ENVIRONMENT

Index No: 501M-005A

Rev. : 2

DISPLAY INSTRUMENTATION - TECHNICAL SPECIFICATIONS

Prepared by:
Checked by:

Date: 11/1/83

Date: 11/2/13

[illegible]

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No. 301H-008
Rev.: 2

Prepared by:

3 Lewis

Date:

9/30/83

Checked by:

William D. ...

Date:

9/30/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Display Instrumentation	Operating Time	1 Year	1.1 Years	0	J-8 Note 4	Analysis	None
Plant ID No. FTDH2A	Temperature (°F)	198.0	Exempt	C-236	Note 1	N/A	None
Component: Flow Transmitter	Pressure (PSIA)	15.51	Exempt	C-236	Note 1	N/A	None
Manufacturer: Rosemount	Relative Humidity (%)	100.0	Exempt	A	Note 1	N/A	None
Model Number: 1152DP5A22PB	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Transmits Flow Signals	Radiation	1.97 x 10 ⁶ RADS	5.0 x 10 ⁶ RADS	T	CAL-64 J-8	Sequential Test	None
Accuracy: Spec: 2.0% Demon: .5%	Aging	40 Years	1.87 Years Note 5	I	CAL-64 Notes 2 and 3	Analysis	None
Service: Low Pressure Injection 2 Flow Indication	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 236							
Flood Level Elev: N/A							
Above Flood Level: N/A							
Needed for:							
Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input checked="" type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-008A
Rev.: 2

NOTES

Prepared by: 3 Lewis Date: 9/30/83
Checked by: [Signature] Date: 7/3/83

1. This component is a differential pressure (flow) transmitter that transmits low pressure injection flow signals to control room flow indicators. This component is exempt from qualification because it does not perform a safety-related function in the harsh steam environment caused by a high energy line break. Failure of the component in this environment will not degrade other safety-related functions because the transmitter does not provide a control function. This failure will not mislead the operator because the low pressure injection system is not initiated during high energy line break accidents. Any abnormal indications will be verified by monitoring alternate parameters such as decay heat pump status, low pressure injection isolation valve position, decay heat pump discharge pressure, and decay heat removal cooler outlet temperatures. 1152DP transmitters have successfully passed type testing in a saturated steam environment enveloping the specified environmental conditions.
2. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.
3. Materials and/or components sensitive to thermal aging will be replaced as per maintenance and replacement schedules to assure that associated component will maintain functional operability in harsh environments.
4. One-year operating time is used as a conservative maximum specification.
5. The 1.87 year qualified life is the best analytically supported estimate of qualified life for this transmitter. There is significant operating experience at Davis-Besse and at other nuclear power plants to support a longer qualified life. The surveillance and maintenance program will ensure that no aging related failures occur and the surveillance and maintenance program frequency will be adjusted as necessary to ensure that the associated component will maintain functional operability.

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

COMPONENT MATERIALS EVALUATION SHEET

Index No.: 301H-008B
Rev.: 2

Prepared by:

3 Lewis

Date:

9/29/83

Checked by:

[Signature]

Date:

9/30/83

Plant I.D. No.: FTDH2A

Component: Flow Transmitter

Manufacturer: Rosemount

Model No.: 1152DP5A22PB

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

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-009
Rev.: 2

Prepared by: J Lewis
Checked by: [Signature]

Date: 9/30/83
Date: 9/30/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Display Instrumentation	Operating Time	1 Year	1.1 Years	0	J-8 Note 4	Analysis	None
Plant ID No. FTDH2B	Temperature (°F)	130.0	Exempt	C-105	Note 1	N/A	None
Component: Flow Transmitter	Pressure (PSIA)	16.06	Exempt	C-105	Note 1	N/A	None
Manufacturer: Rosemount	Relative Humidity (%)	100.0	Exempt	A	Note 1	N/A	None
Model Number: 1152DP5A22PB	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Transmits Flow Signals	Radiation	1.9 x 10 ⁶ RADS	5.0 x 10 ⁶ RADS	T	CAL-64 J-8	Sequential Test	None
Accuracy: Spec: 2.0% Demon: .5%	Aging	40 Years	1.87 Years Note 3,5	I	CAL-64 Notes 2 and 3	Analysis	None
Service: Low Pressure Injection 1 Flow Indication	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.: 301H-009A
Rev.: 2

NOTES

Prepared by: J. Lewis Date 9/30/83
Checked by: [Signature] Date 7/20/83

1. This component is a differential pressure (flow) transmitter that transmits low pressure injection flow signals to control room flow indicators. This component is exempt from qualification because it does not perform a safety-related function in the harsh steam environment caused by a high energy line break. Failure of the component in this environment will not degrade other safety-related functions because the transmitter does not provide a control function. This failure will not mislead the operator because the low pressure injection system is not initiated during high energy line break accidents. Any abnormal indications will be verified by monitoring alternate parameters such as decay heat pump status, low pressure injection isolation valve position, decay heat pump discharge pressure, and decay heat removal cooler outlet temperatures. 1152DP transmitters have successfully passed type testing in a saturated steam environment enveloping the specified environmental conditions.
2. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.
3. Materials and/or components sensitive to thermal aging will be replaced as per maintenance and replacement schedules to assure that associated component will maintain functional operability in harsh environments.
4. One-year operating time is used as a conservative maximum specification.
5. The 1.87 year qualified life is the best analytically supported qualified life estimate for this transmitter. There is significant operating experience at Davis-Besse and at other nuclear power plants to support a longer qualified life. The surveillance and maintenance program will ensure that no aging related failures occur and the surveillance and maintenance program frequency will be adjusted as necessary to ensure that the associated component will maintain functional operability.

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

COMPONENT MATERIALS EVALUATION SHEET

Index No. 301H-009B

Rev.: 2

Prepared by:

J Lewis

Date:

9/30/83

Checked by:

J. Anderson

Date:

9/30/83

Plant I.D. No.: FTDH 2B

Component: Flow Transmitter

Manufacturer: Rosemount

Model No.: 1152DP5A22PB

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

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-010
Rev.: 2

Prepared by: E. Lewis Date: 9/30/83
Checked by: Jim Duff Date: 9/30/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Display Instrumentation	Operating Time	1 Year	1.1 Years	F	Note 1 J-8	Simultaneous Test	None
Plant ID No. FTHP3A	Temperature (°F)	198.0	350.0	C-236	J-8	Simultaneous Test	None
Component: Flow Transmitter	Pressure (PSIA)	15.51	84.7	C-236	J-8	Simultaneous Test	None
Manufacturer: Rosemount	Relative Humidity (%)	100.0	100.0	A	J-8	Simultaneous Test	None
Model Number: 1152	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Transmits Flow Signals	Radiation	1.97×10^6 RADS	5.0×10^6 RADS	T	CAL-64 J-8	Sequential Test	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	1.87 Years Note 3	I	CAL-64 J-8 Note 2	Analysis	None
Service: High Pressure Injection 2-1 Flow Indication	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 236							
Flood Level Elev: N/A							
Above Flood Level: N/A							
Needed for: Hot Shutdown <input checked="" type="checkbox"/> Cold Shutdown <input type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-Q0A
Rev.: 2

NOTES

Prepared by: J. Lewis Date: 9/30/83
Checked by: J. M. Gandy Date: 8/20/83

1. One-year operating time is used as a conservative maximum specification.
2. Materials and/or components sensitive to thermal aging will be replaced as per maintenance and replacement schedules to assure that associated components will maintain operability in harsh environments.
3. The 1.67 year qualified life is the best analytically supported qualified life estimate for this transmitter. There is significant operating experience at Davis-Besse and at other nuclear power plants to support a longer qualified life. The surveillance and maintenance program will ensure that no aging failures occur and the surveillance and maintenance program frequency will be adjusted as necessary to ensure that the associated component will maintain functional operability.

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

COMPONENT MATERIAL EVALUATION SHEET

Index No. 301H-010B

Rev.: 2

Prepared by:

J Lewis
J. M. [Signature]

Date:

9/30/83
8/20/82

Checked by:

Date:

Plant I.D. No.: FTH03A
Manufacturer: Rosemount

Component: Flow Transmitter
Model No.: 1152

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

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-011
Rev.: 2

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

Date: 9/29/83
Date: 9/30/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Display Instrumentation	Operating Time	1 Year	1.1 Years	F	Note 1 J-8	Simultaneous Test	None
Plant ID No. FTHP3B	Temperature (°F)	198.0	350.0	C-236	J-8	Simultaneous Test	None
Component: Flow Transmitter	Pressure (PSIA)	15.51	84.7	C-236	J-8	Simultaneous Test	None
Manufacturer: Rosemount	Relative Humidity (%)	100.0	100.0	A	J-8	Simultaneous Test	None
Model Number: 1152	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Transmits Flow Signals	Radiation	1.97 x 10 ⁶ RADS	5.0 x 10 ⁶ RADS	T	J-8	Sequential Test	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	1.87 Years Note 3	I	Note 2 J-8 CAL-64	Analysis	None
Service: High Pressure Injection 2-2 Flow Indication	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 236							
Flood Level Elev: N/A							
Above Flood Level: N/A							
Needed for: Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-011A
Rev.: 2

NOTES

Prepared by: J. Lewis Date: 9/30/83
Checked by: J. M. Carroll Date: 9/20/83

-
1. One-year operating time is used as a conservative maximum specification.
 2. Materials and/or components sensitive to thermal aging will be replaced as per maintenance and replacement schedules to assure that associated components will maintain operability in harsh environments.
 3. The 1.87 year qualified life is the best analytically supported qualified life estimate for this transmitter. There is significant operating experience at Davis-Besse and at other nuclear power plants to support a longer qualified life. The surveillance and maintenance program will ensure that no aging failures occur and the surveillance and maintenance program frequency will be adjusted as necessary to ensure that the associated component will maintain functional operability.

Facility: Davis-Besse Unit 1

Docket: 50-346

COMPONENT MATERIALS EVALUATION SHEET

Index No.: 301H-011B

Rev.: 2

Prepared by:

F Lewis

Date:

9/30/83

Checked by:

St. Ladouceur

Date:

9/30/83

Plant I.D. No.: FTHP3B

Component: Flow Transmitter

Manufacturer: Rosemount

Model No.: 1152

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

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-012
Rev.: 2

Prepared by:

J Lewis

Date:

9/30/83

Checked by:

Miller

Date:

9/30/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Display Instrumentation	Operating Time	1 Year	1.1 Years	F	Note 1 J-8	Simultaneous Test	None
Plant ID No. FTHP3C	Temperature (°F)	192.0	350.0	C-208	J-8	Simultaneous Test	None
Component: Flow Transmitter	Pressure (PSIA)	16.25	84.7	C-208	J-8	Simultaneous Test	None
Manufacturer: Rosemount	Relative Humidity (%)	100.0	100.0	A	J-8	Simultaneous Test	None
Model Number: 1152	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Transmits Flow Signals	Radiation	1.97×10^6 RADS	5.0×10^6 RADS	T	J-8 CAL-64	Sequential Test	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	1.87 Years Note 3	I	CAL-64 J-8 Note 2	Analysis	None
Service: High Pressure Injection 1-1 Flow Indication	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 208							
Flood Level Elev: N/A Above Flood Level: N/A							
Needed for: Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input type="checkbox"/>							

Facility: Davis-Besse Unit 1
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SYSTEM COMPONENT EVALUATION WORKSHEET

Index No. 301H-012A
Rev.: 2

NOTES

Prepared by: J. Lewis Date 9/30/83
Checked by: Steve Conell Date 8/20/83

1. One-year operating time is used as a conservative maximum specification.
2. Materials and/or components sensitive to thermal aging will be replaced as per maintenance and replacement schedules to assure that associated components will maintain operability in harsh environments.
3. The 1.67 year qualified life is the best analytically supported qualified life estimate for this transmitter. There is significant operating experience at Davis-Besse and at other nuclear power plants to support a longer qualified life. The surveillance and maintenance program will ensure that no aging failures occur and the surveillance and maintenance program frequency will be adjusted as necessary to ensure that the associated component will maintain functional operability.

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

COMPONENT MATERIAL EVALUATION SHEET

Index No. 501H-012BRev.: 2Prepared by: 7 LuisDate: 9/30/82Checked by: [Signature]Date: 9/30/82Plant I.D. No.: FTHP3CComponent: Flow TransmitterManufacturer: RosemountModel No.: 1152

THERMAL AGING

RADIATION

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

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No. 501H-013
Rev. : 2

Prepared by:

J Lewis

Date:

8/30/83

Checked by:

William D. P.

Date:

9/30/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Display Instrumentation	Operating Time	1 Year	1.1 Years	F	Note 1 J-8	Simultaneous Test	None
Plant ID No. FTHP3D	Temperature (°F)	192.0	350.0	C-208	J-8	Simultaneous Test	None
Component: Flow Transmitter	Pressure (PSIA)	16.25	84.7	C-208	J-8	Simultaneous Test	None
Manufacturer: Rosemount	Relative Humidity (%)	100.0	100.0	A	J-8	Simultaneous Test	None
Model Number: 1152	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Transmits Flow Signals	Radiation	1.97 x 10 ⁶ RADS	5.0 x 10 ⁶ RADS	T	J-8 CAL-64	Sequential Test	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	1.37 Years Note 3	I	Note 2 J-8 CAL-64	Analysis	None
Service: High Pressure Injection 1-2 Flow Indication	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 208							
Flood Level Elev: N/A							
Above Flood Level: N/A							
Needed for: Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No. 301H-013A
Rev. : 2

NOTES

Prepared by: J. Lewis Date 9/30/83
Checked by: J. M. G. G. G. Date 8/20/85

1. One-year operating time is used as a conservative maximum specification.
2. Materials and/or components sensitive to thermal aging will be replaced as per maintenance and replacement schedules to assure that associated components will maintain operability in harsh environments.
3. The 1.67 year qualified life is the best analytically supported qualified life estimate for this transmitter. There is significant operating experience at Davis-Besse and at other nuclear power plants to support a longer qualified life. The surveillance and maintenance program will ensure that no aging failures occur and the surveillance and maintenance program frequency will be adjusted as necessary to ensure that the associated component will maintain functional operability.

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

COMPONENT MATERIAL EVALUATION SHEET

Index No. 301H-013B
Rev.: 2

Prepared by:

F. Lewis

Date:

9/29/82

Checked by:

J. M. Schraff

Date:

9/30/83

Plant I.D. No.: FTHP3D

Component: Flow Transmitter

Manufacturer: Rosemount

Model No.: 1152

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

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-015
Rev.: 0

Prepared by: W. J. Belland Date: 9-28-81
Checked by: John T. Allstate Date: 9/28/81

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Display Instrumentation	Operating Time	1 Year	1.1 Years	Note 2	J-1 Note 3	Analysis	None
Plant ID No. LTRC14-3	Temperature (°F)	283.0	300.0	H, X	J-1	Simultaneous Test	None
Component: Level Transmitter							
Manufacturer: Bailey Meter	Pressure (PSIA)	52.0	74.7	G, X	J-1	Simultaneous Test	None
Model Number: BY3B40X-A	Relative Humidity (%)	100.0	100.0	A	J-1	Simultaneous Test	None
Function: Transmits Level Signals							
Accuracy: Spec: + .5% Demon: + .23%	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	CAL-42	Analysis	None
Service: Reactor Coolant Pressurizer Level Indication							
Location: Containment El. 3	Radiation	1.7 x 10 ⁷ RADS	4.0 x 10 ⁷ RADS	CAL-44	AG	Sequential Test	None
Flood Level Elev: 572'-2"	Aging	40 Years	10.83 Years Note 1	I	CAL-38	Analysis	None
Above Flood Level: Yes							
Needed for:	Submergence	572' - 2"	585' - 0"	B	J-29	N/A	None
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. 301H-015A
Rev.: 0

NOTES

Prepared by: W. V. Bellagale Date 10-1-81
Checked by: Harold D. Moody Date 10/1/81

1. This component is scheduled for replacement during the first refueling outage subsequent to component on-site availability.
2. One year operating time is used as a conservative maximum specification.
3. According to profiles G and H, containment conditions will nearly return to ambient (2.5 psig, 104°F) within 24 hours, with a complete return to ambient within seven days. Ambient conditions will remain for the duration of the accident and ensuing cooldown. The 24-hour LOCA simulation test exposed the transmitter to a more severe environment than that which would result from the postulated loss of coolant accident. Since the transmitter remained operable throughout the test, it can be concluded that it will also maintain functional operability during the short term accident environment and the long-term cooldown at ambient conditions.

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No. 301H-015
Rev.: 2

Prepared by: J Lewis
Checked by: SMC

Date: 9/30/83
Date: 9/30/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Display Instrumentation	Operating Time	1 Year	1.1 Years	Notes 1 and 3	J-36	Simultaneous Test	None
Plant ID No. LTRC14-3	Temperature (°F)	283.0	350.0	H, X	J-36	Simultaneous Test	None
Component: Level Transmitter	Pressure (PSIA)	52.0	85.0	G, X	J-36	Simultaneous Test	None
Manufacturer: Rosemount	Relative Humidity (%)	100.0	100.0	A	J-36	Simultaneous Test	None
Model Number: 1153	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 8.5 to 11	T	J-36 CAL-40 Note 2	Simultaneous Test	None
Function: Transmits Level Signals	Radiation	1.7×10^7 RADS	5.0×10^7 RADS	CAL-44	AG	Sequential Test	None
Accuracy: Spec: + 5.0% Demon: + .42%	Aging	40 Years	10 Years Note 4	I	CAL-66 J-36	Sequential Test	None
Service: Pressurizer Level	Submergence	572' - 2"	585' - 0"	B	J-29	N/A	None
Location: Containment El.							
Flood Level Elev: 572'-2"							
Above Flood Level: Yes							
Needed for: Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input checked="" type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-015A
Rev.: 2

NOTES

Prepared by: J Lewis Date 9/30/83
Checked by: McDonald Date 9/30/83

1. The Rosemount replaces the Bailey Meter in accordance with FCR 78-525.
2. CAL-40 qualifies components tested in a high pH Boric Acid spray to a pH value of 5.0.
3. One year operating time is used as a conservative maximum specification.
4. Materials and/or components sensitive to thermal aging will be replaced as per maintenance and replacement schedules to ensure that associated component will maintain functional operability in harsh environments.

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index 301H-016
 Rev.: 2

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

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Display Instrumentation	Operating Time	1 Year	1.1 Years Note 1	Note 2	J-10 Note 1	Simultaneous Test	None
Plant ID No. PTSP12A1	Temperature (°F)	283.0	314.0	H, X	J-10	Simultaneous Test	None
Component: Pressure Transmitter	Pressure (PSIA)	52.0	78.0	G, X	J-10	Simultaneous Test	None
Manufacturer: Foxboro	Relative Humidity (%)	100.0	100.0	A	J-10	Simultaneous Test	None
Model Number: EllGM S/N 266-0827	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	J-10 CAL-40 Note 3	Simultaneous Test, Analysis	None
Function: Transmits Pressure Signals	Radiation	6.35 x 10 ⁶ RADS	3.7 x 10 ⁷ RADS	AF	J-10	N/A	None
Accuracy: Spec: 1.0% Demon: 0.94%	Aging	40 Years	0.54 Years Note 5	I	CAI-74 Note 4	Analysis	None
Service: Steam Generator 2 Outlet Steam Pressure Indication	Submergence	572'-2"	589'-5"	B	ROC-16C	N/A	None
Location: Containment El. 3							
Flood Level Elev: 572'-2"							
Above Flood Level: Yes							
Needed for:							
Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input checked="" type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index: 301H-016A
Rev.: 2

NOTES

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

1. According to Profiles G and H, containment conditions will return to ambient within seven days and remain there for the duration of the accident and ensuing cooldown. At the completion of the 30-day LOCA simulation test, test conditions had returned to 150°F, 5 psig. This test exposed the transmitter to an overall more severe environment than that which would result from the postulated loss of coolant accident. Since the transmitter remained operable throughout the test, it can be concluded that the transmitter will maintain functional operability during the short-term accident environment and the long-term cooldown at ambient conditions.
2. One-year operating time is used as a conservative maximum specification.
3. CAL-40 qualifies components tested in a high pH boric acid spray to a pH value of 5.
4. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.
5. Materials and/or components sensitive to thermal aging will be replaced as per maintenance and replacement schedules to assure that associated component will maintain functional operability in harsh environments.

The limiting material is the transmitter amplifier which has an aging life of 1.19/0.54 years at 104°F/120°F, respectively (Reference CAL-74). However, there is operating experience at Davis-Besse Unit 1 and in other nuclear plants to support a longer qualified life.

Although the 1.19/0.54 year qualified life is the best analytically supported life estimate, operating experience shows that a longer life is justified. The surveillance and maintenance program will detect age-related degradation and proper surveillance frequencies will be adjusted to ensure that no common mode aging failures predominate.

Facility: Davis-Besse Unit 1
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COMPONENT MATERIAL EVALUATION SHEET

Index: 301H-016B
Rev.: 2

Prepared by:

N Lewis

Date:

11/1/83

Checked by:

A. J. J. J.

Date:

11/4/83

Plant I.D. No.: PTSP12A1

Component: Pressure Transmitter

Manufacturer: Foxboro

Model No.: E11GM*

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Cover	Aluminum 214	40 Years	AA	N/A	J-10
Screws and Nuts	Steel	40 Years	AA	N/A	J-10
Washers	Steel	40 Years	AA	N/A	J-10
Base Assembly	Cast Iron	40 Years	AA	N/A	J-10
Zero Shaft	Steel	40 Years	AA	N/A	J-10
Sleeve	Steel	40 Years	AA	N/A	N/A
Zero Coupling Assembly	Steel	40 Years	AA	N/A	N/A
Retaining Rings	Steel	40 Years	AA	N/A	N/A
Force Bar and Base	Steel	40 Years	AA	N/A	N/A
Assembly				N/A	N/A
Junction Box	Cast Iron	40 Years	AA	N/A	N/A
Coupling	Stainless Steel	40 Years	AA	N/A	N/A
Brackets	Steel	40 Years	AA	N/A	N/A
Flexure Assemblies	Steel	40 Years	AA	N/A	N/A
Columns	Steel	40 Years	AA	N/A	N/A
Base	Cast Iron	40 Years	AA	N/A	N/A
Cover Plate Molding	Steel	40 Years	AA	N/A	N/A
Terminal Block Assembly	Steel	40 Years	AA	N/A	N/A
Detector Assembly	Steel	40 Years	AA	N/A	N/A
Plates	Steel	40 Years	AA	N/A	N/A
Level Assembly	Steel	40 Years	AA	N/A	N/A

Facility: Davis-Besse Unit 1
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COMPONENT MATERIAL EVALUATION SHEET

Index No. 301H-016C
Rev.: 2

Prepared by: N. Lewis Date: 11/1/83
Checked by: Edmund O'Neil Date: 11/2/83

Plant I.D. No.: PTSP12A1
Manufacturer: Foxboro

Component: Pressure Transmitter
Model No.: EllGM*

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Blocks	Steel	40 Years	AA	N/A	N/A
Lever	Steel	40 Years	AA	N/A	N/A
Clamp Spring	Steel	40 Years	AA	N/A	N/A
Bushings	Steel	40 Years	AA	N/A	N/A
Coil Assembly	Steel	40 Years	AA	N/A	N/A
Zero Screw Assembly	Steel	40 Years	AA	N/A	N/A
Spring Assemblies	Steel	40 Years	AA	N/A	N/A
Tubing	Steel	40 Years	AA	N/A	N/A
Clamps	Steel	40 Years	AA	N/A	N/A
Lubricant	Silicone Oil	N/A	AA	N/A	N/A
Transmitter Amplifier Assembly	Solid State Electronics	0.54 Years @ 120°F	CAL-74	N/A	N/A
G-Rings	Viton	40 Years @ 265°F	CAL-74	N/A	N/A
Nylon Washer	Nylon (Polyamide)	96 Years @ 120°F	CAL-74	N/A	N/A
Cable	Nylon (Polyamide)	96 Years @ 120°F	CAL-74	N/A	N/A
Insulator	Nylon (Polyamide)	96 Years @ 120°F	CAL-74	N/A	N/A
Sealant	Silicone RTV (Silastic)	40 Years @ 302°F	CAL-74	N/A	N/A
Force Motor Assembly	Formvar Insulation	40 Years @ 122°F	CAL-74	N/A	N/A
Armature Assembly	Formvar Insulation	40 Years @ 122°F	CAL-74	N/A	N/A
Terminal Block	Phenolic	40 Years @ 230°F	CAL-74	N/A	N/A
Column	Phenolic	40 Years @ 230°F	CAL-74	N/A	N/A

Materials & Parts List Reference: AA

* The EllGH materials list is applicable to the EllAH and EllGM transmitters because these transmitters have identical topworks, junction box, and electronics.

Note 1: Conservative value based on the fact that the transmitter amplifier assembly is the most limiting component for thermal aging (see Reference AA, CAL-38).

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No. 301H-017
 Rev.: 2

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

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Display Instrumentation	Operating Time	1 Year	1.1 Years	Note 2	J-10 Note 1	Simultaneous Test	None
Plant ID No. PTSPL2A2	Temperature (°F)	283.0	314.0	H, X	J-10	Simultaneous Test	None
Component: Pressure Transmitter	Pressure (PSIA)	52.0	78.0	G, X	J-10	Simultaneous Test	None
Manufacturer: Foxboro	Relative Humidity (%)	100.0	100.0	A	J-10	Simultaneous Test	None
Model Number: EllGM S/N 266-0828	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	J-10 CAL-40 Note 3	Simultaneous Test, Analysis	None
Function: Transmits Pressure Signals	Radiation	6.35 x 10 ⁶ RADS	1.0 x 10 ⁷ RADS	AF	J-5	Sequential Test	None
Accuracy: Spec: 1.0% Demon: 0.94%	Aging	40 Years	0.54 Years Note 5	I	CAL-74 Note 4	Analysis	None
Service: Steam Generator 2 Outlet Steam Pressure Indication	Submergence	572' - 2"	589' - 5"	B	ROC-16C	N/A	None
Location: Containment El. 3							
Flood Level Elev: 572'-2"							
Above Flood Level: Yes							
Needed for:							
Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input checked="" type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No. 301H-017A
Rev.: 2

NOTES

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

1. According to Profiles G and H, containment conditions will return to ambient within seven days and remain there for the duration of the accident and ensuing cooldown. At the completion of the 30-day LOCA simulation test, test conditions had returned to 150°F, 5 psig. This test exposed the transmitter to an overall more severe environment than that which would result from the postulated loss of coolant accident. Since the transmitter remained operable throughout the test, it can be concluded that the transmitter will maintain functional operability during the short-term accident environment and the long-term cooldown at ambient conditions.
2. One-year operating time is used as a conservative maximum specification.
3. CAL-40 qualifies components tested in a high pH boric acid spray to a pH value of 5.
4. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.
5. Materials and/or components sensitive to thermal aging will be replaced as per maintenance and replacement schedules to assure that associated component will maintain functional operability in harsh environments.

The limiting material is the transmitter amplifier which has an aging life of 1.19/0.54 years at 104°F/120°F, respectively (Reference CAL-74). However, there is operating experience at Davis-Besse Unit 1 and in other nuclear plants to support a longer qualified life.

Although the 1.19/0.54 year qualified life is the best analytically supported life estimate, operating experience shows that a longer life is justified. The surveillance and maintenance program will detect age-related degradation and proper surveillance frequencies will be adjusted to ensure that no common mode aging failures predominate.

Facility: Wis-Besse Unit 1
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COMPONENT MATERIAL EVALUATION SHEET

Index: 301H-017B
Rev.: 2

Prepared by: N Lewis Date: 11/1/93
Checked by: Ellen Small Date: 11/4/93

Plant I.D. No.: PTSP12A2

Component: Pressure Transmitter

Manufacturer: Foxboro

Model No.: E11GM*

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Cover	Aluminum 214	40 Years	AA	N/A	N/A
Screws and Nuts	Steel	40 Years	AA	N/A	N/A
Washers	Steel	40 Years	AA	N/A	N/A
Base Assembly	Cast Iron	40 Years	AA	N/A	N/A
Zero Shaft	Steel	40 Years	AA	N/A	N/A
Sleeve	Steel	40 Years	AA	N/A	N/A
Zero Coupling Assembly	Steel	40 Years	AA	N/A	N/A
Retaining Rings	Steel	40 Years	AA	N/A	N/A
Force Bar and Base	Steel	40 Years	AA	N/A	N/A
Assembly				N/A	N/A
Junction Box	Cast Iron	40 Years	AA	N/A	N/A
Coupling	Stainless Steel	40 Years	AA	N/A	N/A
Brackets	Steel	40 Years	AA	N/A	N/A
Flexure Assemblies	Steel	40 Years	AA	N/A	N/A
Columns	Steel	40 Years	AA	N/A	N/A
Base	Cast Iron	40 Years	AA	N/A	N/A
Cover Plate Molding	Steel	40 Years	AA	N/A	N/A
Terminal Block Assembly	Steel	40 Years	AA	N/A	N/A
Detector Assembly	Steel	40 Years	AA	N/A	N/A
Plates	Steel	40 Years	AA	N/A	N/A
Level Assembly	Steel	40 Years	AA	N/A	N/A

Facility: Davis-Besse Unit 1
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COMPONENT MATERIAL EVALUATION SHEET

Index No. 301H-017C
Rev.: 2

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

Plant I.D. No.: PTSP12A2
Manufacturer: Foxboro

Component: Pressure Transmitter
Model No.: EllGM*

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Blocks	Steel	40 Years	AA	N/A	N/A
Lever	Steel	40 Years	AA	N/A	N/A
Clamp Spring	Steel	40 Years	AA	N/A	N/A
Bushings	Steel	40 Years	AA	N/A	N/A
Coil Assembly	Steel	40 Years	AA	N/A	N/A
Zero Screw Assembly	Steel	40 Years	AA	N/A	N/A
Spring Assemblies	Steel	40 Years	AA	N/A	N/A
Tubing	Steel	40 Years	AA	N/A	N/A
Clamps	Steel	40 Years	AA	N/A	N/A
Lubricant	Silicone Oil	N/A	AA	N/A	N/A
Transmitter Amplifier Assembly	Solid State Electronics	0.54 Years @ 120°F	CAL-74	N/A	N/A
O-Rings	Viton	40 Years @ 265°F	CAL-74	N/A	N/A
Nylon Washer	Nylon (Polyamide)	96 Years @ 120°F	CAL-74	N/A	N/A
Cable	Nylon (Polyamide)	96 Years @ 120°F	CAL-74	N/A	N/A
Insulator	Nylon (Polyamide)	96 Years @ 120°F	CAL-74	N/A	N/A
Sealant	Silicone RTV (Silastic)	40 Years @ 302°F	CAL-74	N/A	N/A
Force Motor Assembly	Formvar Insulation	40 Years @ 122°F	CAL-74	N/A	N/A
Armature Assembly	Formvar Insulation	40 Years @ 122°F	CAL-74	N/A	N/A
Terminal Block	Phenolic	40 Years @ 230°F	CAL-74	N/A	N/A
Column	Phenolic	40 Years @ 230°F	CAL-74	N/A	N/A

Materials & Parts List Reference: AA

* The EllGM materials list is applicable to the EllAH and EllGM transmitters because these transmitters have identical topworks, junction box, and electronics.

Note 1: Conservative value based on the fact that the transmitter amplifier assembly is the most limiting component for thermal aging (see Reference AA, CAL-38).

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SYSTEM COMPONENT EVALUATION WORKSHEET

Index 301H-018
Rev.: 2

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

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Display Instrumentation	Operating Time	1 Year	1.1 Years	Note 2	J-10 Note 1	Simultaneous Test	None
Plant ID No. PTSP12B1	Temperature (°F)	283.0	314.0	H, X	J-10	Simultaneous Test	None
Component: Pressure Transmitter	Pressure (PSIA)	52.0	78.0	G, X	J-10	Simultaneous Test	None
Manufacturer: Foxboro	Relative Humidity (%)	100.0	100.0	A	J-10	Simultaneous Test	None
Model Number: EllGM S/N 266-0829	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	J-10 CAL-40 Note 3	Simultaneous Test, Analysis	None
Function: Transmits Pressure Signals	Radiation	5.30 x 10 ⁶ RADS	1.0 x 10 ⁷ RADS	AF	J-5	Sequential Test	None
Accuracy: Spec: 1.0% Demon: 0.94%	Aging	40 Years	0.54 Years Note 5	I	CAL-74 Note 4	Analysis	None
Service: Steam Generator 1 Outlet Steam Pressure Indication	Submergence	572' - 2"	589' - 6"	B	ROC-16C	N/A	None
Location: Containment El. 3							
Flood Level Elev: 572'-2"							
Above Flood Level: Yes							
Needed for:							
Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input checked="" type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No. 301H-018A
Rev.: 2

NOTES

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

1. According to Profiles G and H, containment conditions will return to ambient within seven days and remain there for the duration of the accident and ensuing cooldown. At the completion of the 30-day LOCA simulation test, test conditions had returned to 150°F, 5 psig. This test exposed the transmitter to an overall more severe environment than that which would result from the postulated loss of coolant accident. Since the transmitter remained operable throughout the test, it can be concluded that the transmitter will maintain functional operability during the short-term accident environment and the long-term cooldown at ambient conditions.
2. One-year operating time is used as a conservative maximum specification.
3. CAL-40 qualifies components tested in a high pH boric acid spray to a pH value of 5.
4. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.
5. Materials and/or components sensitive to thermal aging will be replaced as per maintenance and replacement schedules to assure that associated component will maintain functional operability in harsh environments.

The limiting material is the transmitter amplifier which has an aging life of 1.19/0.54 years at 104°F/120°F, respectively (Reference CAL-74). However, there is operating experience at Davis-Besse Unit 1 and in other nuclear plants to support a longer qualified life.

Although the 1.19/0.54 year qualified life is the best analytically supported life estimate, operating experience shows that a longer life is justified. The surveillance and maintenance program will detect age-related degradation and proper surveillance frequencies will be adjusted to ensure that no common mode aging failures predominate.

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

COMPONENT MATERIAL EVALUATION SHEET

Index No. 301H-018B
Rev.: 2

Prepared by: N Lewis Date: 11/1/82
Checked by: Allen Dand Date: 11/2/82

Plant I.D. No.: PTSP12B1

Component: Pressure Transmitter

Manufacturer: Foxboro

Model No.: ELLGM*

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Cover	Aluminum 214	40 Years	AA	N/A	N/A
Screws and Nuts	Steel	40 Years	AA	N/A	N/A
Washers	Steel	40 Years	AA	N/A	N/A
Base Assembly	Cast Iron	40 Years	AA	N/A	N/A
Zero Shaft	Steel	40 Years	AA	N/A	N/A
Sleeve	Steel	40 Years	AA	N/A	N/A
Zero Coupling Assembly	Steel	40 Years	AA	N/A	N/A
Retaining Rings	Steel	40 Years	AA	N/A	N/A
Force Bar and Base	Steel	40 Years	AA	N/A	N/A
Assembly				N/A	N/A
Junction Box	Cast Iron	40 Years	AA	N/A	N/A
Coupling	Stainless Steel	40 Years	AA	N/A	N/A
Brackets	Steel	40 Years	AA	N/A	N/A
Flexure Assemblies	Steel	40 Years	AA	N/A	N/A
Columns	Steel	40 Years	AA	N/A	N/A
Base	Cast Iron	40 Years	AA	N/A	N/A
Cover Plate Molding	Steel	40 Years	AA	N/A	N/A
Terminal Block Assembly	Steel	40 Years	AA	N/A	N/A
Detector Assembly	Steel	40 Years	AA	N/A	N/A
Plates	Steel	40 Years	AA	N/A	N/A
Level Assembly	Steel	40 Years	AA	N/A	N/A

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

COMPONENT MATERIAL EVALUATION SHEET

Index No. 301H-018C
Rev.: 2

Prepared by: N. Lewis Date: 11/1/83
Checked by: Handwritten Date: 11/3/83

Plant I.D. No.: PTSP12B1
Manufacturer: Foxboro

Component: Pressure Transmitter
Model No.: EllGM*

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Blocks	Steel	40 Years	AA	N/A	N/A
Lever	Steel	40 Years	AA	N/A	N/A
Clamp Spring	Steel	40 Years	AA	N/A	N/A
Bushings	Steel	40 Years	AA	N/A	N/A
Coil Assembly	Steel	40 Years	AA	N/A	N/A
Zero Screw Assembly	Steel	40 Years	AA	N/A	N/A
Spring Assemblies	Steel	40 Years	AA	N/A	N/A
Tubing	Steel	40 Years	AA	N/A	N/A
Clamps	Steel	40 Years	AA	N/A	N/A
Lubricant	Silicone Oil	N/A	AA	N/A	N/A
Transmitter Amplifier Assembly	Solid State Electronics	0.54 Years @ 120°F	CAL-74	N/A	N/A
O-Rings	Viton	40 Years @ 265°F	CAL-74	N/A	N/A
Nylon Washer	Nylon (Polyamide)	96 Years @ 120°F	CAL-74	N/A	N/A
Cable	Nylon (Polyamide)	96 Years @ 120°F	CAL-74	N/A	N/A
Insulator	Nylon (Polyamide)	96 Years @ 120°F	CAL-74	N/A	N/A
Sealant	Silicone RTV (Silastic)	40 Years @ 302°F	CAL-74	N/A	N/A
Force Motor Assembly	Formvar Insulation	40 Years @ 122°F	CAL-74	N/A	N/A
Armature Assembly	Formvar Insulation	40 Years @ 122°F	CAL-74	N/A	N/A
Terminal Block	Phenolic	40 Years @ 230°F	CAL-74	N/A	N/A
Column	Phenolic	40 Years @ 230°F	CAL-74	N/A	N/A

Materials & Parts List Reference: AA

* The EllGH materials list is applicable to the EllAH and EllGM transmitters because these transmitters have identical topworks, junction box, and electronics.

Note 1: Conservative value based on the fact that the transmitter amplifier assembly is the most limiting component for thermal aging (see Reference AA, CAL-38).

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index 301H-019
 Rev.: 2

Prepared by: N Lewis Date: 11/1/77
 Checked by: [Signature] Date: 11/2/77

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Display Instrumentation	Operating Time	1 Year	1.1 Years	Note 2	J-10 Note 1	Simultaneous Test	None
Plant ID No. PTSPL2B2	Temperature (°F)	283.0	314.0	H, X	J-10	Simultaneous Test	None
Component: Pressure Transmitter	Pressure (PSIA)	52.0	78.0	G, X	J-10	Simultaneous Test	None
Manufacturer: Foxboro	Relative Humidity (%)	100.0	100.0	A	J-10	Simultaneous Test	None
Model Number: EllGM S/N 266-0830	Chemical Spray	Boric Acid 1800 pfm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	J-10 CAL-40 Note 3	Simultaneous Test, Analysis	None
Function: Transmits Pressure Signals	Radiation	5.30 x 10 ⁶ RADS	1.0 x 10 ⁷ RADS	AF	J-5	Sequential Test	None
Accuracy: Spec: 1.0% Demon: 0.94%	Aging	40 Years	0.54 Years Note 5	I	CAL-74 Note 4	Analysis	None
Service: Steam Generator 1 Outlet Steam Pressure Indication	Submergence	572' - 2"	589' - 6"	B	ROC-16C	N/A	None
Location: Containment El. 3							
Flood Level Elev: 572'-2"							
Above Flood Level: Yes							
Needed for: Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input checked="" type="checkbox"/>							

Facility: Davis-Besse Unit 1
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SYSTEM COMPONENT EVALUATION WORKSHEET

Index No. 301H-019A
Rev.: 2

NOTES

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

1. According to Profiles G and H, containment conditions will return to ambient within seven days and remain there for the duration of the accident and ensuing cooldown. At the completion of the 30-day LOCA simulation test, test conditions had returned to 150°F, 5 psig. This test exposed the transmitter to an overall more severe environment than that which would result from the postulated loss of coolant accident. Since the transmitter remained operable throughout the test, it can be concluded that the transmitter will maintain functional operability during the short-term accident environment and the long-term cooldown at ambient conditions.
2. One-year operating time is used as a conservative maximum specification.
3. CAL-40 qualifies components tested in a high pH boric acid spray to a pH value of 5.
4. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.
5. Materials and/or components sensitive to thermal aging will be replaced as per maintenance and replacement schedules to assure that associated component will maintain functional operability in harsh environments.

The limiting material is the transmitter amplifier which has an aging life of 1.19/0.54 years at 104°F/120°F, respectively (Reference CAL-74). However, there is operating experience at Davis-Besse Unit 1 and in other nuclear plants to support a longer qualified life.

Although the 1.19/0.54 year qualified life is the best analytically supported life estimate, operating experience shows that a longer life is justified. The surveillance and maintenance program will detect age-related degradation and proper surveillance frequencies will be adjusted to ensure that no common mode aging failures predominate.

Facility: Davis-Besse Unit 1
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COMPONENT MATERIAL EVALUATION SHEET

Index No. 301H-019B
Rev.: 2

Prepared by:

N Lewis

Date:

11/1/83

Checked by:

[Signature]

Date:

11/2/83

Plant I.D. No.: PTSP12B2

Component: Pressure Transmitter

Manufacturer: Foxboro

Model No.: E11GM*

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Cover	Aluminum 214	40 Years	AA	N/A	N/A
Screws and Nuts	Steel	40 Years	AA	N/A	N/A
Washers	Steel	40 Years	AA	N/A	N/A
Base Assembly	Cast Iron	40 Years	AA	N/A	N/A
Zero Shaft	Steel	40 Years	AA	N/A	N/A
Sleeve	Steel	40 Years	AA	N/A	N/A
Zero Coupling Assembly	Steel	40 Years	AA	N/A	N/A
Retaining Rings	Steel	40 Years	AA	N/A	N/A
Force Bar and Base Assembly	Steel	40 Years	AA	N/A	N/A
Junction Box	Cast Iron	40 Years	AA	N/A	N/A
Coupling	Stainless Steel	40 Years	AA	N/A	N/A
Brackets	Steel	40 Years	AA	N/A	N/A
Flexure Assemblies	Steel	40 Years	AA	N/A	N/A
Columns	Steel	40 Years	AA	N/A	N/A
Base	Cast Iron	40 Years	AA	N/A	N/A
Cover Plate Molding	Steel	40 Years	AA	N/A	N/A
Terminal Block Assembly	Steel	40 Years	AA	N/A	N/A
Detector Assembly	Steel	40 Years	AA	N/A	N/A
Plates	Steel	40 Years	AA	N/A	N/A
Level Assembly	Steel	40 Years	AA	N/A	N/A

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Docket: 50-346

COMPONENT MATERIAL EVALUATION SHEET

Index No. 301H-019C
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: Stacy D. Neal Date: 11/2/83

Plant I.D. No.: PTSP12B2

Component: Pressure Transmitter

Manufacturer: Foxboro

Model No.: EllGM*

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Blocks	Steel	40 Years	AA	N/A	N/A
Lever	Steel	40 Years	AA	N/A	N/A
Clamp Spring	Steel	40 Years	AA	N/A	N/A
Bushings	Steel	40 Years	AA	N/A	N/A
Coil Assembly	Steel	40 Years	AA	N/A	N/A
Zero Screw Assembly	Steel	40 Years	AA	N/A	N/A
Spring Assemblies	Steel	40 Years	AA	N/A	N/A
Tubing	Steel	40 Years	AA	N/A	N/A
Clamps	Steel	40 Years	AA	N/A	N/A
Lubricant	Silicone Oil	N/A	AA	N/A	N/A
Transmitter Amplifier Assembly	Solid State Electronics	0.54 Years @ 120°F	CAL-74	N/A	N/A
O-Rings	Viton	40 Years @ 255°F	CAL-74	N/A	N/A
Nylon Washer	Nylon (Polyamide)	96 Years @ 120°F	CAL-74	N/A	N/A
Cable	Nylon (Polyamide)	96 Years @ 120°F	CAL-74	N/A	N/A
Insulator	Nylon (Polyamide)	96 Years @ 120°F	CAL-74	N/A	N/A
Sealant	Silicone RTV (Silastic)	40 Years @ 302°F	CAL-74	N/A	N/A
Force Motor Assembly	Formvar Insulation	40 Years @ 122°F	CAL-74	N/A	N/A
Armature Assembly	Formvar Insulation	40 Years @ 122°F	CAL-74	N/A	N/A
Terminal Block	Phenolic	40 Years @ 230°F	CAL-74	N/A	N/A
Column	Phenolic	40 Years @ 230°F	CAL-74	N/A	N/A

Materials & Parts List Reference: AA

* The EllGH materials list is applicable to the EllAH and EllGM transmitters because these transmitters have identical topworks, junction box, and electronics.

Note 1: Conservative value based on the fact that the transmitter amplifier assembly is the most limiting component for thermal aging (see Reference AA, CAL-38).

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Docket: 50-346

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No. 301H-020
Rev.: 0

Prepared by: W. V. Belland Date: 9/29/81
Checked by: John T. Albate Date: 9/29/81

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Display Instrumentation	Operating Time	1 Year	Note 1	Note 4	N/A	N/A	Note 3
Plant ID No. ZS100-1	Temperature (°F)	344.0	Note 1	C-602	N/A	N/A	Note 3
Component: Limit Switch							
Manufacturer: NAMCO	Pressure (PSIA)	20.0	Note 1	C-602	N/A	N/A	Note 3
Model Number: D2400							
Function: Valve Position Indication	Relative Humidity (%)	100.0	Note 1	A	N/A	N/A	Note 3
Accuracy: Spec: N/A Demon: N/A							
Service: Main Steam Line 2 Warm-Up Isolation Valve	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 602	Radiation	N/A	N/A	N/A	N/A	N/A	None
Flood Level Elev: N/A Above Flood Level: N/A	Aging	40 years	40 Years	I	Note 2	Analysis	None
Needed for: Hot Shutdown <input checked="" type="checkbox"/>	Submergence	N/A	N/A	N/A	N/A	N/A	None
Cold Shutdown <input checked="" type="checkbox"/>							

Facility: Davis-Besse Unit 1

Docket: 50-346

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No. 301H-020A

Rev.: 0

NOTES

Prepared by: W.V. Belland Date 9.29.81

Checked by: Kenneth D. Noody Date 9/29/81

1. The limit switch subjected to the harsh environment is for indication only. The warm-up isolation valve is only used during start-up operations and is closed during normal plant operations. The operator is aware of this condition as he will not monitor this valve's position during a high energy line break accident. For this reason the operator will not be misled by failure of the limit switch in the harsh environment. Since the limit switch does not provide a control function, its failure will not degrade other safety-related functions.
2. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.
3. This component is scheduled for replacement during the first refueling outage subsequent to component on-site availability.
4. One year operating time is used as a conservative maximum specification.

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

COMPONENT MATERIAL EVALUATION SHEET

Index No. 301H-020B
Rev.: 0

Prepared by: W. J. Boland Date: 9/29/81
Checked by: John T. Albate Date: 9/29/81

Plant I.D. No.: ZS100-1
Manufacturer: NAMCO

Component: Limit Switch
Model No.: D2400

		THERMAL AGING		RADIATION	
Parts List *	Materials List *	Qualification	Reference	Qualification	Reference
Contact Block	Polyester, Glass Filled	40 Years @ 50°C	W-2	N/A	N/A
Contact Lever	Polyester, Glass Filled	40 Years @ 50°C	W-2	N/A	N/A
Top & Bottom Cover Gaskets	BUNA-N-Coated Nylon	40 Years @ 43.5°C	CAL-2	N/A	N/A
Contact Lever	Alkyd, Mineral Filled	40 Years @ 130°C	W-2	N/A	N/A
Top & Bottom Cover Gaskets	Koroseal	40 Years @ 50°C	W-2	N/A	N/A
Top & Bottom Cover Gaskets	Polyvinyl Chloride Plastic	40 Years @ 50°C	W-2	N/A	N/A

Material & Parts List Reference: V-29B, ROC-29C

- * Only non-metallic parts are listed. Metallic parts are not considered sensitive to Thermal Aging and are not affected by radiation. The materials of these parts differ according to the date of manufacture. Since we are unable to determine the components manufacture date, all possible materials have been listed.

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Docket: 50-346

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-020
Rev.: 1

Prepared by: John C. Brown Date: 12-15-82
Checked by: Paul W. Smith Date: 12-17-82

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Display Instrumentation	Operating Time	1 Year	1.1 Years	Note 2	J-30 Note 3	Simultaneous Test	None
Plant ID No. ZS100-1	Temperature (°F)	344.0	391.0	C-602	J-30	Simultaneous Test	None
Component: Limit Switch	Pressure (PSIA)	20.0	133.7	C-602	J-30	Simultaneous Test	None
Manufacturer: NAMCO	Relative Humidity (%)	100.0	100.0	A	J-30	Simultaneous Test	None
Model Number: EA-180 Note 1	Accuracy: Spec: N/A Demon: N/A						
Function: Valve Position Indication	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Service: Main Steam Line 2 Warm-Up Isolation Valve	Radiation	N/A	2.04 x 10 ⁸ RADS	N/A	J-30	Sequential Test, Analysis	None
Location: Auxiliary Bldg. Rm. 602	Flood Level Elev: N/A Above Flood Level: N/A						
	Aging	40 Years	19.13 Years Note 4	I	J-30 CAL-54	Sequential Test, Analysis	None
Needed for:	Submergence	N/A	N/A	N/A	N/A	N/A	None
Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input checked="" type="checkbox"/>							

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Docket: 50-346

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-020A
Rev.: 1

NOTES

Prepared by: Jonie Cypour Date 12-15-82
Checked by: Paul W. Spikes Date 12-17-82

1. This component replaces a Model D2400 in accordance with FCR 82-101.
2. One-year operating time is used as a conservative maximum.
3. The test subjected the limit switch to 3 transients. The first transient lasted for 4 hours and 20 minutes, with maximum temperature of 391°F and a maximum pressure of 133.7 psia, ending with a return to ambient. The second transient immediately followed the first, lasting for 4 hours and 16 minutes, with maximum temperature of 391°F and maximum pressure of 133.7 psia, ending with a return to ambient. The limit switch was maintained at ambient for 18 hours and 19 minutes, and then was subjected to the third transient, which reached a maximum temperature of 320°F and a maximum pressure of 89.7 psia, and lasted for 2 hours and 55 minutes. At 26 hours and 55 minutes, the conditions are 258°F and 89.7 psia. After approximately 4 days, the temperature and pressure was 200°F and 64.7 psia and remained stable for the duration of the test (25 days). The temperature and pressure in Room 602 peak at 344°F and 20.0 psia in 0.5 and 2.0 seconds, respectively. The conditions return to ambient in 57 minutes.

Based on this information, it can be concluded that the laboratory test subjected the limit switch to an overall more severe environment than that which would result from the postulated HELB. Since the limit switch remained functional throughout the test, it can be concluded that the limit switch will remain functional during and after exposure to the accident environment that would result from the postulated HELB. (Reference C-602.)

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-021
Rev.: C

Prepared by: W.V. Billingsley Date: 9.29.81
Checked by: John D. Hill Date: 9/29/81

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Display Instrumentation	Operating Time	1 Year	Note 1	Note 4	N/A	N/A	Note 3
Plant ID No. ZS101-1	Temperature (°F)	282.0	Note 1	C-601	N/A	N/A	Note 3
Component: Limit Switch							
Manufacturer: NAMCO	Pressure (PSIA)	17.0	Note 1	C-601	N/A	N/A	Note 3
Model Number: D2400							
Function: Valve Position Indication	Relative Humidity (%)	100.0	Note 1	A	N/A	N/A	Note 3
Accuracy: Spec: N/A Demon: N/A	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Service: Main Steam Line 1 Warm-Up Isolation Valve							
Location: Auxiliary Bldg. Rm. 601	Radiation	1.86 x 10 ⁴ RADS	1.0 x 10 ⁷ RADS	T	Note 2	Analysis	None
Flood Level Elev: N/A Above Flood Level: N/A	Aging	40 Years	40 Years	I	Note 2	Analysis	None
Needed for: Hot Shutdown <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.: 301H-021A
Rev.: 0

NOTES

Prepared by: W. A. Zellmer Date 10/1/81
Checked by: Kenneth D. Marty Date 10/1/81

1. The limit switch subjected to the harsh environment is for indication only. The warm-up isolation valve is only used during start-up operations and is closed during normal plant operations. The operator is aware of this condition as he will not monitor this valve's position during a high energy line break accident. For this reason, the operator will not be misled by failure of the limit switch in the harsh environment. Since the limit switch does not provide a control function, its failure will not degrade other safety-related functions.
2. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.
3. This component is scheduled for replacement during the first refueling outage subsequent to component on-site availability.
4. One year operating time is used as a conservative maximum specification.

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COMPONENT MATERIAL EVALUATION SHEET

Index No. 301H-021B
Rev.: 0

Prepared by: W.V. Belland Date: 10-1-81
Checked by: Kenneth V. Moody Date: 10/1/81

Plant I.D. No.: ZS101-1
Manufacturer: NAMCO

Component: Limit Switch
Model No.: D2400

		THERMAL AGING		RADIATION	
Parts List *	Materials List *	Qualification	Reference	Qualification	Reference
Contact Block	Polyester, Glass Filled	40 Years @ 50°C	W-2	1.0 x 10 ⁷ RADS	W-1
Contact Lever	Polyester, Glass Filled	40 Years @ 50°C	W-2	1.0 x 10 ⁷ RADS	W-1
Top & Bottom Cover Gaskets	BUNA-N-Coated Nylon	40 Years @ 43.5°C	CAL-2	1.0 x 10 ⁷ RADS	W-1
Contact Lever	Alkyd, Mineral Filled	40 Years @ 130°C	W-2	2.0 x 10 ⁹ RADS	W-1
Top & Bottom Cover Gaskets	Koroseal	40 Years @ 50°C	W-2	2.0 x 10 ⁹ RADS	W-1
Top & Bottom Cover Gaskets	Polyvinyl Chloride Plastic	40 Years @ 50°C	W-2	1.0 x 10 ⁷ RADS	W-1

Material & Parts List Reference: V-29B, ROC-29C

- * Only non-metallic parts are listed. Metallic parts are not considered sensitive to Thermal Aging and are not affected by radiation. The materials of these parts differ according to the date of manufacture. Since we are unable to determine the components manufacture date, all possible materials have been listed.

Index No.: 301H-021
Rev.: 1

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Display Instrumentation	Operating Time	1 Year	1.1 Years	Note 2	J-30 Note 3	Simultaneous Test	None
Plant ID No. ZS101-1	Temperature (°F)	282.0	391.0	C-601	J-30	Simultaneous Test	None
Component: Limit Switch							
Manufacturer: NAMCO	Pressure (PSIA)	17.0	133.7	C-601	J-30	Simultaneous Test	None
Model Number: EA-180 Note 1	Relative Humidity (%)	100.0	100.0	A	J-30	Simultaneous Test	None
Function: Valve Position Indication							
Accuracy: Spec: N/A Demon: N/A	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Service: Main Steam Line 1 Warm-Up Isolation Valve							
Location: Auxiliary Bldg. Rm. 601	Radiation	1.86 x 10 ⁴ RADS	2.04 x 10 ⁸ RADS	T	J-30	Sequential Test, Analysis	None
Flood Level Elev: N/A Above Flood Level: N/A	Aging	40 Years	19.13 Years Note 4	I	J-30 CAL-54	Sequential Test, 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

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Doclet: 50-346

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-021A
Rev.: 1

NOTES

Prepared by: Erica Cuyang Date 12-15-82
Checked by: Paul W. Lytle Date 12-17-82

1. This component replaces a Model D2400 in accordance with FCR 82-101.
2. One-year operating time is used as a conservative maximum.
3. The test subjected the limit switch to 3 transients. The first transient lasted for 4 hours and 20 minutes, with maximum temperature of 391°F and a maximum pressure of 133.7 psia, ending with a return to ambient. The second transient immediately followed the first, lasting for 4 hours and 16 minutes, with maximum temperature of 391°F and maximum pressure of 133.7 psia, ending with a return to ambient. The limit switch was maintained at ambient for 18 hours and 19 minutes, and then was subjected to the third transient, which reached a maximum temperature of 320°F and a maximum pressure of 89.7 psia, and lasted for 2 hours and 55 minutes. At 26 hours and 55 minutes, the conditions are 258°F and 89.7 psia. After approximately 4 days, the temperature and pressure was 200°F and 64.7 psia and remained stable for the duration of the test (25 days). The temperature and pressure inside room 601 peak at 282°F and 17.0 psia in 0.5 and 2.0 seconds, respectively. The conditions return to ambient in 2 hours and 30 minutes.

Based on this information, it can be concluded that the laboratory test subjected the limit switch to an overall more severe environment than that which would result from the postulated HELB. Since the limit switch remained functional throughout the test, it can be concluded that the limit switch will remain functional during and after exposure to the accident environment that would result from the postulated HELB. (Reference C-601.)

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-022
Rev.: 2

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

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

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Display Instrumentation	Operating Time	1 Year	40 Years	Note 1	Note 3	N/A	None
Plant ID No. ZS1356	Temperature (°F)	221.0	Exempt	C-314	Note 2	N/A	None
Component: Limit Switch	Pressure (PSIA)	19.76	Exempt	C-314	Note 2	N/A	None
Manufacturer: NAMCO	Relative Humidity (%)	100.0	Exempt	A	Note 2	N/A	None
Model Number: D2400X	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Valve Position Indication	Radiation	1.0 x 10 ⁶ RADS	1.0 x 10 ⁷ RADS	T	CAL-76 Note 3	Analysis	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	40 Years	I	CAL-76 Note 3	Analysis	None
Service: Containment Air Cooler 1 Service Water Outlet Isolation Valve	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 314							
Flood Level Elev: N/A							
Above Flood Level: N/A							
Needed for:							
Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input checked="" type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-022A
Rev.: 2

NOTES

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

1. One-year operating time is used as a conservative maximum specification.
2. This component is a limit switch which is used for valve position indication only. The harsh environment seen by the limit switch is due to a main feedline break. The component is exempted from qualification since its associated valve would not be required to mitigate a high energy line break outside containment. The operator will not monitor this valve's position indication during this accident because the containment air cooling system will not be initiated. For this reason, limit switch failure will not mislead the operator. Failure of the limit switch would not degrade other safety-related functions since it does not provide a control function.
3. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

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COMPONENT MATERIALS EVALUATION SHEET

Index No.: 301H-022B
Rev.: 2

Prepared by: *J. L...*

Date: *11/1/93*

Checked by: *MacDonald*

Date: *11/2/93*

Plant I.D. No.: ZS1356

Component: Limit Switch

Manufacturer: NAMCO

Model No.: D2400X

		THERMAL AGING		RADIATION	
Parts List *	Materials List *	Qualification	Reference	Qualification	Reference
Contact Block	Polyester, Glass Filled	40 Years @ 266°F	CAL-76	1 x 10 ⁹ RADS	CAL-76
Contact Lever	Polyester, Glass Filled	40 Years @ 266°F	CAL-76	1 x 10 ⁹ RADS	CAL-76
Top & Bottom Cover Gaskets	BUNA-N-Coated Nylon **	40 Years @ 104°F	CAL-76	1.5 x 10 ⁷ RADS	CAL-76
Contact Lever	Alkyd, Mineral Filled	Greater than 40 Years @ 300°F	CAL-76	1 x 10 ⁹ RADS	CAL-76
Top & Bottom Cover Gaskets	Koroseal	40 Years @ 140°F	CAL-76	1 x 10 ⁷ RADS	CAL-76
Top & Bottom Cover Gaskets	Polyvinyl Chloride Plastic	40 Years @ 140°F	CAL-76	1 x 10 ⁷ RADS	CAL-76

Material & Parts List Reference: V-29B, ROC-29C

* Only non-metallic parts are listed. Metallic parts are not considered sensitive to Thermal Aging and are not affected by radiation. The materials of these parts differ according to the date of manufacture. Since we are unable to determine the components manufacture date, all possible materials have been listed.

** Thermal aging life and radiation tolerance from more limiting BUNA-N.

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-023
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: Display Instrumentation	Operating Time	1 Year	40 Years	Note 1	Note 3	N/A	None
Plant ID No. ZS1357	Temperature (°F)	221.0	Exempt	C-314	Note 2	N/A	None
Component: Limit Switch	Pressure (PSIA)	19.76	Exempt	C-314	Note 2	N/A	None
Manufacturer: NAMCO	Relative Humidity (%)	100.0	Exempt	A	Note 2	N/A	None
Model Number: D2400X	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Valve Position Indication	Radiation	1.0×10^6 RADS	1.0×10^7 RADS	T	CAL-76 Note 3	Analysis	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	40 Years	I	CAL-76 Note 3	Analysis	None
Service: Containment Air Cooler 2 Service Water Outlet Isolation Valve	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 314							
Flood Level Elev: N/A							
Above Flood Level: N/A							
Needed for: Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input checked="" type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-023A
Rev.: 2

NOTES

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

1. One-year operating time is used as a conservative maximum specification.
2. This component is a limit switch which is used for valve position indication only. The harsh environment seen by the limit switch is due to a main feedline break. The component is exempted from qualification since its associated valve would not be required to mitigate a high energy line break outside containment. The operator will not monitor this valve's position indication during this accident because the containment air cooling system will not be initiated. For this reason, limit switch failure will not mislead the operator. Failure of the limit switch would not degrade other safety-related functions since it does not provide a control function.
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.: 301H-024
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: Display Instrumentation	Operating Time	1 Year	40 Years	Note 1	Note 3	N/A	None
Plant ID No. ZS1358	Temperature (°F)	221.0	Exempt	C-314	Note 2	N/A	None
Component: Limit Switch							
Manufacturer: NAMCO	Pressure (PSIA)	19.76	Exempt	C-314	Note 2	N/A	None
Model Number: EAL70-31100	Relative Humidity (%)	100.0	Exempt	A	Note 2	N/A	None
Function: Valve Position Indication							
Accuracy: Spec: N/A Demon: N/A	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Service: Containment Air Cooler 3 Service Water Outlet Isolation Valve							
Location: Auxiliary Bldg. Rm. 314	Radiation	1.0 x 10 ⁶ RADS	1.0 x 10 ⁷ RADS	T	CAL-76 Note 3	Analysis	None
Flood Level Elev: N/A Above Flood Level: N/A	Aging	40 Years	40 Years	I	CAL-76 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-Pesse Unit 1
Docket: 50-346

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-024A
Rev.: 2

NOTES

Prepared by: N Lewis Date 11/1/83
Checked by: DA S. G. Smith Date 11/4/83

1. One-year operating time is used as a conservative maximum specification.
2. This component is a limit switch which is used for valve position indication only. The harsh environment seen by the limit switch is due to a main feedline break. The component is exempted from qualification since its associated valve would not be required to mitigate a high energy line break outside containment. The operator will not monitor this valve's position indication during this accident because the containment air cooling system will not be initiated. For this reason, limit switch failure will not mislead the operator. Failure of the limit switch would not degrade other safety-related functions since it does not provide a control function.
3. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

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

COMPONENT MATERIALS EVALUATION SHEET

Index No.: 301H-024B
Rev.: 2

Prepared by: N. Lee

Date: 11/1/87

Checked by: Mark D. Wald

Date: 4/2/83

Plant I.D. No.: ZS1358

Component: Limit Switch

Manufacturer: NAMCO

Model No.: EA170-31100

		THERMAL AGING		RADIATION	
Parts List *	Materials List *	Qualification	Reference	Qualification	Reference
Contact Block	Polyester, Glass Filled	40 Years @ 266°F	CAL-76	1 x 10 ⁹ RADS	CAL-76
Contact Lever	Polyester, Glass Filled	40 Years @ 266°F	CAL-76	1 x 10 ⁹ RADS	CAL-76
Top & Bottom Cover Gaskets	BUNA-N-Coated Nylon **	40 Years @ 104°F	CAL-76	1 x 10 ⁷ RADS	CAL-76
Contact Lever	Alkyd, Mineral Filled	Greater than 40 Years @ 300°F	CAL-76	1 x 10 ⁹ RADS	CAL-76
Top & Bottom Cover Gaskets	Koroseal	40 Years @ 140°F	CAL-76	1 x 10 ⁷ RADS	CAL-76
Top & Bottom Cover Gaskets	Polyvinyl Chloride Plastic	40 Years @ 140°F	CAL-76	1 x 10 ⁷ RADS	CAL-76

Material & Parts List Reference: V-29B, ROC-29C

* Only non-metallic parts are listed. Metallic parts are not considered sensitive to Thermal Aging and are not affected by radiation. The materials of these parts differ according to the date of manufacture. Since we are unable to determine the components manufacture date, all possible materials have been listed.

** Thermal aging life and radiation tolerance from more limiting BUNA-N.

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-025
Rev.: 2

Prepared by: N Lewis Date: 11/1/87
Checked by: Ellen Smith Date: 11/2/87

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Display Instrumentation	Operating Time	1 Year	40 Years	Note 1	Note 3	N/A	None
Plant ID No. ZS1358A	Temperature (°F)	221.0	Exempt	C-314	Note 2	N/A	None
Component: Limit Switch							
Manufacturer: NAMCO	Pressure (PSIA)	19.76	Exempt	C-314	Note 2	N/A	None
Model Number: EA170-31100							
Function: Valve Position Indication	Relative Humidity (%)	100.0	Exempt	A	Note 2	N/A	None
Accuracy: Spec: N/A Demon: N/A	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Service: Containment Air Cooler 3 Service Water Outlet Isolation Valve							
Location: Auxiliary Bldg. Rm. 314	Radiation	1.0×10^6 RADS	1.0×10^7 RADS	T	CAL-76 Note 3	Analysis	None
Flood Level Elev: N/A Above Flood Level: N/A	Aging	40 Years	40 Years	I	CAL-76 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.: 301H-025A
Rev.: 2

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

NOTES

1. One-year operating time is used as a conservative maximum specification.
2. This component is a limit switch which is used for valve position indication only. The harsh environment seen by the limit switch is due to a main feedline break. The component is exempted from qualification since its associated valve would not be required to mitigate a high energy line break outside containment. The operator will not monitor this valve's position indication during this accident because the containment air cooling system will not be initiated. For this reason, limit switch failure will not mislead the operator. Failure of the limit switch would not degrade other safety-related functions since it does not provide a control function.
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.: 301H-026
Rev.: 2

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

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Display Instrumentation	Operating Time	1 Year	40 Years	Note 3	Note 2	Analysis	None
Plant ID No. ZS1467	Temperature (°F)	155.0	Exempt	C-113	Note 1	N/A	None
Component: Limit Switch	Pressure (PSIA)	16.06	Exempt	C-113	Note 1	N/A	None
Manufacturer: NAMCO	Relative Humidity (%)	100.0	Exempt	A	Note 1	N/A	None
Model Number: D2400X	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Valve Position Indication	Radiation	7.1×10^6 RADS	1.0×10^7 RADS	T	CAL-76 Note 2	Analysis	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	15.1 Years	I	CAL-76 Note 2	Analysis	None
Service: Decay Heat Removal Cooler 1 Component Cooling 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
Docket: 50-346

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-026A
Rev.: 2

NOTES

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

1. This component is a limit switch which is used for valve position indication only. The harsh environment seen by the limit switch is due to a main feedline break. The component is exempted from qualification since operation of its associated valve would not be required to mitigate a high energy line break. The operator will not monitor this valve's position indication during the accident because the decay heat removal system will not be initiated. For this reason, limit switch failure will not mislead the operator. Failure of the limit switch would not degrade other safety-related functions since it does not provide a control function.
2. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.
3. One-year operating time is used as a conservative maximum specification.

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

COMPONENT MATERIALS EVALUATION SHEET

Index No.: 301H-026B
Rev.: 2

Prepared by:

Date:

11/1/2

Checked by:

Date:

4/2/83

Plant I.D. No.: ZS1467

Component: Limit Switch

Manufacturer: NAMCO

Model No.: D2400X

[illegible]

Material & Parts List Reference: V-29B, ROC-29C

* Only non-metallic parts are listed. Metallic parts are not considered sensitive to Thermal Aging and are not affected by radiation. The materials of these parts differ according to the date of manufacture. Since we are unable to determine the components manufacture date, all possible materials have been listed.

** Thermal aging life and radiation tolerance from more limiting BUNA-N.

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-027
Rev.: 2

Prepared by: N. Lewis Date: 11/1/82
Checked by: [Signature] Date: 11/2/82

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Display Instrumentation	Operating Time	1 Year	40 Years	Note 3	Note 2	Analysis	None
Plant ID No. ZS1469	Temperature (°F)	155.0	Exempt	C-113	Note 1	N/A	None
Component: Limit Switch	Pressure (PSIA)	16.06	Exempt	C-113	Note 1	N/A	None
Manufacturer: NAMCO	Relative Humidity (%)	100.0	Exempt	A	Note 1	N/A	None
Model Number: D2400X	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Valve Position Indication	Radiation	7.1 x 10 ⁶ RADS	1.0 x 10 ⁷ RADS	T	CAL-76 Note 2	Analysis	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	15.1 Years	I	CAL-76 Note 2	Analysis	None
Service: Decay Heat Removal Cooler 2 Component Cooling 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
Docket: 50-346

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-027A
Rev.: 2

NOTES

Prepared by: N Lewis Date: 11/1/83
Checked by: G. J. Smith Date: 11/4/83

1. This component is a limit switch which is used for valve position indication only. The harsh environment seen by the limit switch is due to a main feedline break. The component is exempted from qualification since operation of its associated valve would not be required to mitigate a high energy line break. The operator will not monitor this valve's position indication during the accident because the decay heat removal system will not be initiated. For this reason, limit switch failure will not mislead the operator. Failure of the limit switch would not degrade other safety-related functions since it does not provide a control function.
2. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.
3. One-year operating time is used as a conservative maximum specification.

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

COMPONENT MATERIALS EVALUATION SHEET

Index No.: 301H-027B
Rev.: 2

Prepared by:

Date:

Checked by:

Date:

Plant I.D. No.: ZS1469

Component: Limit Switch

Manufacturer: NAMCO

Model No.: D2400X

		THERMAL AGING		RADIATION	
Parts List *	Materials List *	Qualification	Reference	Qualification	Reference
Contact Block	Polyester, Glass Filled	40 Years @ 266°F	CAL-76	1 x 10 ⁹ RADS	CAL-76
Contact Lever	Polyester, Glass Filled	40 Years @ 266°F	CAL-76	1 x 10 ⁹ RADS	CAL-76
Top & Bottom Cover Gaskets	BUNA-N-Coated Nylon **	15.1 Years @ 122°F	CAL-76	1 x 10 ⁷ RADS	CAL-76
Contact Lever	Alkyd, Mineral Filled	Greater than 40 Years @ 300°F	CAL-76	1 x 10 ⁹ RADS	CAL-76
Top & Bottom Cover Gaskets	Koroseal	40 Years @ 140°F	CAL-76	1 x 10 ⁷ RADS	CAL-76
Top & Bottom Cover Gaskets	Polyvinyl Chloride Plastic	40 Years @ 140°F	CAL-76	1 x 10 ⁷ RADS	CAL-76

Material & Parts List Reference: V-29B, ROC-29C

* Only non-metallic parts are listed. Metallic parts are not considered sensitive to Thermal Aging and are not affected by radiation. The materials of these parts differ according to the date of manufacture. Since we are unable to determine the components manufacture date, all possible materials have been listed.

** Thermal aging life and radiation tolerance from more limiting BUNA-N.

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-028
Rev.: 2

Prepared by: N. Lewis
Checked by: Samuel

Date: 11/1/82
Date: 11/2/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Display Instrumentation	Operating Time	1 Year	40 Years	Note 3	Note 2	Analysis	None
Plant ID No. ZS1542	Temperature (°F)	221.0	Exempt	C-314	Note 1	N/A	None
Component: Limit Switch	Pressure (PSIA)	19.76	Exempt	C-314	Note 1	N/A	None
Manufacturer: NAMCO	Relative Humidity (%)	100.0	Exempt	A	Note 1	N/A	None
Model Number: D2400X	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Valve Position Indication	Radiation	1.0 x 10 ⁶ RADS	1.0 x 10 ⁷ RADS	T	CAL-76 Note 2	Analysis	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	40 Years	I	CAL-76 Note 2	Analysis	None
Service: Core Flooding Tank to Waste Gas Isolation Valve	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 314							
Flood Level Elev: N/A							
Above Flood Level: N/A							
Needed for: Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input checked="" type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index NO.: 301H-028A
Rev.: 2

NOTES

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

1. The component is a limit switch which is used for valve position indication only. The harsh environment seen by this component is due to a main feedline break. The component is exempted from qualification since its associated valve would not be required to mitigate a high energy line break. The operator will not monitor this valve's position because the valve's only function is to isolate containment during a loss of coolant accident. For this reason, limit switch failure will not mislead the operator. Failure of the limit switch would not degrade other safety-related functions since it does not provide any control function.
2. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.
3. One-year operating time is used as a conservative maximum specification.

Facility: Davis-Besse Unit 1
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COMPONENT MATERIALS EVALUATION SHEET

Index No.: 304H-028B

Rev.: 2

Prepared by:

Date:

Checked by: _____

Date:

Plant I.D. No.: ZS1542

Component:	Limit Switch
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Manufacturer: NAMCO

Model No.: D2400X

[illegible]

Material & Parts List Reference: V-29B, ROC-29C

* Only non-metallic parts are listed. Metallic parts are not considered sensitive to Thermal Aging and are not affected by radiation. The materials of these parts differ according to the date of manufacture. Since we are unable to determine the components manufacture date, all possible materials have been listed.

** Thermal aging life and radiation tolerance from more limiting BUNA-N.

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-029
Rev.: 2

Prepared by: N. Lewis
Checked by: W. S. Smith

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

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Display Instrumentation	Operating Time	1 Year	40 Years	Note 3	Note 2	Analysis	None
Plant ID No. ZS1544	Temperature (°F)	218.0	Exempt	C-303	Note 1	N/A	None
Component: Limit Switch	Pressure (PSIA)	17.16	Exempt	C-303	Note 1	N/A	None
Manufacturer: NAMCO	Relative Humidity (%)	100.0	Exempt	A	Note 1	N/A	None
Model Number: D2400X	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Valve Position Indication	Radiation	1.16×10^6 RADS	1.0×10^7 RADS	T	CAL-76 Note 2	Analysis	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	40 Years	I	CAL-76 Note 2	Analysis	None
Service: Core Flooding Tank 1 Fill Line Isolation Valve	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 303	Hot Shutdown	<input checked="" type="checkbox"/>					
Flood Level Elev: N/A Above Flood Level: N/A	Cold Shutdown	<input checked="" type="checkbox"/>					

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-029A
Rev.: 2

NOTES

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

1. The component is a limit switch which is used for valve position indication only. The harsh environment seen by this component is due to a main feedline break. The component is exempted from qualification since its associated valve would not be required to mitigate a high energy line break. The operator will not monitor this valve's position because the valve's only function is to isolate containment during a loss of coolant accident. For this reason, limit switch failure will not mislead the operator. Failure of the limit switch would not degrade other safety-related functions since it does not provide any control function.
2. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.
3. One year operating time is used as a conservative maximum specification.

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

COMPONENT MATERIALS EVALUATION SHEET

Index No.: 301H-029B
Rev.: 2

Prepared by: *[Signature]*

Date: *4/1/83*

Checked by: *[Signature]*

Date: *4/1/83*

Plant I.D. No.: ZS1544

Component: Limit Switch

Manufacturer: NAMCO

Model No.: D2400X

		THERMAL AGING		RADIATION	
Parts List *	Materials List *	Qualification	Reference	Qualification	Reference
Contact Block	Polyester, Glass Filled	40 Years @ 266°F	CAL-76	1×10^9 RADS	CAL-76
Contact Lever	Polyester, Glass Filled	40 Years @ 266°F	CAL-76	1×10^9 RADS	CAL-76
Top & Bottom Cover Gaskets	BUNA-N-Coated Nylon **	40 Years @ 104°F	CAL-76	1×10^7 RADS	CAL-76
Contact Lever	Alkyd, Mineral Filled	Greater than 40 Years @ 300°F	CAL-76	1×10^9 RADS	CAL-76
Top & Bottom Cover Gaskets	Koroseal	40 Years @ 140°F	CAL-76	1×10^7 RADS	CAL-76
Top & Bottom Cover Gaskets	Polyvinyl Chloride Plastic	40 Years @ 140°F	CAL-76	1×10^7 RADS	CAL-76

Material & Parts List Reference: V-29B, ROC-29C

* Only non-metallic parts are listed. Metallic parts are not considered sensitive to Thermal Aging and are not affected by radiation. The materials of these parts differ according to the date of manufacture. Since we are unable to determine the components manufacture date, all possible materials have been listed.

** Thermal aging life and radiation tolerance from more limiting BUNA-N.

Index No.: 301H-030
Rev.: 2

Prepared by: N Lewis
Checked by: [Signature]

Date: 11/1/82
Date: 11/2/82

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Display Instrumentation	Operating Time	1 Year	40 Years	Note 3	Note 2	Analysis	None
Plant ID No. ZS1545	Temperature (°F)	221.0	Exempt	C-314	Note 1	N/A	None
Component: Limit Switch							
Manufacturer: NAMCO	Pressure (PSIA)	19.76	Exempt	C-314	Note 1	N/A	None
Model Number: D2400X							
Function: Valve Position Indication	Relative Humidity (%)	100.0	Exempt	A	Note 1	N/A	None
Accuracy: Spec: N/A Demon: N/A							
Service: Core Flooding Tank Sample Isolation Valve	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 314	Radiation	1.0×10^6 RADS	1.0×10^7 RADS	T	CAL-76 Note 2	Analysis	None
Flood Level Elev: N/A Above Flood Level: N/A	Aging	40 Years	40 Years	I	CAL-76 Note 2	Analysis	None
Needed for: Hot Shutdown <input checked="" type="checkbox"/>	Submergence	N/A	N/A	N/A	N/A	N/A	None
Cold Shutdown <input checked="" type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-030A
Rev.: 2

NOTES

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

1. The component is a limit switch which is used for valve position indication only. The harsh environment seen by this component is due to a main feedline break. The component is exempted from qualification since its associated valve would not be required to mitigate a high energy line break. The operator will not monitor this valve's position because the valve's only function is to isolate containment during a loss of coolant accident. For this reason, limit switch failure will not mislead the operator. Failure of the limit switch would not degrade other safety-related functions since it does not provide any control function.
2. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.
3. One year operating time is used as a conservative maximum specification.

Index No.: 301H-031
Rev.: 0

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Display Instrumentation	Operating Time	1 Year	Note 1	Note 3	N/A	N/A	Note 2
Plant ID No. ZS1719A	Temperature (°F)	283.0	Note 1	G, X	N/A	N/A	Note 2
Component: Limit Switch	Pressure (PSIA)	52.0	Note 1	H, X	N/A	N/A	Note 2
Manufacturer: NAMCO	Relative Humidity (%)	100.0	Note 1	A	N/A	N/A	Note 2
Model Number: D2400X	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Note 1	A	N/A	N/A	Note 2
Function: Valve Position Indication	Radiation	1.7 x 10 ⁷ RADS	Note 1	CAL-44	N/A	N/A	Note 2
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	Note 1	I	N/A	N/A	Note 2
Service: Containment Vent Header Isolation Valve	Submergence	572'-2"	578'-6"	B	J-12	N/A	None
Location: Containment Rm. 220							
Flood Level Elev: 572'-2"							
Above Flood Level: Yes							
Needed for:							
Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input checked="" type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No. 301H-031A
Rev.: 0

NOTES

Prepared by: W.V. Zellandy Date 9/29/81
Checked by: Kenneth D. Moody Date 9/29/81

1. This component is a limit switch which is used for valve position indication only. The harsh environment seen by this component is due to a loss of coolant accident.

The limit switch is used to monitor the valve position of RC1719A (an air-operated containment vent header isolation valve). This valve is an isolation valve for containment penetration 16. A second isolation valve for this penetration, RC1719B, is located outside containment and would not be subjected to the harsh environment. During a LOCA, both valves would move to (or remain in) their fail-safe closed position upon receiving an SFAS signal.

Failure of limit switch ZS1719A will not mislead the operator due to the availability of ZS1719B on the second isolation valve. This limit switch would not be affected by the postulated LOCA conditions and would be monitored by the operator to determine the status of penetration 16. Failure of limit switch 1719A would not degrade other safety-related functions since it does not provide a control function. Based on the above discussion, interim operation is justified.

2. This component is scheduled for replacement during the first refueling outage subsequent to component on-site availability.
3. One year operating time is used as a conservative maximum specification.

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-031
Rev.: 2

Prepared by: N Lewis Date: 11/1/82
Checked by: W. J. Randall Date: 11/1/82

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Display Instrumentation	Operating Time	1 Year	1.1 Years	Note 2	Note 3 J-30	Simultaneous Test	None
Plant ID No. ZS1719A	Temperature (°F)	283.0	391.0	H, X	J-30	Simultaneous Test	None
Component: Limit Switch	Pressure (PSIA)	52.0	133.7	G, X	J-30	Simultaneous Test	None
Manufacturer: NAMCO	Relative Humidity (%)	100.0	100.0	A	J-30	Simultaneous Test	None
Model Number: EA-180 Note 1	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	J-30 CAL-40 Note 5	Simultaneous Test, Analysis	None
Function: Valve Position Indication	Radiation	1.7×10^7 RADS	2.04×10^8 RADS Note 4	CAL-44	J-30	Sequential Test, Analysis	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	8.43 Years Note 4	I	J-30 CAL-54	Sequential Test, Analysis	None
Service: Containment Vent Header Isolation Valve	Submergence	572'-2"	577'-11"	B	J-12	N/A	None
Location: Containment Rm. 220							
Flood Level Elev: 572'-2"							
Above Flood Level: Yes							
Needed for:							
Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input checked="" type="checkbox"/>							

Facility: Davis-Besse Unit 1
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SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-031A
Rev.: 2

NOTES

Prepared by: N. Lewis Date: 11/1/83
Checked by: M. J. Smith Date: 11/4/83

1. This component replaces a Model D2400 in accordance with FCR 82-101.
2. One-year operating time is used as a conservative maximum.
3. The test subjected the limit switch to 3 transients. The first transient lasted for 4 hours and 20 minutes, with maximum temperature of 391°F and a maximum pressure of 133.7 psia, ending with a return to ambient. The second transient immediately followed the first, lasting for 4 hours and 16 minutes, with maximum temperature of 391°F and maximum pressure of 133.7 psia, ending with a return to ambient. The limit switch was maintained at ambient for 18 hours and 19 minutes, and then was subjected to the third transient, which reached a maximum temperature of 320°F and a maximum pressure of 89.7 psia, and lasted for 2 hours and 55 minutes. At 26 hours and 55 minutes, the conditions are 258°F and 89.7 psia. After approximately 4 days, the temperature and pressure was 200°F and 64.7 psia and remained stable for the duration of the test (25 days). The temperature and pressure inside containment peak at 283°F and 52.0 psia in 17 minutes and 50 seconds, respectively. At 24 hours and 55 minutes, conditions are 148°F and 18.7 psia; at 26 hours and 55 minutes, conditions are 140°F and 17.7 psia; and after approximately 4 days, conditions are 124°F and 16.5 psia. The conditions returned to ambient in 7 days.

Based on this information, it can be concluded that the laboratory test subjected the limit switch to an overall more severe environment than that which would result from the postulated HELB. Since the limit switch remained functional throughout the test, it can be concluded that the limit switch will remain functional during and after exposure to the accident environment that would result from the postulated HELB. (Reference G&H.)

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

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Docket: 50-346

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-032
Rev.: 2

Prepared by: N Lewis Date: 11/6/82
Checked by: SM Donald Date: 11/2/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Display Instrumentation	Operating Time	1 Year	40 Years	Note 3	Note 2	Analysis	None
Plant ID No. ZS1719B	Temperature (°F)	198.0	Exempt	C-236	Note 1	N/A	None
Component: Limit Switch	Pressure (PSIA)	15.51	Exempt	C-236	Note 1	N/A	None
Manufacturer: NAMCO	Relative Humidity (%)	100.0	Exempt	A	Note 1	N/A	None
Model Number: D2400X-ST	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Valve Position Indication	Radiation	1.97 x 10 ⁶ RADS	1.0 x 10 ⁷ RADS	T	CAL-76 Note 2	Analysis	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	40 Years	I	CAL-76 Note 2	Analysis	None
Service: Containment Vent Header Isolation Valve	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 236							
Flood Level Elev: N/A							
Above Flood Level: N/A							
Needed for: Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input checked="" type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-032A
Rev.: 2

NOTES

Prepared by: N. Lewis Date: 11/1/82
Checked by: R. M. Smith Date: 11/4/82

1. This component is a limit switch which is used for valve position indication only. The harsh environment seen by this component is due to a main feedline break.

The limit switch is used to monitor the valve position of RC1719B (an air-operated containment vent header isolation valve). This valve is an isolation valve for containment penetration 16. The component is exempted from qualification since its associated valve would not be required to mitigate a high energy line break. The operator will not monitor this valve's position indication during the accident because the valve's only safety-related function is the isolation of containment during a loss of coolant accident. For this reason, limit switch failure will not mislead the operator. Failure of the limit switch would not degrade other safety-related functions since it does not provide a control function.

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

Facility: Davis-Besse Unit 1
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COMPONENT MATERIALS EVALUATION SHEET

Index No.: 301H-032B
Rev.: 2

Prepared by:

Date:

Checked by:

Date:

Plant I.D. No.: ZS1719B

Component: Limit Switch

Manufacturer: NAMCO

Model No.: D2400X-ST

		THERMAL AGING		RADIATION	
Parts List *	Materials List *	Qualification	Reference	Qualification	Reference
Contact Block	Polyester, Glass Filled	40 Years @ 266°F	CAL-76	1 x 10 ⁹ RADS	CAL-76
Contact Lever	Polyester, Glass Filled	40 Years @ 266°F	CAL-76	1 x 10 ⁹ RADS	CAL-76
Top & Bottom Cover Gaskets	BUNA-N-Coated Nylon **	40 Years @ 104°F	CAL-76	1 x 10 ⁷ RADS	CAL-76
Contact Lever	Alkyd, Mineral Filled	Greater than 40 Years @ 300°F	CAL-76	1 x 10 ⁹ RADS	CAL-76
Top & Bottom Cover Gaskets	Koroseal	40 Years @ 140°F	CAL-76	1 x 10 ⁷ RADS	CAL-76
Top & Bottom Cover Gaskets	Polyvinyl Chloride Plastic	40 Years @ 140°F	CAL-76	1 x 10 ⁷ RADS	CAL-76

Material & Parts List Reference: V-29B, ROC-29C

* Only non-metallic parts are listed. Metallic parts are not considered sensitive to Thermal Aging and are not affected by radiation. The materials of these parts differ according to the date of manufacture. Since we are unable to determine the components manufacture date, all possible materials have been listed.

** Thermal aging life and radiation tolerance from more limiting BUNA-N.

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SYSTEM COMPONENT EVALUATION WORKSHEET

Index No. 301H-033
Rev.: 0

Prepared by: W. J. Belland Date: 2.28.81
Checked by: Kenneth D. Hardy Date: 7/14/81

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Display Instrumentation	Operating Time	1 Year	Note 1	Note 3	N/A	N/A	Note 2
Plant ID No. ZS1773A	Temperature (°F)	283.0	Note 1	G, X	N/A	N/A	Note 2
Component: Limit Switch	Pressure (PSIA)	52.0	Note 1	H, X	N/A	N/A	Note 2
Manufacturer: NAMCO	Relative Humidity (%)	100.0	Note 1	A	N/A	N/A	Note 2
Model Number: D2400X	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Note 1	A	N/A	N/A	Note 2
Function: Valve Position Indication	Radiation	1.7 x 10 ⁷ RADS	Note 1	CAL-44	N/A	N/A	Note 2
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	Note 1	I	N/A	N/A	Note 2
Service: Reactor Coolant Drain Tank Header Isolation Valve	Submergence	572'-2"	566'-3" Note 1,4	B	J-13	N/A	Note 2
Location: Containment Pm. 220							
Flood Level Elev: 572'-2"							
Above Flood Level: No							
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 301H-033A
Rev.: 0

NOTES

Prepared by: N. J. Bellandi Date 9-29-81
Checked by: Kenneth D. Moody Date 9/29/81

1. This component is a limit switch which is used for valve position indication only. The harsh environment seen by this component is due to a loss of coolant accident.

The limit switch is used to monitor the valve position of RC1773A (an air-operated reactor coolant drain tank header isolation valve). This valve is an isolation valve for containment penetration 32. A second isolation valve for this penetration, RC1773B, is located outside containment in a non-harsh area and would not be subjected to the postulated LOCA conditions. During a LOCA, both valves would move to (or remain in) their fail-safe closed position upon receiving an SFAS signal.

Failure of limit switch ZS1773A will not mislead the operator due to the availability of ZS1773B on the second isolation valve. This limit switch would not be affected by the postulated LOCA conditions and would be monitored by the operator to determine the status of penetration 32. Failure of limit switch 1773A would not degrade other safety-related functions since it does not provide a control function. Based on the above discussion, interim operation is justified.

2. This component is scheduled for replacement during the first refueling outage subsequent to component on-site availability.
3. One year operating time is used as a conservative maximum specification.
4. The flood level elevation is based on DBA-LOCA conditions. Under this condition the level switch will become submerged at 10.9 minutes post-LOCA (see CAL-49). This is a worst-case value based on a postulated DBA LOCA. For smaller LOCAs, component submergence will occur further into the accident, if it occurs at all.

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SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-033
Rev.: 2

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

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Display Instrumentation	Operating Time	1 Year	1.1 Years	Note 2	Note 3 J-30	Simultaneous Test	None
Plant ID No. ZS1773A	Temperature (°F)	283.0	391.0	H, X	J-30	Simultaneous Test	None
Component: Limit Switch	Pressure (PSIA)	52.0	133.7	G, X	J-30	Simultaneous Test	None
Manufacturer: NAMCO	Relative Humidity (%)	100.0	100.0	A	J-30	Simultaneous Test	None
Model Number: EA-180 Note 1	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	J-30 CAL-40 Note 5	Simultaneous Test, Analysis	None
Function: Valve Position Indication	Radiation	1.7 x 10 ⁷ RADS	2.04 x 10 ⁸ RADS Note 4	CAL-44	J-30	Sequential Test, Analysis	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	8.43 Years Note 4	I	J-30 CAL-54	Sequential Test, Analysis	None
Service: Reactor Coolant Drain Tank Header Isolation Valve	Submergence	572'-2"	577'-11"	E	J-12	N/A	None
Location: Containment Rm. 220							
Flood Level Elev: 572'-2"							
Above Flood Level: No							
Needed for:							
Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input checked="" type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-033A
Rev.: 2

NOTES

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

1. This component replaces a Model D2400 in accordance with FCR 82-101.
2. One-year operating time is used as a conservative maximum.
3. The test subjected the limit switch to 3 transients. The first transient lasted for 4 hours and 20 minutes, with maximum temperature of 391°F and a maximum pressure of 133.7 psia, ending with a return to ambient. The second transient immediately followed the first, lasting for 4 hours and 16 minutes, with maximum temperature of 391°F and maximum pressure of 133.7 psia, ending with a return to ambient. The limit switch was maintained at ambient for 18 hours and 19 minutes, and then was subjected to the third transient, which reached a maximum temperature of 320°F and a maximum pressure of 89.7 psia, and lasted for 2 hours and 55 minutes. At 26 hours and 55 minutes, the conditions are 258°F and 89.7 psia. After approximately 4 days, the temperature and pressure was 200°F and 64.7 psia and remained stable for the duration of the test (25 days). The temperature and pressure inside containment peak at 283°F and 52.0 psia in 17 minutes and 50 seconds, respectively. At 24 hours and 55 minutes, conditions are 148°F and 18.7 psia; at 26 hours and 55 minutes, conditions are 140°F and 17.7 psia; and after approximately 4 days, conditions are 124°F and 16.5 psia. The conditions returned to ambient in 7 days.

Based on this information, it can be concluded that the laboratory test subjected the limit switch to an overall more severe environment than that which would result from the postulated HELB. Since the limit switch remained functional throughout the test, it can be concluded that the limit switch will remain functional during and after exposure to the accident environment that would result from the postulated HELB. (Reference G&H.)

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

Index No.: 301H-034
Rev.: 2

11/1/83

11/24/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Display Instrumentation	Operating Time	1 Year	40 Years	Note 3	Note 2	Analysis	None
Plant ID No. ZS2010	Temperature (°F)	221.0	Exempt	C-314	Note 1	N/A	None
Component: Limit Switch							
Manufacturer: NAMCO	Pressure (PSIA)	19.76	Exempt	C-314	Note 1	N/A	None
Model Number: D2400X							
Function: Valve Position Indication	Relative Humidity (%)	100.0	Exempt	A	Note 1	N/A	None
Accuracy: Spec: N/A Demon: N/A							
Service: Containment Service Air Isolation Valve	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 314	Radiation	1.0×10^6 RADS	1.0×10^7 RADS	T	CAL-76 Note 2	Analysis	None
Flood Level Elev: N/A Above Flood Level: N/A	Aging	40 Years	40 Years	I	CAL-76 Note 2	Analysis	None
Needed for: Hot Shutdown <input checked="" type="checkbox"/>	Submergence	N/A	N/A	N/A	N/A	N/A	None
Cold Shutdown <input checked="" type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-034A
Rev.: 2

NOTES

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

1. This component is a limit switch which is used for valve position indication only. The harsh environment seen by this component is due to a main feedline break.

The component is exempted from qualification since its associated valve would not be required to mitigate a high energy line break. The operator will not monitor this valve's position indication during the accident because the valve's only safety-related function is the isolation of containment during a loss of coolant accident. For this reason, limit switch failure will not mislead the operator. Failure of the limit switch would not degrade other safety-related functions since it does not provide any control function.

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

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

COMPONENT MATERIALS EVALUATION SHEET

Index No.: 301H-034B
Rev.: 2

Prepared by: Shae Donald Date: 11/1/92
Checked by: Shae Donald Date: 11/3/93

Plant I.D. No.: ZS2010
Manufacturer: NAMCO

Component: Limit Switch
Model No.: D2400X

		THERMAL AGING		RADIATION	
Parts List *	Materials List *	Qualification	Reference	Qualification	Reference
Contact Block	Polyester, Glass Filled	40 Years @ 266°F	CAL-76	1×10^9 RADS	CAL-76
Contact Lever	Polyester, Glass Filled	40 Years @ 266°F	CAL-76	1×10^9 RADS	CAL-76
Top & Bottom Cover Gaskets	BUNA-N-Coated Nylon **	40 Years @ 104°F	CAL-76	1×10^7 RADS	CAL-76
Contact Lever	Alkyd, Mineral Filled	Greater than 40 Years @ 300°F	CAL-76	1×10^9 RADS	CAL-76
Top & Bottom Cover Gaskets	Koroseal	40 Years @ 140°F	CAL-76	1×10^7 RADS	CAL-76
Top & Bottom Cover Gaskets	Polyvinyl Chloride Plastic	40 Years @ 140°F	CAL-76	1×10^7 RADS	CAL-76

Material & Parts List Reference: V-29B, ROC-29C

* Only non-metallic parts are listed. Metallic parts are not considered sensitive to Thermal Aging and are not affected by radiation. The materials of these parts differ according to the date of manufacture. Since we are unable to determine the components manufacture date, all possible materials have been listed.

** Thermal aging life and radiation tolerance from more limiting BUNA-N.

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SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-035
Rev.: 2

Prepared by:

N Lewis

Date:

11/1/83

Checked by:

L. M. Smith

Date:

11/2/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Display Instrumentation	Operating Time	1 Year	40 Years	Note 3	Note 2	Analysis	None
Plant ID No. ZS2011	Temperature (°F)	221.0	Exempt	C-314	Note 1	N/A	None
Component: Limit Switch	Pressure (PSIA)	19.76	Exempt	C-314	Note 1	N/A	None
Manufacturer: NAMCO	Relative Humidity (%)	100.0	Exempt	A	Note 1	N/A	None
Model Number: D2400X	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Valve Position Indication	Radiation	1.0×10^6 RADS	1.0×10^7 RADS	T	CAL-76 Note 2	Analysis	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	40 Years	I	CAL-76 Note 2	Analysis	None
Service: Containment Instrumentation Air Isolation Valve	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 314							
Flood Level Elev: N/A Above Flood Level: N/A							
Needed for: Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input checked="" type="checkbox"/>							

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SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-035A
Rev.: 2

NOTES

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

1. This component is a limit switch which is used for valve position indication only. The harsh environment seen by this component is due to a main feedline break.

The component is exempted from qualification since its associated valve would not be required to mitigate a high energy line break. The operator will not monitor this valve's position indication during the accident because the valve's only safety-related function is the isolation of containment during a loss of coolant accident. For this reason, limit switch failure will not mislead the operator. Failure of the limit switch would not degrade other safety-related functions since it does not provide any control function.

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

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COMPONENT MATERIALS EVALUATION SHEET

Index No.: 301H-035B
Rev.: 2

Prepared by: D. L. Lunn Date: 4/1/83
Checked by: J. MacDonald Date: 4/2/83

Plant M.D. No.: <u>ZS2011</u>		Component: <u>Limit Switch</u>			
Manufacturer: <u>NAMCO</u>		Model No.: <u>D2400X</u>			
		THERMAL AGING		RADIATION	
Parts List *	Materials List *	Qualification	Reference	Qualification	Reference
Contact Block	Polyester, Glass Filled	40 Years @ 266°F	CAL-76	1 x 10 ⁹ RADS	CAL-76
Contact Lever	Polyester, Glass Filled	40 Years @ 266°F	CAL-76	1 x 10 ⁹ RADS	CAL-76
Top & Bottom Cover Gaskets	BUNA-N-Coated Nylon **	40 Years @ 104°F	CAL-76	1 x 10 ⁷ RADS	CAL-76
Contact Lever	Alkyd, Mineral Filled	Greater than 40 Years @ 300°F	CAL-76	1 x 10 ⁹ RADS	CAL-76
Top & Bottom Cover Gaskets	Koroseal	40 Years @ 140°F	CAL-76	1 x 10 ⁷ RADS	CAL-76
Top & Bottom Cover Gaskets	Polyvinyl Chloride Plastic	40 Years @ 140°F	CAL-76	1 x 10 ⁷ RADS	CAL-76

Material & Parts List Reference: V-29B, ROC-29C

* Only non-metallic parts are listed. Metallic parts are not considered sensitive to Thermal Aging and are not affected by radiation. The materials of these parts differ according to the date of manufacture. Since we are unable to determine the components manufacture date, all possible materials have been listed.

** Thermal aging life and radiation tolerance from more limiting BUNA-N.

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 Docket: 50-346

SYSTEM COMPONENT EVALUATION WORKSHEET

Index: 301H-036
 Rev.: 0

Prepared by: N. J. Bellamy Date: 9-22-81
 Checked by: Kenneth D. Mandy Date: 9/24/81

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Display Instrumentation	Operating Time	1 Year	Note 1	Note 3	N/A	N/A	Note 2
Plant ID No. ZS229B	Temperature (°F)	283.0	Note 1	G, X	N/A	N/A	Note 2
Component: Limit Switch	Pressure (PSIA)	52.0	Note 1	H, X	N/A	N/A	Note 2
Manufacturer: NAMCO	Relative Humidity (%)	100.0	Note 1	A	N/A	N/A	Note 2
Model Number: D2400X	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Note 1	A	N/A	N/A	Note 2
Function: Valve Position Indication	Radiation	1.7 x 10 ⁷ RADS	Note 1	CAL-44	N/A	N/A	Note 2
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	Note 1	I	N/A	N/A	Note 2
Service: Pressurizer Quench Tank Outlet Isolation Valve	Submergence	572'-2"	566'-3" Note 1, 4	B	J-14	N/A	Note 2
Location: Containment Rm. 220							
Flood Level Elev: 572'-2"							
Above Flood Level: No							
Needed for: Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input checked="" type="checkbox"/>							

Facility: Davis-Besse Unit 1

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No. 301H-036A

Docket: 50-346

Rev.: 0

NOTES

Prepared by: W. J. Bellando Date 9-29-81
Checked by: Kenneth H. Hardy Date 9/29/81

1. This component is a limit switch which is used for valve position indication only. The harsh environment seen by this component is due to a loss of coolant accident.

The limit switch is used to monitor the valve position of RC229B (an air-operated pressurizer quench tank outlet isolation valve). This valve is an isolation valve for containment penetration 48. A second isolation valve for this penetration, RC229A, is located outside containment in a non-harsh area and would not be subjected to the postulated LOCA conditions. During a LOCA, both valves would move to (or remain in) their fail-safe closed position upon receiving an SFAS signal.

Failure of limit switch ZS229B will not mislead the operator due to the availability of ZS229A on the second isolation valve. This limit switch would not be affected by the postulated LOCA conditions and could be monitored by the operator to determine the status of penetration 48. Failure of limit switch 229B would not degrade other safety-related functions since it does not provide a control function. Based on the above discussion, interim operation is justified.

2. This component is scheduled for replacement during the first refueling outage subsequent to component on-site availability.
3. One year operating time is used as a conservative maximum specification.
4. The flood level elevation is based on DBA-LOCA conditions. Under this condition the level switch will become submerged at 10.9 minutes post-LOCA (see CAL-49). This is a worst-case value based on a postulated DBA LOCA. For smaller LOCAs, component submergence will occur further into the accident, if it occurs at all.

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SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-036
Rev.: 2

Prepared by:

N Lewis

Date:

11/1/83

Checked by:

James Christ

Date:

11/2/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Issues
	Parameter	Specification	Qualification	Specification	Qualification		
System: Display Instrumentation	Operating Time	1 Year	1.1 Years	Note 2	Note 3 J-30	Simultaneous Test	None
Plant ID No. ZS229B	Temperature (°F)	283.0	391.0	H, X	J-30	Simultaneous Test	None
Component: Limit Switch	Pressure (PSIA)	52.0	133.7	G, X	J-30	Simultaneous Test	None
Manufacturer: NAMCO	Relative Humidity (%)	100.0	100.0	A	J-30	Simultaneous Test	None
Model Number: EA-180 Note 1	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	J-30 CAL-40 Note 5	Simultaneous Test, Analysis	None
Function: Valve Position Indication	Radiation	1.7×10^7 RADS	2.04×10^8 RADS Note 4	CAL-44	J-30	Sequential Test, Analysis	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	8.43 Years Note 4	I	J-30 CAL-54	Sequential Test, Analysis	None
Service: Pressurizer Quench Tank Outlet Isolation Valve	Submergence	572'-2"	577'-11"	B	J-12	N/A	None
Location: Containment Rm. 220							
Flood Level Elev: 572'-2"							
Above Flood Level: No							
Needed for:							
Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input checked="" type="checkbox"/>							

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SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-036A
Rev.: 2

NOTES

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

1. This component replaces a Model D2400 in accordance with FCR 82-101.
2. One-year operating time is used as a conservative maximum.
3. The test subjected the limit switch to 3 transients. The first transient lasted for 4 hours and 20 minutes, with maximum temperature of 391°F and a maximum pressure of 133.7 psia, ending with a return to ambient. The second transient immediately followed the first, lasting for 4 hours and 16 minutes, with maximum temperature of 391°F and maximum pressure of 133.7 psia, ending with a return to ambient. The limit switch was maintained at ambient for 18 hours and 19 minutes, and then was subjected to the third transient, which reached a maximum temperature of 320°F and a maximum pressure of 89.7 psia, and lasted for 2 hours and 55 minutes. At 26 hours and 55 minutes, the conditions are 258°F and 89.7 psia. After approximately 4 days, the temperature and pressure was 200°F and 64.7 psia and remained stable for the duration of the test (25 days). The temperature and pressure inside containment peak at 283°F and 52.0 psia in 17 minutes and 50 seconds, respectively. At 24 hours and 55 minutes, conditions are 148°F and 18.7 psia; at 26 hours and 55 minutes, conditions are 140°F and 17.7 psia; and after approximately 4 days, conditions are 124°F and 16.5 psia. The conditions returned to ambient in 7 days.

Based on this information, it can be concluded that the laboratory test subjected the limit switch to an overall more severe environment than that which would result from the postulated HELB. Since the limit switch remained functional throughout the test, it can be concluded that the limit switch will remain functional during and after exposure to the accident environment that would result from the postulated HELB. (Reference G&H.)

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

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SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-037
Rev.: 2

Prepared by: N Lewis
Checked by: G Marshall

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

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Display Instrumentation	Operating Time	1 Year	40 Years	Note 3	Note 2	Analysis	None
Plant ID No. ZS232	Temperature (°F)	198.0	Exempt	C-236	Note 1	N/A	None
Component: Limit Switch	Pressure (PSIA)	15.51	Exempt	C-236	Note 1	N/A	None
Manufacturer: NAMCO	Relative Humidity (%)	100.0	Exempt	A	Note 1	N/A	None
Model Number: D2400X							
Function: Valve Position Indication							
Accuracy: Spec: N/A Demon: N/A							
Service: Pressurizer Quench Tank Inlet Isolation Valve	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 236	Radiation	1.97×10^6 RADS	1.0×10^7 RADS	T	CAL-76 Note 2	Analysis	None
Flood Level Elev: N/A Above Flood Level: N/A	Aging	40 Years	40 Years	I	CAL-76 Note 2	Analysis	None
Needed for: Hot Shutdown <input checked="" type="checkbox"/>	Submergence	N/A	N/A	N/A	N/A	N/A	None
Cold Shutdown <input checked="" type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-037A
Rev.: 2

NOTES

Prepared by: N. Lewis Date 11/1/93
Checked by: E. McDonald Date 11/2/93

1. This component is a limit switch which is used for valve position indication only. The harsh environment seen by this component is due to a main feedline break.

The component is exempted from qualification since its associated valve would not be required to mitigate a high energy line break. The operator will not monitor this valve's position indication during the accident because the valve's only safety-related function is the isolation of containment during a loss of coolant accident. For this reason, limit switch failure will not mislead the operator. Failure of the limit switch would not degrade other safety-related functions since it does not provide any control function.

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

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COMPONENT MATERIALS EVALUATION SHEET

Index No.: 301H-037B
Rev.: 2

Prepared by: [Signature] Date: 4/1/67
Checked by: [Signature] Date: 4/2/83

Plant I.D. No.: ZS232
Manufacturer: NAMCO

Component: Limit Switch
Model No.: D2400X

		THERMAL AGING		RADIATION	
Parts List *	Materials List *	Qualification	Reference	Qualification	Reference
Contact Block	Polyester, Glass Filled	40 Years @ 266°F	CAL-76	1 x 10 ⁹ RADS	CAL-76
Contact Lever	Polyester, Glass Filled	40 Years @ 266°F	CAL-76	1 x 10 ⁹ RADS	CAL-76
Top & Bottom Cover Gaskets	BUNA-N-Coated Nylon **	40 Years @ 104°F	CAL-76	1 x 10 ⁷ RADS	CAL-76
Contact Lever	Alkyd, Mineral Filled	Greater than 40 Years @ 300°F	CAL-76	1 x 10 ⁹ RADS	CAL-76
Top & Bottom Cover Gaskets	Koroseal	40 Years @ 140°F	CAL-76	1 x 10 ⁷ RADS	CAL-76
Top & Bottom Cover Gaskets	Polyvinyl Chloride Plastic	40 Years @ 140°F	CAL-76	1 x 10 ⁷ RADS	CAL-76

Material & Parts List Reference: V-29B, ROC-29C

* Only non-metallic parts are listed. Metallic parts are not considered sensitive to Thermal Aging and are not affected by radiation. The materials of these parts differ according to the date of manufacture. Since we are unable to determine the components manufacture date, all possible materials have been listed.

** Thermal aging life and radiation tolerance from more limiting BUNA-N.

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-038
Rev.: 2

Prepared by:

N Lewis

Date:

11/1/93

Checked by:

[Signature]

Date:

11/2/93

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Display Instrumentation	Operating Time	1 Year	40 Years	Note 3	Note 2	Analysis	None
Plant ID No. ZS235A	Temperature (°F)	221.0	Exempt	C-314	Note 1	N/A	None
Component: Limit Switch	Pressure (PSIA)	19.76	Exempt	C-314	Note 1	N/A	None
Manufacturer: NAMCO	Relative Humidity (%)	100.0	Exempt	A	Note 1	N/A	None
Model Number: D2400X	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Valve Position Indication	Radiation	1.0×10^6 RADS	1.0×10^7 RADS	T	CAL-76 Note 2	Analysis	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	40 Years	I	CAL-76 Note 2	Analysis	None
Service: Pressurizer Quench Tank Sample Isolation Valve	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 314							
Flood Level Elev: N/A Above Flood Level: N/A							
Needed for: Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input checked="" type="checkbox"/>							

Facility: Davis-Besse Unit 1
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SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-038A
Rev.: 2

NOTES

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

1. This component is a limit switch which is used for valve position indication only. The harsh environment seen by this component is due to a main feedline break.

The component is exempted from qualification since its associated valve would not be required to mitigate a high energy line break. The operator will not monitor this valve's position indication during the accident because the valve's only safety-related function is the isolation of containment during a loss of coolant accident. For this reason, limit switch failure will not mislead the operator. Failure of the limit switch would not degrade other safety-related functions since it does not provide any control function.

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

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COMPONENT MATERIALS EVALUATION SHEET

Index No.: 301H-038B
Rev.: 2

Prepared by:

Date:

Checked by:

Date:

Plant I.D. No.: 7S235A

Component:	Limit Switch
------------	--------------

Manufacturer: NAMCO

Model No.: D24C0X

[illegible]

Material & Parts List Reference: V-29B, ROC-29C

* Only non-metallic parts are listed. Metallic parts are not considered sensitive to Thermal Aging and are not affected by radiation. The materials of these parts differ according to the date of manufacture. Since we are unable to determine the components manufacture date, all possible materials have been listed.

** Thermal aging life and radiation tolerance from more limiting BUNA-N.

Facility: Davis-Besse Unit 1
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SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-039
Rev.: 0

Prepared by: W. V. Bellgards Date: 2.29.81
Checked by: John D. White Date: 9/29/81

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Display Instrumentation	Operating Time	1 Year	Note 1	Note 3	N/A	N/A	Note 2
Plant ID No. ZS235B	Temperature (°F)	283.0	Note 1	H, X	N/A	N/A	Note 2
Component: Limit Switch	Pressure (PSIA)	52.0	Note 1	G, X	N/A	N/A	Note 2
Manufacturer: NAMCO	Relative Humidity (%)	100.0	Note 1	A	N/A	N/A	Note 2
Model Number: D2400X	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Note 1	A	N/A	N/A	Note 2
Function: Valve Position Indication	Radiation	1.7 x 10 ⁷ RADS	Note 1	CAL-44	N/A	N/A	Note 2
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	Note 1	I	N/A	N/A	Note 2
Service: Pressurizer Quench Tank Sample Isolation Valve	Submergence	572'-2"	577'-11"	B	J-12	N/A	None
Location: Containment Rm. 315							
Flood Level Elev: 572'-2"							
Above Flood Level: Yes							
Needed for: Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input checked="" type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index: 301H-039A
Rev.: 0

NOTES

Prepared by: W.V. Zellandy Date 3-29-81
Checked by: Kenneth D. Moody Date 9/29/81

1. This component is a limit switch which is used for valve position indication only. The harsh environment seen by this component is due to a loss of coolant accident.

The limit switch is used to monitor the valve position of SS235B (an air-operated pressurizer quench tank sample isolation valve). The valve is an isolation valve for containment penetration 68A. A second isolation valve for this penetration, SS235A, is located outside containment and would not be subjected to the harsh environment. Both valves are closed during normal plant operations.

Failure of limit switch ZS235B will not mislead the operator due to the availability of ZS235A on the second isolation valve. This limit switch would not be affected by the postulated LOCA conditions and would be monitored by the operator to determine the status of penetration 68A. Failure of limit switch 235B would not degrade other safety-related functions since it does not provide a control function. Based on the above discussion, interim operation is justified.

2. This component is scheduled for replacement during the first refueling outage subsequent to component on-site availability.
3. One year operating time is used as a conservative maximum specification.

Facility: Davis-Besse Unit 1
Docket: 90-346

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-039
Rev.: 2

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

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Display Instrumentation	Operating Time	1 Year	1.1 Years	Note 2	J-30 Note 3	Simultaneous Test	None
Plant ID No. ZS235B	Temperature (°F)	283.0	391.0	H, X	J-30	Simultaneous Test	None
Component: Limit Switch	Pressure (PSIA)	52.0	133.7	G, X	J-30	Simultaneous Test	None
Manufacturer: NAMCO	Relative Humidity (%)	100.0	100.0	A	J-30	Simultaneous Test	None
Model Number: EA-180 Note 1	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	J-30 CAL-40 Note 5	Simultaneous Test, Analysis	None
Function: Valve Position Indication	Radiation	1.7 x 10 ⁷ RADS	2.04 x 10 ⁸ RADS Note 4	CAL-44	J-30	Sequential Test, Analysis	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	8.43 Years Note 4	I	J-30 CAL-54	Sequential Test, Analysis	None
Service: Pressurizer Quench Tank Sample Isolation Valve	Submergence	572'-2"	577'-11"	B	J-12	N/A	None
Location: Containment Rm. 315							
Flood Level Elev: 572'-2"							
Above Flood Level: Yes							
Needed for:							
Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input checked="" type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No. 301H-039A
Rev.: 2

NOTES

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

1. This component replaces a Model D2400X in accordance with FCR 82-101.

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

3. The test subjected the limit switch to 3 transients. The first transient lasted for 4 hours and 20 minutes, with maximum temperature of 391°F and a maximum pressure of 133.7 psia, ending with a return to ambient. The second transient immediately followed the first, lasting for 4 hours and 16 minutes, with maximum temperature of 391°F and maximum pressure of 133.7 psia, ending with a return to ambient. The limit switch was maintained at ambient for 18 hours and 19 minutes, and then was subjected to the third transient, which reached a maximum temperature of 320°F and a maximum pressure of 89.7 psia, and lasted for 2 hours and 55 minutes. At 26 hours and 55 minutes, the conditions are 258°F and 89.7 psia. After approximately 4 days, the temperature and pressure was 200°F and 64.7 psia and remained stable for the duration of the test (25 days). The temperature and pressure inside containment peak at 283°F and 52.0 psia in 17 minutes and 50 seconds, respectively. At 24 hours and 55 minutes, conditions are 148°F and 18.7 psia; at 26 hours and 55 minutes, conditions are 140°F and 17.7 psia; and after approximately 4 days, conditions are 124°F and 16.5 psia. The conditions returned to ambient in 7 days.

Based on this information, it can be concluded that the laboratory test subjected the limit switch to an overall more severe environment than that which would result from the postulated HELB. Since the limit switch remained functional throughout the test, it can be concluded that the limit switch will remain functional during and after exposure to the accident environment that would result from the postulated HELB. (Reference G&H.)

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-040
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: Display Instrumentation	Operating Time	1 Year	40 Years	Note 1	Note 2	Analysis	None
Plant ID No. ZS236	Temperature (°F)	198.0	Exempt	C-236	Note 1	N/A	None
Component: Limit Switch							
Manufacturer: NAMCO	Pressure (PSIA)	15.51	Exempt	C-236	Note 1	N/A	None
Model Number: D2400X							
Function: Valve Position Indication	Relative Humidity (%)	100.0	Exempt	A	Note 1	N/A	None
Accuracy: Spec: N/A Demon: N/A							
Service: Containment N ₂ Heater Isolation Valve	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 236	Radiation	1.97×10^6 RADS	1.0×10^7 RADS	T	CAL-76 Note 2	Analysis	None
Flood Level Elev: N/A Above Flood Level: N/A	Aging	40 Years	40 Years	I	CAL-76 Note 2	Analysis	None
Needed for: Hot Shutdown <input checked="" type="checkbox"/>	Submergence	N/A	N/A	N/A	N/A	N/A	None
Cold Shutdown <input checked="" type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-040A
Rev.: 2

NOTES

Prepared by: N Lewis Date 11/1/82
Checked by: Michael H Date 11/2/82

1. This component is a limit switch which is used for valve position indication only. The harsh environment seen by this component is due to a main feedline break.

The component is exempted from qualification since its associated valve would not be required to mitigate a high energy line break. The operator will not monitor this valve's position indication during the accident because the valve's only safety-related function is the isolation of containment during a loss of coolant accident. For this reason, limit switch failure will not mislead the operator. Failure of the limit switch would not degrade other safety-related functions since it does not provide any control function.

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

Facility: Davis-Besse Unit 1
Docket: 50-345

COMPONENT MATERIALS EVALUATION SHEET

Index No.: 301H-040B
Rev.: 2

Prepared by:

Date:

Checked by:

Date:

Plant I.D. No.: ZS236

Component: Limit Switch

Manufacturer: NAMCO

Model No.: D2400X

		THERMAL AGING		RADIATION	
Parts List *	Materials List *	Qualification	Reference	Qualification	Reference
Contact Block	Polyester, Glass Filled	40 Years @ 266°F	CAL-76	1 x 10 ⁹ RADS	CAL-76
Contact Lever	Polyester, Glass Filled	40 Years @ 266°F	CAL-76	1 x 10 ⁹ RADS	CAL-76
Top & Bottom Cover Gaskets	BUNA-N-Coated Nylon **	40 Years @ 104°F	CAL-76	1 x 10 ⁷ RADS	CAL-76
Contact Lever	Alkyd, Mineral Filled	Greater than 40 Years @ 300°F	CAL-76	1 x 10 ⁹ RADS	CAL-76
Top & Bottom Cover Gaskets	Koroseal	40 Years @ 140°F	CAL-76	1 x 10 ⁷ RADS	CAL-76
Top & Bottom Cover Gaskets	Polyvinyl Chloride Plastic	40 Years @ 140°F	CAL-76	1 x 10 ⁷ RADS	CAL-76

Material & Parts List Reference: V-29B, ROC-29C

* Only non-metallic parts are listed. Metallic parts are not considered sensitive to Thermal Aging and are not affected by radiation. The materials of these parts differ according to the date of manufacture. Since we are unable to determine the components manufacture date, all possible materials have been listed.

** Thermal aging life and radiation tolerance from more limiting BUNA-N.

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-041
Rev.: 0

Prepared by: H. J. Billewicz Date: 9-29-81
Checked by: J. L. H. H. H. Date: 9/29/81

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Display Instrumentation	Operating Time	1 Year	Note 1	Note 4	N/A	N/A	Note 3
Plant ID No. ZS375							
Component: Limit Switch	Temperature (°F)	344.0	Note 1	C-602	N/A	N/A	Note 3
Manufacturer: NAMCO							
Model Number: D2400X	Pressure (PSIA)	20.0	Note 1	C-602	N/A	N/A	Note 3
Function: Valve Position Indication	Relative Humidity (%)	100.0	Note 1	A	N/A	N/A	Note 3
Accuracy: Spec: N/A Demon: N/A							
Service: Main Steam Line 2 Warm-Up Drain Isolation Valve	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 602	Radiation	N/A	N/A	N/A	N/A	N/A	None
Flood Level Elev: N/A Above Flood Level: N/A	Aging	40 Years	40 Years	I	Note 2	Analysis	None
Needed for: Hot Shutdown <input checked="" type="checkbox"/>	Submergence	N/A	N/A	N/A	N/A	N/A	None
Cold Shutdown <input checked="" type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No: 301H-041A
Rev.: 0

NOTES

Prepared by: W.V. Belland Date 9.29.81
Checked by: Kenneth D. Moody Date 9/29/81

1. The limit switch subjected to the harsh environment is for indication only. The warm-up drain isolation valve is only used during start-up and cooldown operations and would be closed during normal plant operations.

The operator is aware of this condition as he will not monitor the valve's position during a high energy line break accident. For this reason, the operator will not be misled by the failure of the limit switch in the harsh environment. Since the limit switch does not provide a control function, its failure will not degrade other safety-related functions. Based on this discussion, interim operation is justified.

2. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.
3. This component is scheduled for replacement during the first refueling outage subsequent to component on-site availability.
4. One year operating time is used as a conservative maximum specification.

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

COMPONENT MATERIALS EVALUATION SHEET

Index No.: 301H-041B
Rev.: 0

Prepared by: N.V. Bellardo Date: 9-29-81
Checked by: John T. Allister Date: 9/29/81

Plant I.D. No.: ZS375
Manufacturer: NAMCO

Component: Limit Switch
Model No.: D2400X

		THERMAL AGING		RADIATION	
Parts List *	Materials List *	Qualification	Reference	Qualification	Reference
Contact Block	Polyester, Glass Filled	40 Years @ 50°C	W-2	1×10^7 RADS	W-1
Contact Lever	Polyester, Glass Filled	40 Years @ 50°C	W-2	1×10^7 RADS	W-1
Top & Bottom Cover Gaskets	BUNA-N-Coated Nylon	40 Years @ 43.5°C	W-2, CAL-2	1×10^7 RADS	W-1
Contact Lever	Alkyd, Mineral Filled	40 Years @ 130°C	W-2	2×10^9 RADS	W-1
Top & Bottom Cover Gaskets	Koroseal	40 Years @ 50°C	W-2	2×10^9 RADS	W-1
Top & Bottom Cover Gaskets	Polyvinyl Chloride Plastic	40 Years @ 50°C	W-2	1.0×10^7 RADS	W-1

Material & Parts List Reference: V-29B, ROC-29C

* Only non-metallic parts are listed. Metallic parts are not considered sensitive to Thermal Aging and are not affected by radiation. The materials of these parts differ according to the date of manufacture. Since we are unable to determine the components manufacture date, all possible materials have been listed.

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-041
Rev.: 1

Prepared by: Sonia C. Rupp Date: 12-15-82
Checked by: Paul W. Lipinski Date: 12-17-82

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Display Instrumentation	Operating Time	1 Year	1.1 Years	Note 2	J-30 Note 3	Simultaneous Test	None
Plant ID No. ZS375	Temperature (°F)	344.0	391.0	C-602	J-30	Simultaneous Test	None
Component: Limit Switch	Pressure (PSIA)	20.0	133.7	C-602	J-30	Simultaneous Test	None
Manufacturer: NAMCO	Relative Humidity (%)	100.0	100.0	A	J-30	Simultaneous Test	None
Model Number: EA-180 Note 1	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Valve Position Indication	Radiation	N/A	2.04 x 10 ⁸ RADS	N/A	J-30	Sequential Test, Analysis	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	19.1 Years Note 4	I	J-30 CAL-54	Sequential Test, Analysis	None
Service: Main Steam Line 2 Warm-Up Drain Isolation Valve	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 602							
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.: 301H-041A
Rev.: 1

NOTES

Prepared by: Sonia Capron Date 12-15-82
Checked by: Paul W. Spiller Date 12-17-82

1. This component replaces a Model D2400 in accordance with FCR 82-101.
2. One-year operating time is used as a conservative maximum.
3. The test subjected the limit switch to 3 transients. The first transient lasted for 4 hours and 20 minutes, with maximum temperature of 391°F and a maximum pressure of 133.7 psia, ending with a return to ambient. The second transient immediately followed the first, lasting for 4 hours and 16 minutes, with maximum temperature of 391°F and maximum pressure of 133.7 psia, ending with a return to ambient. The limit switch was maintained at ambient for 18 hours and 19 minutes, and then was subjected to the third transient, which reached a maximum temperature of 320°F and a maximum pressure of 89.7 psia, and lasted for 2 hours and 55 minutes. At 26 hours and 55 minutes, the conditions are 258°F and 89.7 psia. After approximately 4 days, the temperature and pressure was 200°F and 64.7 psia and remained stable for the duration of the test (25 days). The temperature and pressure in Room 602 peak at 344°F and 20.0 psia in 0.5 seconds and 2.0 seconds, respectively. The conditions return to ambient in 57 minutes.

Based on this information, it can be concluded that the laboratory test subjected the limit switch to an overall more severe environment than that which would result from the postulated HELB. Since the limit switch remained functional throughout the test, it can be concluded that the limit switch will remain functional during and after exposure to the accident environment that would result from the postulated HELB. (Reference C-602.)

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-041
Rev.: 0

Prepared by: W. J. Bullard Date: 9-29-81
Checked by: J. St. Albans Date: 9/29/81

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Display Instrumentation	Operating Time	1 Year	Note 1	Note 4	N/A	N/A	Note 3
Plant ID No. ZS375	Temperature (°F)	344.0	Note 1	C-602	N/A	N/A	Note 3
Component: Limit Switch	Pressure (PSIA)	20.0	Note 1	C-602	N/A	N/A	Note 3
Manufacturer: NAMCO	Relative Humidity (%)	100.0	Note 1	A	N/A	N/A	Note 3
Model Number: D2400X	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Valve Position Indication	Radiation	N/A	N/A	N/A	N/A	N/A	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	40 Years	I	Note 2	Analysis	None
Service: Main Steam Line, 2 Warm-Up Drain Isolation Valve	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 602							
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.: 301H-041A

Rev.: 0

NOTES

Prepared by: W.V. Bellandi Date 9.29.81

Checked by: Kenneth D. Morley Date 9/29/81

1. The limit switch subjected to the harsh environment is for indication only. The warm-up drain isolation valve is only used during start-up and cooldown operations and would be closed during normal plant operations.

The operator is aware of this condition as he will not monitor the valve's position during a high energy line break accident. For this reason, the operator will not be misled by the failure of the limit switch in the harsh environment. Since the limit switch does not provide a control function, its failure will not degrade other safety-related functions. Based on this discussion, interim operation is justified.

2. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.
3. This component is scheduled for replacement during the first refueling outage subsequent to component on-site availability.
4. One year operating time is used as a conservative maximum specification.

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

COMPONENT MATERIALS EVALUATION SHEET

Index No.: 301H-041B
Rev.: 0

Prepared by: N.V. Bellamy Date: 9-29-81
Checked by: John T. White Date: 9/29/81

Plant I.D. No.: ZS375
Manufacturer: NAMCO

Component: Limit Switch
Model No.: D2400X

		THERMAL AGING		RADIATION	
Parts List *	Materials List *	Qualification	Reference	Qualification	Reference
Contact Block	Polyester, Glass Filled	40 Years @ 50°C	W-2	1 x 10 ⁷ RADS	W-1
Contact Lever	Polyester, Glass Filled	40 Years @ 50°C	W-2	1 x 10 ⁷ RADS	W-1
Top & Bottom Cover	BUNA-N-Coated Nylon	40 Years @ 43.5°C	W-2,	1 x 10 ⁷ RADS	W-1
Gaskets			CAL-2		
Contact Lever	Alkyd, Mineral Filled	40 Years @ 130°C	W-2	2 x 10 ⁹ RADS	W-1
Top & Bottom Cover	Koroseal	40 Years @ 50°C	W-2	2 x 10 ⁹ RADS	W-1
Gaskets					
Top & Bottom Cover	Polyvinyl Chloride Plastic	40 Years @ 50°C	W-2	1.0 x 10 ⁷ RADS	W-1
Gaskets					

Material & Parts List Reference: V-29B, ROC-29C

* Only non-metallic parts are listed. Metallic parts are not considered sensitive to Thermal Aging and are not affected by radiation. The materials of these parts differ according to the date of manufacture. Since we are unable to determine the components manufacture date, all possible materials have been listed.

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-042
Rev.: 0

Prepared by: W. V. Bellanato Date: 9.29.81
Checked by: J. L. P. Pate Date: 9/29/81

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Display Instrumentation	Operating Time	1 Year	Note 1	Note 4	N/A	N/A	Note 3
Plant ID No. ZS394	Temperature (°F)	282.0	Note 1	C-601	N/A	N/A	Note 3
Component: Limit Switch	Pressure (PSIA)	17.0	Note 1	C-601	N/A	N/A	Note 3
Manufacturer: NAMCO	Relative Humidity (%)	100.0	Note 1	A	N/A	N/A	Note 3
Model Number: D2400X							
Function: Valve Position Indication	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Accuracy: Spec: N/A Demon: N/A	Radiation	N/A	N/A	N/A	N/A	N/A	None
Service: Main Steam Line 1 Warm-Up Drain Isolation Valve	Aging	40 Years	40 Years	I	Note 2	Analysis	None
Location: Auxiliary Bldg. Rm. 601	Submergence	N/A	N/A	N/A	N/A	N/A	None
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. 301H-042A
Rev.: 0

NOTES

Prepared by: W. J. Sullivan Date 9-29-81
Checked by: Kenneth D. Moody Date 9/29/81

1. The limit switch subjected to the harsh environment is for indication only. The warm-up drain isolation valve is only used during start-up and cooldown operations and would be closed during normal plant operations.

The operator is aware of this condition as he will not monitor the valve's position during a high energy line break accident. For this reason, the operator will not be misled by the failure of the limit switch in the harsh environment. Since the limit switch does not provide a control function, its failure will not degrade other safety-related functions. Based on this discussion, interim operation is justified.

2. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.
3. This component is scheduled for replacement during the first refueling outage subsequent to component on-site availability.
4. One year operating time is used as a conservative maximum specification.

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

COMPONENT MATERIALS EVALUATION SHEET

Index No.: 301H-042B
Rev.: 0

Prepared by: W. J. Bellamy Date: 2.29.81
Checked by: John T. Harte Date: 9/29/81

Plant I.D. No.: ZS394
Manufacturer: NAMCO

Component: Limit Switch
Model No.: D2400X

		THERMAL AGING		RADIATION	
Parts List *	Materials List *	Qualification	Reference	Qualification	Reference
Contact Block	Polyester, Glass Filled	40 Years @ 50°C	W-2	1 x 10 ⁷ RADS	W-1
Contact Lever	Polyester, Glass Filled	40 Years @ 50°C	W-2	1 x 10 ⁷ RADS	W-1
Top & Bottom Cover Gaskets	BUNA-N-Coated Nylon	40 Years @ 43.5°C	W-2, CAL-2	1 x 10 ⁷ RADS	W-1
Contact Lever	Alkyd, Mineral Filled	40 Years @ 130°C	W-2	2 x 10 ⁹ RADS	W-1
Top & Bottom Cover Gaskets	Koroseal	40 Years @ 50°C	W-2	2 x 10 ⁹ RADS	W-1
Top & Bottom Cover Gaskets	Polyvinyl Chloride Plastic	40 Years @ 50°C	W-2	1.0 x 10 ⁷ RADS	W-1

Material & Parts List Reference: V-29B, ROC-29C

* Only non-metallic parts are listed. Metallic parts are not considered sensitive to Thermal Aging and are not affected by radiation. The materials of these parts differ according to the date of manufacture. Since we are unable to determine the components manufacture date, all possible materials have been listed.

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-042
Rev.: 1

Prepared by: *John Casper* Date: *12-15-82*
Checked by: *Paul W. Lytle* Date: *12-11-82*

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Display Instrumentation	Operating Time	1 Year	1.1 Years	Note 2	J-30 Note 3	Simultaneous Test	None
Plant ID No. ZS394	Temperature (°F)	282.0	391.0	C-601	J-30	Simultaneous Test	None
Component: Limit Switch	Pressure (PSIA)	17.0	133.7	C-601	J-30	Simultaneous Test	None
Manufacturer: NAMCO	Relative Humidity (%)	100.0	100.0	A	J-30	Simultaneous Test	None
Model Number: EA-180 Note 1	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Valve Position Indication	Radiation	N/A	2.04×10^8 RADS	N/A	J-30	Sequential Test, Analysis	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	19.13 Years Note 4	I	J-30 CAL-54	Sequential Test, Analysis	None
Service: Main Steam Line 1 Warm-Up Drain Isolation Valve	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 601							
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.: 301H-042A
Rev.: 1

NOTES

Prepared by: Erica Campbell Date 12-15-82
Checked by: Paul W. Updegraff Date 12-17-82

1. This component replaces a Model D2400X in accordance with FCR 82-101.
2. One-year operating time is used as a conservative maximum.
3. The test subjected the limit switch to 3 transients. The first transient lasted for 4 hours and 20 minutes, with maximum temperature of 391°F and a maximum pressure of 133.7 psia, ending with a return to ambient. The second transient immediately followed the first, lasting for 4 hours and 16 minutes, with maximum temperature of 391°F and maximum pressure of 133.7 psia, ending with a return to ambient. The limit switch was maintained at ambient for 18 hours and 19 minutes, and then was subjected to the third transient, which reached a maximum temperature of 320°F and a maximum pressure of 89.7 psia, and lasted for 2 hours and 55 minutes. At 26 hours and 55 minutes, the conditions are 258°F and 89.7 psia. After approximately 4 days, the temperature and pressure was 200°F and 64.7 psia and remained stable for the duration of the test (25 days). The temperature and pressure in Room 601 peak at 282°F and 17.0 psia in 0.5 seconds and 2.0 seconds, respectively. The conditions return to ambient in 2 hours and 30 minutes.

Based on this information, it can be concluded that the laboratory test subjected the limit switch to an overall more severe environment than that which would result from the postulated HELB. Since the limit switch remained functional throughout the test, it can be concluded that the limit switch will remain functional during and after exposure to the accident environment that would result from the postulated HELB. (Reference C-601.)

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-043
Rev.: 0

Prepared by: W. V. Bellamy Date: 9.29.81
Checked by: J. B. Albrecht Date: 9/29/81

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Display Instrumentation	Operating Time	1 Year	Note 1	Note 3	N/A	N/A	Note 2
Plant ID No. ZS5006	Temperature (°F)	283.0	Note 1	H, X	N/A	N/A	Note 2
Component: Limit Switch	Pressure (PSIA)	52.0	Note 1	G, X	N/A	N/A	Note 2
Manufacturer: NAMCO	Relative Humidity (%)	100.0	Note 1	A	N/A	N/A	Note 2
Model Number: D2400XR	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Note 1	A	N/A	N/A	Note 2
Function: Valve Position Indication	Radiation	1.7 x 10 ⁷ RADS	Note 1	CAL-44	N/A	N/A	Note 2
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	Note 1	I	N/A	N/A	Note 2
Service: Containment Purge Inlet Isolation Valve	Submergence	572'-2"	603' - 0"	B	J-16	N/A	None
Location: Containment Rm. 407							
Flood Level Elev: 572'-2"							
Above Flood Level: Yes							
Needed for: Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input checked="" type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No. 301H-043A
Rev.: 0

NOTES

Prepared by: W. I. Bellamy Date 9-27-81
Checked by: Renneth A. Hardy Date 9/29/81

1. This component is a limit switch which is used for valve position indication only. The harsh environment seen by this component is due to a loss of coolant accident.

The limit switch is used to monitor the valve position of CV5006 (an air-operated containment purge inlet isolation valve). The valve is an isolation valve for containment penetration 33. A second isolation valve for this penetration, CV5005, is located outside containment and would not be subjected to the harsh environment. Both valves are closed during normal plant operations.

Failure of limit switch 5006 will not mislead the operator due to the availability of ZS5005 on the second isolation valve. This limit switch would not be affected by the postulated LOCA conditions and would be monitored by the operator to determine the status of penetration 33. Failure of limit switch 5006 would not degrade other safety-related functions since it does not provide a control function. Based on the above discussion, interim operation is justified.

2. This component is scheduled for replacement during the first refueling outage subsequent to component on-site availability.
3. One year operating time is used as a conservative maximum specification.

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-043
Rev.: 2

Prepared by:

N. Lewis

Date:

11/1/82

Checked by:

Barbara Smith

Date:

11/1/82

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Display Instrumentation	Operating Time	1 Year	1.1 Years	Note 2	J-30 Note 3	Simultaneous Test	None
Plant ID No. ZS5006	Temperature (°F)	283.0	391.0	H, X	J-30	Simultaneous Test	None
Component: Limit Switch	Pressure (PSIA)	52.0	133.7	G, X	J-30	Simultaneous Test	None
Manufacturer: NAMCO	Relative Humidity (%)	100.0	100.0	A	J-30	Simultaneous Test	None
Model Number: EA-180 Note 1	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	J-30 CAL-40 Note 5	Simultaneous Test, Analysis	None
Function: Valve Position Indication	Radiation	1.7×10^7 RADS	2.0×10^8 RADS Note 4	CAL-44	J-30	Sequential Test, Analysis	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	8.43 Years Note 4	I	J-30 CAL-54	Sequential Test, Analysis	None
Service: Containment Purge Inlet Isolation Valve	Submergence	572'-2"	577'-11"	B	J-12	N/A	None
Location: Containment Rm. 407							
Flood Level Elev: 572'-2"							
Above Flood Level: Yes							
Needed for:							
Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input checked="" type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-043A
Rev.: 2

NOTES

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

1. This component replaces a Model D2400X in accordance with FCR 82-101.
2. One-year operating time is used as a conservative maximum.
3. The test subjected the limit switch to 3 transients. The first transient lasted for 4 hours and 20 minutes, with maximum temperature of 391°F and a maximum pressure of 133.7 psia, ending with a return to ambient. The second transient immediately followed the first, lasting for 4 hours and 16 minutes, with maximum temperature of 391°F and maximum pressure of 133.7 psia, ending with a return to ambient. The limit switch was maintained at ambient for 18 hours and 19 minutes, and then was subjected to the third transient, which reached a maximum temperature of 320°F and a maximum pressure of 89.7 psia, and lasted for 2 hours and 55 minutes. At 26 hours and 55 minutes, the conditions are 258°F and 89.7 psia. After approximately 4 days, the temperature and pressure was 200°F and 64.7 psia and remained stable for the duration of the test (25 days). The temperature and pressure inside containment peak at 283°F and 52.0 psia in 17 minutes and 50 seconds, respectively. At 24 hours and 55 minutes, conditions are 148°F and 18.7 psia; at 26 hours and 55 minutes, conditions are 140°F and 17.7 psia; and after approximately 4 days, conditions are 124°F and 16.5 psia. The conditions returned to ambient in 7 days.

Based on this information, it can be concluded that the laboratory test subjected the limit switch to an overall more severe environment than that which would result from the postulated HELB. Since the limit switch remained functional throughout the test, it can be concluded that the limit switch will remain functional during and after exposure to the accident environment that would result from the postulated HELB. (Reference G&H.)

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-044
Rev.: 0

Prepared by: W. V. Belland Date: 3-27-81
Checked by: John T. Allstate Date: 9/29/81

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Display Instrumentation	Operating Time	1 Year	Note 1	Note 3	N/A	N/A	Note 2
Plant ID No. ZS50.17	Temperature (°F)	283.0	Note 1	H, X	N/A	N/A	Note 2
Component: Limit Switch	Pressure (PSIA)	52.0	Note 1	G, X	N/A	N/A	Note 2
Manufacturer: NAMCO	Relative Humidity (%)	100.0	Note 1	A	N/A	N/A	Note 2
Model Number: D2400XR-SR	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Note 1	A	N/A	N/A	Note 2
Function: Valve Position Indication	Radiation	1.7 x 10 ⁷ RADS	Note 1	CAL-44	N/A	N/A	Note 2
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	Note 1	I	N/A	N/A	Note 2
Service: Containment Purge Outlet Isolation Valve	Submergence	572'-2"	605'-11"	B	J-16	N/A	None
Location: Containment Rm. 410							
Flood Level Elev: 572'-2"							
Above Flood Level: Yes							
Needed for: Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input checked="" type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No. 301H-044A
Rev.: 0

NOTES

Prepared by: W. J. Bellamy Date 2.29.81
Checked by: Herbert D. Moody Date 9/29/81

1. This component is a limit switch which is used for valve position indication only. The harsh environment seen by this component is due to a loss of coolant accident.

The limit switch is used to monitor the valve position of CV5007 (an air-operated containment purge outlet isolation valve). The valve is an isolation valve for containment penetration 34. A second isolation valve for this penetration, CV5008, is located outside containment and would not be subjected to the harsh environment. Both valves are closed during normal plant operations.

Failure of limit switch 5007 will not mislead the operator due to the availability of ZS5008 on the second isolation valve. This limit switch would not be affected by the postulated LOCA conditions and would be monitored by the operator to determine the status of penetration 34. Failure of limit switch 5007 would not degrade other safety-related functions since it does not provide a control function. Based on the above discussion, interim operation is justified.

2. This component is scheduled for replacement during the first refueling outage subsequent to component on-site availability.
3. One year operating time is used as a conservative maximum specification.

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 501H-044
Rev.: 2

Prepared by:

N. Lewis

Date:

11/1/12

Checked by:

[Signature]

Date:

11/2/12

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Display Instrumentation	Operating Time	1 Year	1.1 Years	Note 2	J-30 Note 3	Simultaneous Test	None
Plant ID No. ZS5007	Temperature (°F)	283.0	391.0	H, X	J-30	Simultaneous Test	None
Component: Limit Switch	Pressure (PSIA)	52.0	133.7	G, X	J-30	Simultaneous Test	None
Manufacturer: NAMCO	Relative Humidity (%)	100.0	100.0	A	J-30	Simultaneous Test	None
Model Number: EA-180 Note 1	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	J-30 CAL-40 Note 5	Simultaneous Test, Analysis	None
Function: Valve Position Indication	Radiation	1.7×10^7 RADS	2.0×10^8 RADS Note 4	CAL-44	J-30	Sequential Test, Analysis	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	8.43 Years Note 4	I	J-30 CAL-54	Sequential Test, Analysis	None
Service: Containment Purge Inlet Isolation Valve	Submergence	572'-2"	577'-11"	B	J-12	N/A	None
Location: Containment Rm. 410							
Flood Level Elev: 572'-2"							
Above Flood Level: Yes							
Needed for: Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input checked="" type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-044A
Rev.: 2

NOTES

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

1. This component replaces a Model D2400X in accordance with FCR 82-101.
2. One-year operating time is used as a conservative maximum.
3. The test subjected the limit switch to 3 transients. The first transient lasted for 4 hours and 20 minutes, with maximum temperature of 391°F and a maximum pressure of 133.7 psia, ending with a return to ambient. The second transient immediately followed the first, lasting for 4 hours and 16 minutes, with maximum temperature of 391°F and maximum pressure of 133.7 psia, ending with a return to ambient. The limit switch was maintained at ambient for 18 hours and 19 minutes, and then was subjected to the third transient, which reached a maximum temperature of 320°F and a maximum pressure of 89.7 psia, and lasted for 2 hours and 55 minutes. At 26 hours and 55 minutes, the conditions are 258°F and 89.7 psia. After approximately 4 days, the temperature and pressure was 200°F and 64.7 psia and remained stable for the duration of the test (25 days). The temperature and pressure inside containment peak at 283°F and 52.0 psia in 17 minutes and 50 seconds, respectively. At 24 hours and 55 minutes, conditions are 148°F and 18.7 psia; at 26 hours and 55 minutes, conditions are 140°F and 17.7 psia; and after approximately 4 days, conditions are 124°F and 16.5 psia. The conditions returned to ambient in 7 days.

Based on this information, it can be concluded that the laboratory test subjected the limit switch to an overall more severe environment than that which would result from the postulated HELB. Since the limit switch remained functional throughout the test, it can be concluded that the limit switch will remain functional during and after exposure to the accident environment that would result from the postulated HELB. (Reference G&H.)

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-045
Rev.: 2

Prepared by: N. Lewis Date: 4/1/93
Checked by: W. Anderson Date: 4/1/93

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Display Instrumentation	Operating Time	1 Year	40 Years	F	Note 1	Analysis	None
Plant ID No. ZS5008	Temperature (°F)	N/A	N/A	Note 2	N/A	N/A	None
Component: Limit Switch							
Manufacturer: NAMCO	Pressure (PSIA)	N/A	N/A	Note 2	N/A	N/A	None
Model Number: D2400X-R-SR							
Function: Valve Position Indication	Relative Humidity (%)	N/A	N/A	Note 2	N/A	N/A	None
Accuracy: Spec: N/A Demon: N/A							
Service: Containment Purge Outlet Isolation Valve	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 427	Radiation	3.12×10^5 RADS	1.0×10^7 RADS	T	CAL-76 Note 1	Analysis	None
Flood Level Elev: N/A Above Flood Level: N/A	Aging	40 Years	40 Years	I	CAL-76 Note 1	Analysis	None
Needed for: Hot Shutdown <input checked="" type="checkbox"/>	Submergence	N/A	N/A	N/A	N/A	N/A	None
Cold Shutdown <input checked="" type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-045A
Rev.: 2

NOTES

Prepared by: N. Lewis Date 11/1/83
Checked by: Stephen Davis Date 11/2/83

1. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.
2. The only harsh environment seen is increased radiation due to recirculated fluids.

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

COMPONENT MATERIALS EVALUATION SHEET

Index No.: 301H-045B
Rev.: 2

Prepared by: *M. J. [Signature]*

Date: *11/1/83*

Checked by: *J. Macdonald*

Date: *11/2/83*

Plant I.D. No.: ZS5008

Component: Limit Switch

Manufacturer: NAMCO

Model No.: D2400X-R-SR

		THERMAL AGING		RADIATION	
Parts List*	Materials List*	Qualification	Reference	Qualification	Reference
Contact Block	Polyester, Glass Filled	40 Years @ 266°F	CAL-76	1 x 10 ⁹ RADS	CAL-76
Contact Lever	Polyester, Glass Filled	40 Years @ 266°F	CAL-76	1 x 10 ⁹ RADS	CAL-76
Top & Bottom Cover Gaskets	BUNA-N-Coated Nylon **	40 Years @ 104°F	CAL-76	1 x 10 ⁷ RADS	CAL-76
Contact Lever	Alkyd, Mineral Filled	Greater than 40 Years @ 300°F	CAL-76	1 x 10 ⁹ RADS	CAL-76
Top & Bottom Cover Gaskets	Koroseal	40 Years @ 140°F	CAL-76	1 x 10 ⁷ RADS	CAL-76
Top & Bottom Cover Gaskets	Polyvinyl Chloride Plastic	40 Years @ 140°F	CAL-76	1 x 10 ⁷ RADS	CAL-76

Material & Parts List Reference: V-29B, ROC-29C

* Only non-metallic parts are listed. Metallic parts are not considered sensitive to Thermal Aging and are not affected by radiation. The materials of these parts differ according to the date of manufacture. Since we are unable to determine the components manufacture date, all possible materials have been listed.

** Thermal aging life and radiation tolerance from more limiting BUNA-N.

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 361H-046
Rev.: 2

Prepared by: N Lewis Date: 11/1/87
Checked by: DA [signature] Date: 11/2/87

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Display Instrumentation	Operating Time	1 Year	40 Years	Note 1	Note 2	Analysis	None
Plant ID No. ZS5715A	Temperature (°F)	130.0	Exempt	C-105	Note 3	N/A	None
Component: Limit Switch							
Manufacturer: Microswitch	Pressure (PSIA)	16.06	Exempt	C-105	Note 3	N/A	None
Model Number: ILS3							
Function: Damper Position Indication	Relative Humidity (%)	100.0	Exempt	A	Note 3	N/A	None
Accuracy: Spec: N/A Demon: N/A	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Service: ECCS Room Isolation Damper							
Location: Auxiliary Bldg. Rm. 105	Radiation	1.9 x 10 ⁶ RADS	2.0 x 10 ⁶ RADS Note 3	T	CAL-77 Note 2	Analysis	None
Flood Level Elev: N/A Above Flood Level: N/A	Aging	40 Years	9 Years	I	CAL-77 Note 2	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.: 301E-046A
Rev.: 2

NOTES

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

1. One year operating time is used as a conservative maximum specification.
2. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.
3. This component is a limit switch providing indication of isolation damper position. This limit switch provides no control function. The isolation damper would not have to operate to mitigate the HELB which creates the harsh environment in Room 105 (main feedwater line break in Room 303). The dampers only close to mitigate a LOCA; therefore, it is concluded that the limit switch is exempt from qualification for the harsh steam environment.

The high radiation in Room 105 occurs as a result of post-LOCA recirculation of containment fluids which begins 40 minutes after the LOCA when the ECCS switches over to the recirculation mode (Reference FSAR, pg. 6-13). The dampers are closed by the safety features actuation system in 75 seconds after a LOCA (Reference K). The safety features system which signals the dampers to close also signals the ECCS to switch to recirculation mode. Once closed, the dampers will remain closed and local recirculation fans will provide cooling to Room 105.

The normal operating dose for Room 105 is 5×10^2 RADS (Reference T), much less than the radiation qualification value for the limit switch. Since the limit switch's radiation qualification value exceeds the normal operating radiation dose for Room 105 and since the limit switch will have already operated prior to its exposure to the accident radiation dose, it can be concluded that the switch is qualified in this application. The switch is exempt from qualification for the harsh steam environment and operates before its exposure to the accident radiation dose. The limit switch only functions to provide damper position after a LOCA. Once the dampers close, the operators will have 40 minutes to verify damper position. Subsequent limit switch failure will not impact any other safety-related functions or mislead the operator.

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

COMPONENT MATERIALS EVALUATION SHEET

Index No.: 301H-046B
Rev.: 2

Prepared by: N Lewis Date: 11/1/82
Checked by: [Signature] Date: 11/2/83

Plant I.D. No.: ZS5715A
Manufacturer: Microswitch

Component: Limit Switch
Model No.: ILS3

		THERMAL AGING		RADIATION	
Parts List *	Materials List	Qualification	Reference	Qualification	Reference
Seal-Ring	BUNA N Rubber	15.1 Yrs. @ 122°F	CAL-77	1.5 x 10 ⁷ RADS	CAL-77
Seal-Ring	BUNA N Rubber	15.1 Yrs. @ 122°F	CAL-77	1.5 x 10 ⁷ RADS	CAL-77
Insulator	.015 Thick Black Varnished Fiberglass Cloth	Not Sensitive	CAL-77	Not Sensitive	CAL-77
Plunger-Actuator	Acetal Copolymer 1-4 Black	9 Yrs. @ 122°F	CAL-77	2.0 x 10 ⁶ RADS	CAL-77
Plunger-Actuator	Glass Filled Acetal Type 20, 1-3 Natural	9 Yrs. @ 122°F	CAL-77	2.0 x 10 ⁶ RADS	CAL-77
Seal-Ring	BUNA N Rubber	15.1 Yrs. @ 122°F	CAL-77	1.5 x 10 ⁷ RADS	CAL-77
Cover-Switch Case	Heat Resistant Phenolic Black	40 Yrs. @ 230°F	CAL-77	1.0 x 10 ⁷ RADS	CAL-77
Case-Switch	ARC Resistant Phenolic Black	40 Yrs. @ 230°F	CAL-77	1.0 x 10 ⁷ RADS	CAL-77
Button-Actuator	Teflon Filled Phenolic Black	40 Yrs. @ 230°F	CAL-77	1.0 x 10 ⁷ RADS	CAL-77
Insulator	.015 Thick Black Varnished Fiberglass Cloth	Not Sensitive	CAL-77	Not Sensitive	CAL-77
Seal-Ring	BUNA N Rubber	15.1 Yrs. @ 122°F	CAL-77	1.5 x 10 ⁷ RADS	CAL-77

Materials and Parts Reference List: V28-A

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

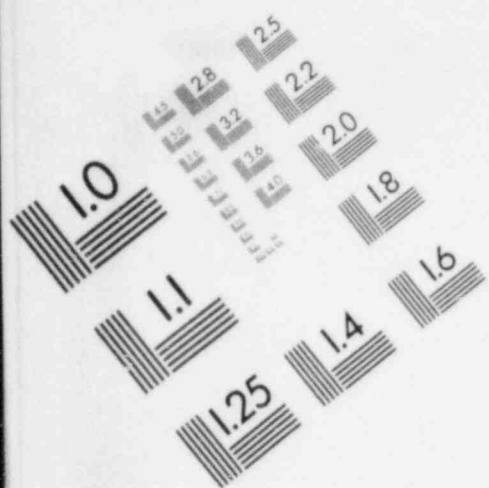
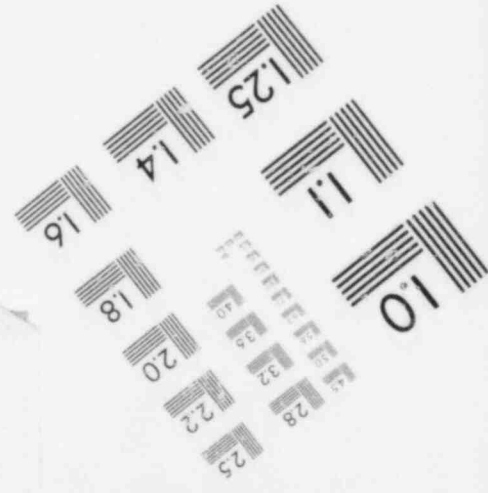
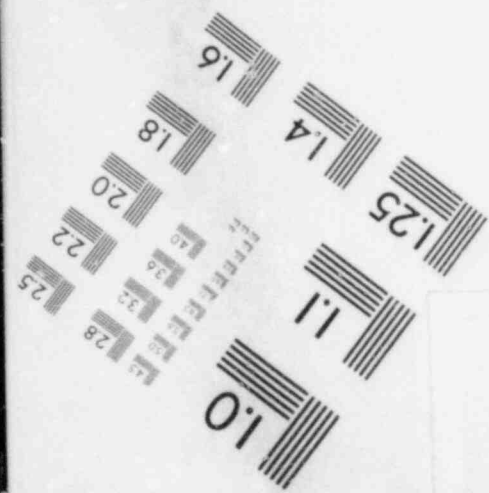
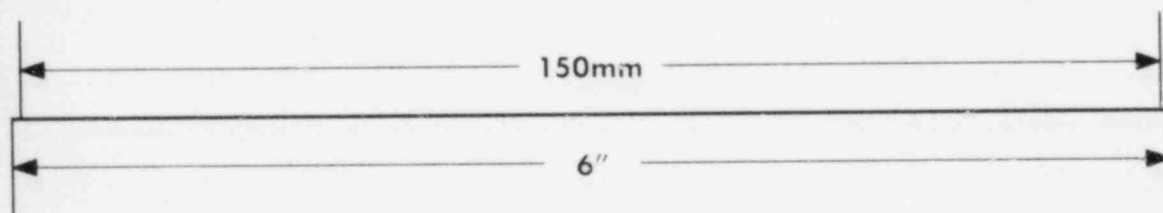
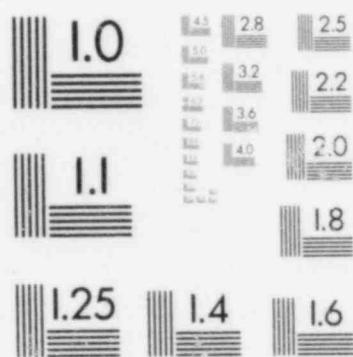
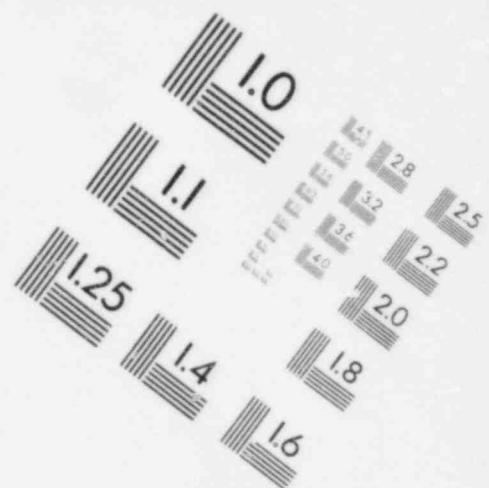


IMAGE EVALUATION
TEST TARGET (MT-3)



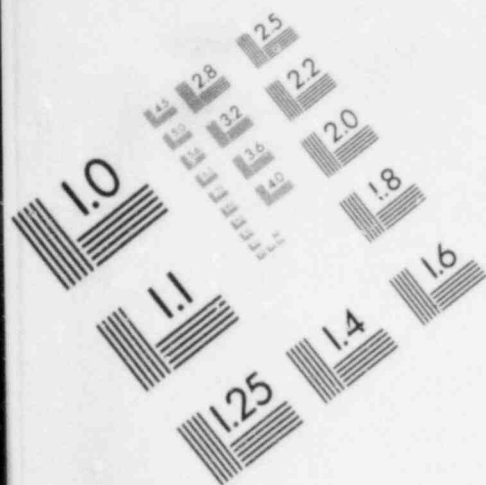
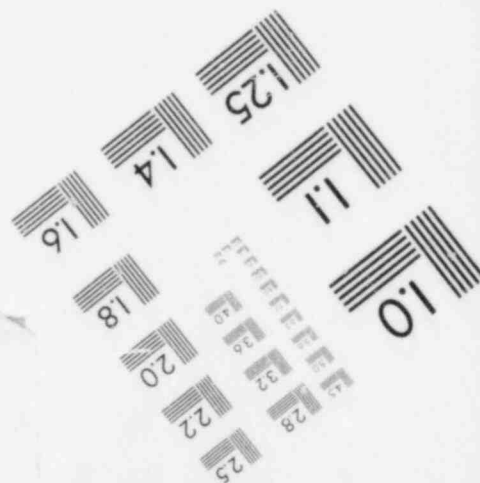
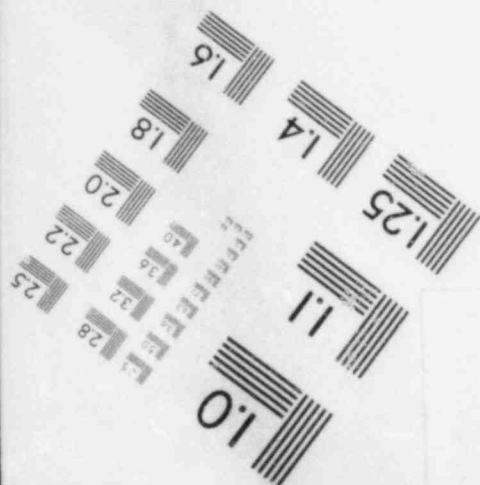
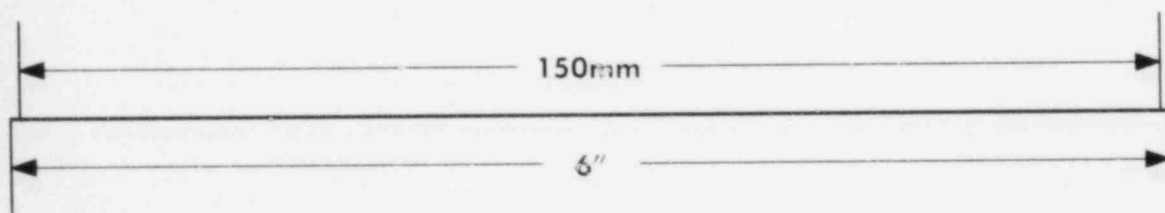
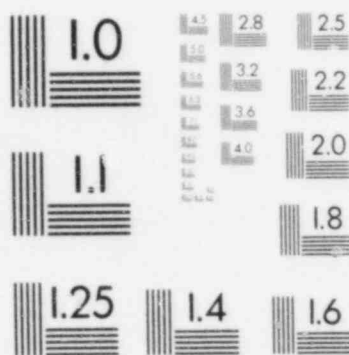
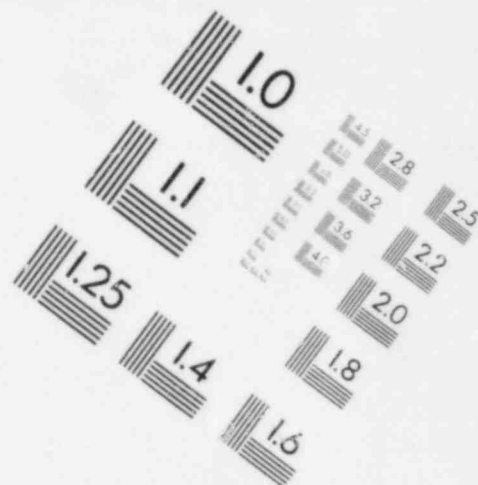


IMAGE EVALUATION
TEST TARGET (MT-3)



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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-047
Rev.: 2

Prepared by: J. L. Lian Date: 11/1/95
Checked by: Ch. H. Howell Date: 11/2/95

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Display Instrumentation	Operating Time	1 Year	9 Years	Note 1	Note 2	Analysis	None
Plant ID No. ZS5715B	Temperature (°F)	130.0	Exempt	C-105	Note 3	N/A	None
Component: Limit Switch							
Manufacturer: Microswitch	Pressure (PSIA)	16.06	Exempt	C-105	Note 3	N/A	None
Model Number: ILS3							
Function: Damper Position Indication	Relative Humidity (%)	100.0	Exempt	A	Note 3	N/A	None
Accuracy: Spec: N/A Demon: N/A							
Service: ECCS Room Isolation Damper	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 105	Radiation	1.9×10^6 RADS	2.0×10^6 RADS Note 3	T	Cal-77 Note 2	Analysis	None
Flood Level Elev: N/A Above Flood Level: N/A	Aging	40 Years	9 Years	I	Cal-77 Note 2	Analysis	None
Needed for: Hot Shutdown <input checked="" type="checkbox"/>	Submergence	N/A	N/A	N/A	N/A	N/A	None
Cold Shutdown <input checked="" type="checkbox"/>							

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Docket: 50-346

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-047A
Rev.: 2

NOTES

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

1. One year operating time is used as a conservative maximum specification.
2. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.
3. This component is a limit switch providing indication of isolation damper position. This limit switch provides no control function. The isolation damper would not have to operate to mitigate the HELB which creates the harsh environment in Room 105 (main feedwater line break in Room 303). The dampers only close to mitigate a LOCA; therefore, it is concluded that the limit switch is exempt from qualification for the harsh steam environment.

The high radiation in Room 105 occurs as a result of post-LOCA recirculation of containment fluids which begins 40 minutes after the LOCA when the ECCS switches over to the recirculation mode (Reference FSAR, pg. 6-13). The dampers are closed by the safety features actuation system in 75 seconds after a LOCA (Reference K). The safety features system which signals the dampers to close also signals the ECCS to switch to recirculation mode. Once closed, the dampers will remain closed and local recirculation fans will provide cooling to Room 105.

The normal operating dose for Room 105 is 5×10^2 RADS (Reference T), much less than the radiation qualification value for the limit switch. Since the limit switch's radiation qualification value exceeds the normal operating radiation dose for Room 105 and since the limit switch will have already operated prior to its exposure to the accident radiation dose, it can be concluded that the switch is qualified in this application. The switch is exempt from qualification for the harsh steam environment and operates before its exposure to the accident radiation dose. The limit switch only functions to provide damper position after a LOCA. Once the dampers close, the operators will have 40 minutes to verify damper position. Subsequent limit switch failure will not impact any other safety-related functions or mislead the operator.

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COMPONENT MATERIALS EVALUATION SHEET

Index No.: 301H-04/B
Rev.: 2

Prepared by:

N. Lewis

Date:

11/1/83

Checked by:

James Bond

Date:

11/2/83

Plant I.D. No.: ZS5715B

Component: Limit Switch

Manufacturer: Microswitch

Model No.: ILS3

		THERMAL AGING		RADIATION	
Parts List *	Materials List	Qualification	Reference	Qualification	Reference
Seal-Ring	BUNA N Rubber	15.1 Yrs. @ 122°F	CAL-77	1.5 x 10 ⁷ RADS	CAL-77
Seal-Ring	BUNA N Rubber	15.1 Yrs. @ 122°F	CAL-77	1.5 x 10 ⁷ RADS	CAL-77
Insulator	.015 Thick Black Varnished Fiberglass Cloth	Not Sensitive	CAL-77	Not Sensitive	CAL-77
Plunger-Actuator	Acetal Copolymer 1-4 Black	9 Yrs. @ 122°F	CAL-77	2.0 x 10 ⁶ RADS	CAL-77
Plunger-Actuator	Glass Filled Acetal Type 20, 1-3 Natural	9 Yrs. @ 122°F	CAL-77	2.0 x 10 ⁶ RADS	CAL-77
Seal-Ring	BUNA N Rubber	15.1 Yrs. @ 122°F	CAL-77	1.5 x 10 ⁷ RADS	CAL-77
Cover-Switch Case	Heat Resistant Phenolic Black	40 Yrs. @ 230°F	CAL-77	1.0 x 10 ⁷ RADS	CAL-77
Case-Switch	ARC Resistant Phenolic Black	40 Yrs. @ 230°F	CAL-77	1.0 x 10 ⁷ RADS	CAL-77
Button-Actuator	Teflon Filled Phenolic Black	40 Yrs. @ 230°F	CAL-77	1.0 x 10 ⁷ RADS	CAL-77
Insulator	.015 Thick Black Varnished Fiberglass Cloth	Not Sensitive	CAL-77	Not Sensitive	CAL-77
Seal-Ring	BUNA N Rubber	15.1 Yrs. @ 122°F	CAL-77	1.5 x 10 ⁷ RADS	CAL-77

Materials and Parts Reference List: V28-A

* 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.: 301H-048
Rev.: 2

Prepared by: 17 Lewis Date: 11/1/83
Checked by: W. J. Dault Date: 11/1/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Display Instrumentation	Operating Time	1 Year	9 Years	Note 1	Note 2	Analysis	None
Plant ID No. ZS5716A	Temperature (°F)	177.0	Exempt	C-115	Note 3	N/A	None
Component: Limit Switch							
Manufacturer: Microswitch	Pressure (PSIA)	15.60	Exempt	C-115	Note 3	N/A	None
Model Number: ILS3							
Function: Damper Position Indication	Relative Humidity (%)	100.0	Exempt	A	Note 3	N/A	None
Accuracy: Spec: N/A Demon: N/A							
Service: ECCS Room Isolation Damper	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 115	Radiation	2.67 x 10 ⁶ RADS	2.0 x 10 ⁶ RADS Note 3	T	Cal-77 Note 2	Analysis	None
Flood Level Elev: N/A Above Flood Level: N/A	Aging	40 Years	9 Years	I	Cal-77 Note 2	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
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SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-048A
Rev.: 2

NOTES

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

1. One year operating time is used as a conservative maximum specification.
2. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.
3. This component is a limit switch providing indication of isolation damper position. This limit switch provides no control function. The isolation damper would not have to operate to mitigate the HELB which creates the harsh environment in Room 115 (main feedwater line break in Room 303). The dampers only close to mitigate a LOCA; therefore, it is concluded that the limit switch is exempt from qualification for the harsh steam environment.

The high radiation in Room 115 occurs as a result of post-LOCA recirculation of containment fluids which begins 40 minutes after the LOCA when the ECCS switches over to the recirculation mode (Reference FSAR, pg. 6-13). The dampers are closed by the safety features actuation system in 75 seconds after a LOCA (Reference K). The safety features system which signals the dampers to close also signals the ECCS to switch to recirculation mode. Once closed, the dampers will remain closed and local recirculation fans will provide cooling to Room 105.

The normal operating dose for Room 115 is 5×10^2 RADS (Reference T), much less than the radiation qualification value for the limit switch. Since the limit switch's radiation qualification value exceeds the normal operating radiation dose for Room 115 and since the limit switch will have already operated prior to its exposure to the accident radiation dose, it can be concluded that the switch is qualified in this application. The switch is exempt from qualification for the harsh steam environment and operates before its exposure to the accident radiation dose. The limit switch only functions to provide damper position after a LOCA. Once the dampers close, the operators will have 40 minutes to verify damper position. Subsequent limit switch failure will not impact any other safety-related functions or mislead the operator.

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COMPONENT MATERIALS EVALUATION SHEET

Index No.: 301H-048B
Rev.: 2

Prepared by:

N Lewis

Date:

11/1/83

Checked by:

Michael J. Smith

Date:

11/2/83

Plant I.D. No.: ZS5716A

Component:

Limit Switch

Manufacturer: Microswitch

Model No.:

ILS3

		THERMAL AGING		RADIATION	
Parts List *	Materials List	Qualification	Reference	Qualification	Reference
Seal-Ring	BUNA N Rubber	15.1 Yrs. @ 122°F	CAL-77	1.5×10^7 RADS	CAL-77
Seal-Ring	BUNA N Rubber	15.1 Yrs. @ 122°F	CAL-77	1.5×10^7 RADS	CAL-77
Insulator	.015 Thick Black Varnished Fiberglass Cloth	Not Sensitive	CAL-77	Not Sensitive	CAL-77
Plunger-Actuator	Acetal Copolymer 1-4 Black	9 Yrs. @ 122°F	CAL-77	2.0×10^6 RADS	CAL-77
Plunger-Actuator	Glass Filled Acetal Type 20, 1-3 Natural	9 Yrs. @ 122°F	CAL-77	2.0×10^6 RADS	CAL-77
Seal-Ring	BUNA N Rubber	15.1 Yrs. @ 122°F	CAL-77	1.5×10^7 RADS	CAL-77
Cover-Switch Case	Heat Resistant Phenolic Black	40 Yrs. @ 230°F	CAL-77	1.0×10^7 RADS	CAL-77
Case-Switch	ARC Resistant Phenolic Black	40 Yrs. @ 230°F	CAL-77	1.0×10^7 RADS	CAL-77
Button-Actuator	Teflon Filled Phenolic Black	40 Yrs. @ 230°F	CAL-77	1.0×10^7 RADS	CAL-77
Insulator	.015 Thick Black Varnished Fiberglass Cloth	Not Sensitive	CAL-77	Not Sensitive	CAL-77
Seal-Ring	BUNA N Rubber	15.1 Yrs. @ 122°F	CAL-77	1.5×10^7 RADS	CAL-77

Materials and Parts Reference List: V28-A

* 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.: 301H-049
Rev.: 2

Prepared by: J. Su Date: 11/1/83
Checked by: Greenblatt Date: 11/4/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification	Outstanding
	Parameter	Specification	Qualification	Specification	Qualification	Method	Items
System: Display Instrumentation	Operating Time	1 Year	9 Years	Note 1	Note 2	Analysis	None
Plant ID No. ZS5716B	Temperature (°F)	177.0	Exempt	C-115	Note 1	N/A	None
Component: Limit Switch	Pressure (PSIA)	15.60	Exempt	C-115	Note 1	N/A	None
Manufacturer: Microswitch	Relative Humidity (%)	100.0	Exempt	A	Note 1	N/A	None
Model Number: ILS3	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Damper Position Indication	Radiation	2.67 x 10 ⁶ RADS	2.0 x 10 ⁶ RADS Note 3	T	Cal-77 Note 2	Analysis	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	9 Years	I	Cal-77 Note 2	Analysis	None
Service: ECCS 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"/>							

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SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-049A
Rev.: 2

NOTES

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

1. One year operating time is used as a conservative maximum specification.
2. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.
3. This component is a limit switch providing indication of isolation damper position. This limit switch provides no control function. The isolation damper would not have to operate to mitigate the HELB which creates the harsh environment in Room 115 (main feedwater line break in Room 303). The dampers only close to mitigate a LOCA; therefore, it is concluded that the limit switch is exempt from qualification for the harsh steam environment.

The high radiation in Room 115 occurs as a result of post-LOCA recirculation of containment fluids which begins 40 minutes after the LOCA when the ECCS switches over to the recirculation mode (Reference FSAR, pg. 6-13). The dampers are closed by the safety features actuation system in 75 seconds after a LOCA (Reference K). The safety features system which signals the dampers to close also signals the ECCS to switch to recirculation mode. Once closed, the dampers will remain closed and local recirculation fans will provide cooling to Room 105.

The normal operating dose for Room 115 is 5×10^2 RADS (Reference T), much less than the radiation qualification value for the limit switch. Since the limit switch's radiation qualification value exceeds the normal operating radiation dose for Room 115 and since the limit switch will have already operated prior to its exposure to the accident radiation dose, it can be concluded that the switch is qualified in this application. The switch is exempt from qualification for the harsh steam environment and operates before its exposure to the accident radiation dose. The limit switch only functions to provide damper position after a LOCA. Once the dampers close, the operators will have 40 minutes to verify damper position. Subsequent limit switch failure will not impact any other safety-related functions or mislead the operator.

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COMPONENT MATERIALS EVALUATION SHEET

Index No.: 301H-049B
Rev.: 2

Prepared by: N. Lewis
Checked by: Gregory Donnell

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

Plant I.D. No.: ZS5716B
Manufacturer: Microswitch

Component: Limit Switch
Model No.: ILS3

		THERMAL AGING		RADIATION	
Parts List *	Materials List	Qualification	Reference	Qualification	Reference
Seal-Ring	BUNA N Rubber	15.1 Yrs. @ 122°F	CAL-77	1.5×10^7 RADS	CAL-77
Seal-Ring	BUNA N Rubber	15.1 Yrs. @ 122°F	CAL-77	1.5×10^7 RADS	CAL-77
Insulator	.015 Thick Black Varnished Fiberglass Cloth	Not Sensitive	CAL-77	Not Sensitive	CAL-77
Plunger-Actuator	Acetal Copolymer 1-4 Black	9 Yrs. @ 122°F	CAL-77	2.0×10^6 RADS	CAL-77
Plunger-Actuator	Glass Filled Acetal Type 20, 1-3 Natural	9 Yrs. @ 122°F.	CAL-77	2.0×10^6 RADS	CAL-77
Seal-Ring	BUNA N Rubber	15.1 Yrs. @ 122°F	CAL-77	1.5×10^7 RADS	CAL-77
Cover-Switch Case	Heat Resistant Phenolic Black	40 Yrs. @ 230°F	CAL-77	1.0×10^7 RADS	CAL-77
Case-Switch	ARC Resistant Phenolic Black	40 Yrs. @ 230°F	CAL-77	1.0×10^7 FADS	CAL-77
Button-Actuator	Teflon Filled Phenolic Black	40 Yrs. @ 230°F	CAL-77	1.0×10^7 RADS	CAL-77
Insulator	.015 Thick Black Varnished Fiberglass Cloth	Not Sensitive	CAL-77	Not Sensitive	CAL-77
Seal-Ring	BUNA N Rubber	15.1 Yrs. @ 122°F	CAL-77	1.5×10^7 RADS	CAL-77

Materials and Parts Reference List: V28-A

* 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.: 301H-050
Rev.: 0

Prepared by: W. V. Bellardi Date: 10-2-81
Checked by: Kenneth D. Hardy Date: 10/2/81

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Display Instrumentation	Operating Time	1 Year	Note 1	Note 2	N/A	N/A	Note 3
Plant ID No. ZS598	Temperature (°F)	221.0	Note 1	C-314	N/A	N/A	Note 3
Component: Limit Switch	Pressure (PSIA)	19.76	Note 1	C-314	N/A	N/A	Note 3
Manufacturer: NAMCO	Relative Humidity (%)	100.0	Note 1	A	N/A	N/A	Note 3
Model Number: D2400X	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Valve Position Indication	Radiation	1.0 x 10 ⁶ RADS	1.0 x 10 ⁷ RADS	T	Note 4	Analysis	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	40 Years	I	Note 4	Analysis	None
Service: Steam Generator 2 Sample Isolation Valve	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 314							
Flood Level Elev: N/A Above Flood Level: N/A							
Needed for: Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input checked="" type="checkbox"/>							

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SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-050A
Rev.: 0

NOTES

Prepared by: W.V. Bellamy Date 6/23/81
Checked by: Kenneth D. Murphy Date 10/28/81

1. This component is a limit switch which is used for valve position indication only. The harsh environment seen by this component is due to a main feedline break.

The limit switch is used to monitor the valve position of SS598 (an air-operated steam generator sample isolation valve). The valve's function is to isolate the steam generator from the sampling system in the event of a loss of coolant accident. The valve would not be required to perform essential safety-related functions in the harsh environment caused by the high energy line break.

Failure of limit switch ZS598 in the harsh environment would not mislead the operator since he would not be monitoring the position of valve SS598 during the high energy line break of concern. Failure of the limit switch would not degrade other safety-related functions since it does not provide a control function. Based on the above discussion interim operation is justified.

2. One year operating time is used as a conservative maximum specification.
3. This component is scheduled for replacement during the first refueling outage subsequent to component on-site availability.
4. Materials evaluation conducted; materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

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Docket: 50-346

COMPONENT MATERIALS EVALUATION SHEET

Index No. 301H-050B
Rev.: 0

Prepared by: W.V. Bellando Date: 3/29/81
Checked by: John T. Abbate Date: 9/29/81

Plant I.D. No.: ZS598
Manufacturer: NAMCO

Component: Limit Switch
Model No.: D2400X

		THERMAL AGING		RADIATION	
Parts List*	Materials List*	Qualification	Reference	Qualification	Reference
Contact Block	Polyester, Glass Filled	40 Years @ 50°C	W-2	1 x 10 ⁷ RADS	W-1
Contact Lever	Polyester, Glass Filled	40 Years @ 50°C	W-2	1 x 10 ⁷ RADS	W-1
Top & Bottom Cover Gaskets	BUNA-N-Coated Nylon	40 Years @ 43.5°C	CAL-2	1 x 10 ⁷ RADS	W-1
Contact Lever	Alkyd, Mineral Filled	40 Years @ 130°C	W-2	2 x 10 ⁹ RADS	W-1
Top & Bottom Cover Gaskets	Koroseal	40 Years @ 50°C	W-2	2 x 10 ⁹ RADS	W-1
Top & Bottom Cover Gaskets	Polyvinyl Chloride Plastic	40 Years @ 50°C	W-2	1.0 x 10 ⁷ RADS	W-1

Material & Parts List Reference: V-29B, ROC-29C

- * Only non-metallic parts are listed. Metallic parts are not considered sensitive to Thermal Aging and are not affected by radiation. The materials of these parts differ according to the date of manufacture. Since we are unable to determine the components manufacture date, all possible materials have been listed.

DocId: 50-346

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-050

Rev.: 1

Prepared by: Squa Canyon Date: 12-15-82

Checked by: Paul H. Linder Date: 12-17-92

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Display Instrumentation	Operating Time	1 Year	1.1 Years	Note 2	J-30 Note 3	Simultaneous Test	None
Plant ID No. ZS598	Temperature (°F)	221.0	391.0	C-314	J-30	Simultaneous Test	None
Component: Limit Switch	Pressure (PSIA)	19.76	133.7	C-314	J-30	Simultaneous Test	None
Manufacturer: NAMCO	Relative Humidity (%)	100.0	100.0	A	J-30	Simultaneous Test	None
Model Number: EA-180 Note 1	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Valve Position Indication	Radiation	1.0 x 10 ⁶ RADS	2.04 x 10 ⁸ RADS	T	J-30	Sequential Test, Analysis	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	19.13 Years Note 4	I	J-30 CAL-54	Sequential Test, Analysis	None
Service: Steam Generator 2 Sample Isolation Valve	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 314							
Flood Level Elev: N/A Above Flood Level: N/A							
Needed for: Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input checked="" type="checkbox"/>							

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SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-050A
Rev.: 1

NOTES

Prepared by: Erica Campbell Date 12-15-82
Checked by: Robert W. Dapkins Date 12-17-82

1. This component replaces a Model D2400X in accordance with FCR 82-101.
2. One-year operating time is used as a conservative maximum.
3. The test subjected the limit switch to 3 transients. The first transient lasted for 4 hours and 20 minutes, with maximum temperature of 391°F and a maximum pressure of 133.7 psia, ending with a return to ambient. The second transient immediately followed the first, lasting for 4 hours and 16 minutes, with maximum temperature of 391°F and maximum pressure of 133.7 psia, ending with a return to ambient. The limit switch was maintained at ambient for 18 hours and 19 minutes, and then was subjected to the third transient, which reached a maximum temperature of 320°F and a maximum pressure of 89.7 psia, and lasted for 2 hours and 55 minutes. At 26 hours and 55 minutes, the conditions are 258°F and 89.7 psia. After approximately 4 days, the temperature and pressure was 200°F and 64.7 psia and remained stable for the duration of the test (25 days). The temperature and pressure in Room 314 peak at 221°F and 19.76 psia in 1.55 seconds and 0.086 seconds, respectively. The conditions return to ambient in 6.7 minutes.

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

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.

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SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-051
Rev.: 0

Prepared by: W. V. Bellandis Date: 9-29-01
Checked by: John B. H. Harte Date: 9/29/01

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Display Instrumentation	Operating Time	1 Year	Note 1	Note 4	N/A	N/A	Note 3
Plant ID No. ZS607	Temperature (°F)	221.0	Note 1	C-314	N/A	N/A	Note 3
Component: Limit Switch	Pressure (PSIA)	19.76	Note 1	C-314	N/A	N/A	Note 3
Manufacturer: NAMCO	Relative Humidity (%)	100.0	Note 1	A	N/A	N/A	Note 3
Model Number: D2400X	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Valve Position Indication	Radiation	1.0 x 10 ⁶ RADS	1.0 x 10 ⁷ RADS	T	Note 2	Analysis	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	40 Years	I	Note 2	Analysis	None
Service: Steam Generator 1 Sample Isolation Valve	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 314							
Flood Level Elev: N/A							
Above Flood Level: N/A							
Needed for: Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input checked="" type="checkbox"/>							

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SYSTEM COMPONENT EVALUATION WORKSHEET

Index # 301H-051A

Rev.: 0

NOTES

Prepared by: W. J. Bellamy Date 9-29-81

Checked by: Kenneth D. Moody Date 9/29/81

1. This component is a limit switch which is used for valve position indication only. The harsh environment seen by this component is due to a main feedline break.

The limit switch is used to monitor the valve position of SS607 (an air operated steam generator sample isolation valve). The valve's function is to isolate the steam generator from the sampling system in the event of a loss of coolant accident. The valve would not be required to perform essential safety-related functions in the harsh environment caused by the high energy line break.

Failure of limit switch ZS607 in the harsh environment would not mislead the operator since he would not be monitoring the position of valve SS607 during the high energy line break of concern. Failure of the limit switch would not degrade other safety-related functions since it does not provide a control function. Based on the above discussion interim operation is justified.

2. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.
3. This component is scheduled for replacement during the first refueling outage subsequent to component on-site availability.
4. One year operating time is used as a conservative maximum specification.

Facility: Davis-Besse Unit 1
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COMPONENT MATERIALS EVALUATION SHEET

Index No. 301H-051B
Rev.: 0

Prepared by: W.V. Bellesand Date: 9-29-81
Checked by: John S. White Date: 9/29/81

Plant I.D. No.: ZS607
Manufacturer: NAMCO

Component: Limit Switch
Model No.: D2400X

		THERMAL AGING		RADIATION	
Parts List*	Materials List*	Qualification	Reference	Qualification	Reference
Contact Block	Polyester, Glass Filled	40 Years @ 50°C	W-2	1×10^7 RADS	W-1
Contact Lever	Polyester, Glass Filled	40 Years @ 50°C	W-2	1×10^7 RADS	W-1
Top & Bottom Cover Gaskets	BUNA-N-Coated Nylon	40 Years @ 43.5°C	CAL-2	1×10^7 RADS	W-1
Contact Lever	Alkyd, Mineral Filled	40 Years @ 130°C	W-2	2×10^9 RADS	W-1
Top & Bottom Cover Gaskets	Koroseal	40 Years @ 50°C	W-2	2×10^9 RADS	W-1
Top & Bottom Cover Gaskets	Polyvinyl Chloride Plastic	40 Years @ 50°C	W-2	1.0×10^7 RADS	W-1

Material & Parts List Reference: V-29B, ROC-29C

- * Only non-metallic parts are listed. Metallic parts are not considered sensitive to Thermal Aging and are not affected by radiation. The materials of these parts differ according to the date of manufacture. Since we are unable to determine the components manufacture date, all possible materials have been listed.

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Docket: 50-346

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-051
Rev.: 1

Prepared by: Squire, C. J. Date: 12-15-82
Checked by: Paul W. Lytle Date: 12-17-82

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Display Instrumentation	Operating Time	1 Year	1.1 Years	Note 2	J-30 Note 3	Simultaneous Test	None
Plant ID No. ZS607	Temperature (°F)	221.0	391.0	C-314	J-30	Simultaneous Test	None
Component: Limit Switch	Pressure (PSIA)	19.76	133.7	C-314	J-30	Simultaneous Test	None
Manufacturer: NAMCO	Relative Humidity (%)	100.0	100.0	A	J-30	Simultaneous Test	None
Model Number: EA-180 Note 1	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Valve Position Indication	Radiation	1.0×10^6 RADS	2.04×10^8 RADS	T	J-30	Sequential Test, Analysis	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	19.13 Years Note 4	I	J-30 CAL-54	Sequential Test, Analysis	None
Service: Steam Generator 1 Sample Isolation Valve	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 314							
Flood Level Elev: N/A Above Flood Level: N/A							
Needed for: Hot Shutdown <input checked="" type="checkbox"/> Cold Shutdown <input checked="" type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-051A
Rev.: 1

NOTES

Prepared by: Senia Cooper Date 12-15-82
Checked by: Paul W. Lynde Date 12-17-82

1. This component replaces a Model D2400X in accordance with FCR 82-101.
2. One-year operating time is used as a conservative maximum.
3. The test subjected the limit switch to 3 transients. The first transient lasted for 4 hours and 20 minutes, with maximum temperature of 391°F and a maximum pressure of 133.7 psia, ending with a return to ambient. The second transient immediately followed the first, lasting for 4 hours and 16 minutes, with maximum temperature of 391°F and maximum pressure of 133.7 psia, ending with a return to ambient. The limit switch was maintained at ambient for 18 hours and 19 minutes, and then was subjected to the third transient, which reached a maximum temperature of 320°F and a maximum pressure of 89.7 psia, and lasted for 2 hours and 55 minutes. At 26 hours and 55 minutes, the conditions are 258°F and 89.7 psia. After approximately 4 days, the temperature and pressure was 200°F and 64.7 psia and remained stable for the duration of the test (25 days). The temperature and pressure in Room 314 peak at 221°F and 19.76 psia in 1.55 seconds and 0.086 seconds, respectively. The conditions return to ambient in 6.7 minutes.

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

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.

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SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-052
Rev.: 0

Prepared by: N.V. Bellamy Date: 9-29-01
Checked by: John B. White Date: 9/29/01

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Display Instrumentation	Operating Time	1 Year	Note 1	Note 3	N/A	N/A	Note 2
Plant ID No. ZS6831A	Temperature (°F)	283.0	Note 1	H, X	N/A	N/A	Note 2
Component: Limit Switch	Pressure (PSIA)	52.0	Note 1	G, X	N/A	N/A	Note 2
Manufacturer: NAMCO	Relative Humidity (%)	100.0	Note 1	A	N/A	N/A	Note 2
Model Number: D2400X	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Note 1	A	N/A	N/A	Note 2
Function: Valve Position Indication	Radiation	1.7 x 10 ⁷ RADS	Note 1	CAL-44	N/A	N/A	Note 2
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	Note 1	I	N/A	N/A	Note 2
Service: Demineralize Water to Containment Isolation Valve	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Containment Rm. 316							
Flood Level Elev: 572'-2"							
Above Flood Level: Yes							
Needed for: Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input checked="" type="checkbox"/>							

Facility: Davis-Besse Unit 1

Docket: 50-346

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No. 301H-052A

Rev.: 0

NOTES

Prepared by: W. V. Bellando Date 9.29.81

Checked by: Kenneth D. Novak Date 9/29/81

1. This component is a limit switch which is used for valve position indication only. The harsh environment seen by this component is due to a loss of coolant accident.

The limit switch is used to monitor the valve position of DW6831A (an air-operated demineralizer water to containment isolation valve). The valve is an isolation valve for containment penetration 21. A second isolation valve for this penetration, DW6831B, is located outside containment and would not be subjected to the harsh environment. Both valves are closed during normal plant operations.

Failure of limit switch ZS6831A will not mislead the operator due to the availability of ZS6831B on the second isolation valve. This limit switch would not be affected by the postulated LOCA conditions and would be monitored by the operator to determine the status of penetration 21. Failure of limit switch 6831A would not degrade other safety-related functions since it does not provide a control function. Based on the above discussion, interim operation is justified.

2. This component is scheduled for replacement during the first refueling outage subsequent to component on-site availability.
3. One year operating time is used as a conservative maximum specification.

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Prepared by: A. Lane
Checked by: M. Oxall

Date: 11/1/82
Date: 11/2/83

Index No.: 301H-052
Rev.: 2

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Display Instrumentation	Operating Time	1 Year	1.1 Years	Note 2	Note 3 J-30	Simultaneous Test	None
Plant ID No. ZS6831A	Temperature (°F)	283.0	391.0	H, X	J-30	Simultaneous Test	None
Component: Limit Switch	Pressure (PSIA)	52.0	133.7	G, X	J-30	Simultaneous Test	None
Manufacturer: NAMCO	Relative Humidity (%)	100.0	100.0	A	J-30	Simultaneous Test	None
Model Number: EA-180 Note 1	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	J-30 CAL-40 Note 5	Simultaneous Test, Analysis	None
Function: Valve Position Indication	Radiation	1.7 x 10 ⁷ RADS	2.04 x 10 ⁸ RADS Note 4	CAL-44	J-30	Sequential Test, Analysis	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	8.43 Years Note 4	I	J-30 CAL-54	Sequential Test, Analysis	None
Service: Demineralize Water to Containment Isolation Valve	Submergence	572'-2"	586'-0"	B	M-9	N/A	None
Location: Containment							
Flood Level Elev: 572'-2"							
Above Flood Level: Yes							
Needed for:							
Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input checked="" type="checkbox"/>							

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SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-052A
Rev.: 2

NOTES

Prepared by: B. L. [Signature] Date 11/1/03
Checked by: J. McDonald Date 11/2/03

1. This component replaces a Model D2400X in accordance with FCR 82-101.
2. One-year operating time is used as a conservative maximum.
3. The test subjected the limit switch to 3 transients. The first transient lasted for 4 hours and 20 minutes, with maximum temperature of 391°F and a maximum pressure of 133.7 psia, ending with a return to ambient. The second transient immediately followed the first, lasting for 4 hours and 16 minutes, with maximum temperature of 391°F and maximum pressure of 133.7 psia, ending with a return to ambient. The limit switch was maintained at ambient for 18 hours and 19 minutes, and then was subjected to the third transient, which reached a maximum temperature of 320°F and a maximum pressure of 89.7 psia, and lasted for 2 hours and 55 minutes. At 26 hours and 55 minutes, the conditions are 258°F and 89.7 psia. After approximately 4 days, the temperature and pressure was 200°F and 64.7 psia and remained stable for the duration of the test (25 days). The temperature and pressure inside containment peak at 283°F and 52.0 psia in 17 minutes and 50 seconds, respectively. At 24 hours and 55 minutes, conditions are 148°F and 18.7 psia; at 26 hours and 55 minutes, conditions are 140°F and 17.7 psia; and after approximately 4 days, conditions are 124°F and 16.5 psia. The conditions returned to ambient in 7 days.

Based on this information, it can be concluded that the laboratory test subjected the limit switch to an overall more severe environment than that which would result from the postulated HELB. Since the limit switch remained functional throughout the test, it can be concluded that the limit switch will remain functional during and after exposure to the accident environment that would result from the postulated HELB. (Reference G&H.)

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-053
Rev.: 2

Prepared by:

Checked by:

Date:

Date:

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Display Instrumentation	Operating Time	1 Year	40 Years	Note 3	Note 2	Analysis	None
Plant ID No. ZS6831B	Temperature (°F)	192.0	Exempt	C-208	Note 1	N/A	None
Component: Limit Switch							
Manufacturer: NAMCO	Pressure (PSIA)	16.25	Exempt	C-208	Note 1	N/A	None
Model Number: D2400X							
Function: Valve Position Indication	Relative Humidity (%)	100.0	Exempt	A	Note 1	N/A	None
Accuracy: Spec: N/A Demon: N/A							
Service: Demineralize Water to Containment Isolation Valve	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 208	Radiation	1.97 x 10 ⁶ RADS	1.0 x 10 ⁷ RADS	T	CAL-76 Note 2	Analysis	None
Flood Level Elev: N/A Above Flood Level: N/A	Aging	40 Years	40 Years	I	CAL-76 Note 2	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

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SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-053A
Rev.: 2

NOTES

Prepared by: N. Lewis Date 11/1/81
Checked by: Shirley Date 11/5/81

1. This component is a limit switch which is used for valve position indication only. The harsh environment seen by this component is due to a main feedline break.

The component is exempted from qualification since its associated valve would not be required to mitigate a high energy line break. The operator will not monitor this valve's position during the accident because the valve's only safety-related function is the isolation of containment during a loss of coolant accident. For this reason, limit switch failure will not mislead the operator. Failure of the limit switch would not degrade other safety-related functions since it does not provide any control function.

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

Index No.: 301H-053B
Rev.: 2

Date: 11/1/6
Date: 11/2/83

Component:	<u>Limit Switch</u>
Model No.:	D2400X

[illegible]

Material & Parts List Reference: V-29B, ROC-29C

* Only non-metallic parts are listed. Metallic parts are not considered sensitive to Thermal Aging and are not affected by radiation. The materials of these parts differ according to the date of manufacture. Since we are unable to determine the components manufacture date, all possible materials have been listed.

** Thermal aging life and radiation tolerance from more limiting BUNA-N.

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SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-054
Rev.: 2

Prepared by: N Lewis Date: 11/1/82
Checked by: W. J. Long Date: 11/2/82

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Display Instrumentation	Operating Time	1 Year	40 Years	Note 3	Note 1	Analysis	None
Plant ID No. ZSDH13A							
Component: Limit Switch	Temperature (°F)	155.0	Exempt	C-113	Note 1	N/A	None
Manufacturer: NAMCO							
Model Number: D2400X	Pressure (PSIA)	16.06	Exempt	C-113	Note 1	N/A	None
Function: Valve Position Indication							
Accuracy: Spec: N/A Demon: N/A	Relative Humidity (%)	100.0	Exempt	A	Note 1	N/A	None
Service: Decay Heat Cooler 2 Bypass Valve							
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 113							
	Radiation	7.1×10^6 RADS	1.0×10^7 RADS	T	CAL-76 Note 2	Analysis	None
Flood Level Elev: N/A							
Above Flood Level: N/A	Aging	40 Years	15.1 Years	I	CAL-76 Note 2	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

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SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-054A
Rev.: 2

NOTES

Prepared by: N Lewis Date 11/1/93
Checked by: Eric D. Smith Date 11/2/93

1. The component is a limit switch which is used for valve position indication only. The harsh environment seen by this component is due to a main feedline break.

The component is exempted from qualification since its associated valve would not be required to mitigate a high energy line break. The operator will not monitor this valve's position indication during the accident since it only performs a safety-related function during a loss of coolant accident. For this reason, limit switch failure will not mislead the operator. Failure of the limit switch would not degrade other safety-related functions since it does not provide any control function.

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

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COMPONENT MATERIALS EVALUATION SHEET

Index No.: 301H-054B
Rev.: 2

Prepared by:

Date:

Checked by:

Date:

Plant I.D. No.: ZSDH13A

Component: Limit Switch

Manufacturer: NAMCO

Model No.: D2400X

THERMAL AGING

RADIATION

Parts List *	Materials List *	Qualification	Reference	Qualification	Reference
Contact Block	Polyester, Glass Filled	40 Years @ 266°F	CAL-76	1 x 10 ⁹ RADS	CAL-76
Contact Lever	Polyester, Glass Filled	40 Years @ 266°F	CAL-76	1 x 10 ⁹ RADS	CAL-76
Top & Bottom Cover Gaskets	BUNA-N-Coated Nylon **	15.1 Years @ 122°F	CAL-76	1 x 10 ⁷ RADS	CAL-76
Contact Lever	Alkyd, Mineral Filled	Greater than 40 Years @ 300°F	CAL-76	1 x 10 ⁹ RADS	CAL-76
Top & Bottom Cover Gaskets	Koroseal	40 Years @ 140°F	CAL-76	1 x 10 ⁷ RADS	CAL-76
Top & Bottom Cover Gaskets	Polyvinyl Chloride Plastic	40 Years @ 140°F	CAL-76	1 x 10 ⁷ RADS	CAL-76

Material & Parts List Reference: V-29B, ROC-29C

* Only non-metallic parts are listed. Metallic parts are not considered sensitive to Thermal Aging and are not affected by radiation. The materials of these parts differ according to the date of manufacture. Since we are unable to determine the components manufacture date, all possible materials have been listed.

** Thermal aging life and radiation tolerance from more limiting BUNA-N.

Facility: Davis-Besse Unit 1

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SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-055

Rev.: 2

Prepared by:

N Lewis

Date:

11/1/83

Checked by:

James Land

Date:

11/1/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Display Instrumentation	Operating Time	1 Year	40 Years	Note 3	Note 1	Analysis	None
Plant ID No. ZSDH13B	Temperature (°F)	155.0	Exempt	C-113	Note 1	N/A	None
Component: Limit Switch							
Manufacturer: NAMCO	Pressure (PSIA)	16.06	Exempt	C-113	Note 1	N/A	None
Model Number: D2400X							
Function: Valve Position Indication	Relative Humidity (%)	100.0	Exempt	A	Note 1	N/A	None
Accuracy: Spec: N/A Demon: N/A							
Service: Decay Heat Cooler 1 Bypass Valve	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 113	Radiation	7.1×10^6 RADS	1.0×10^7 RADS	T	CAL-76 Note 2	Analysis	None
Flood Level Elev: N/A							
Above Flood Level: N/A	Aging	40 Years	15.1 Years	I	CAL-76 Note 2	Analysis	None
Needed for:							
Hot Shutdown <input checked="" type="checkbox"/>	Submergence	N/A	N/A	N/A	N/A	N/A	None
Cold Shutdown <input checked="" type="checkbox"/>							

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SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-055A
Rev.: 2

NOTES

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

1. The component is a limit switch which is used for valve position indication only. The harsh environment seen by this component is due to a main feedline break.

The component is exempted from qualification since its associated valve would not be required to mitigate a high energy line break. The operator will not monitor this valve's position indication during the accident since it only performs a safety-related function during a loss of coolant accident. For this reason, limit switch failure will not mislead the operator. Failure of the limit switch would not degrade other safety-related functions since it does not provide any control function.

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

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COMPONENT MATERIALS EVALUATION SHEET

Index No.: 301H-055B
Rev.: 2

Prepared by: N. L. Linn Date: 11/1/83
Checked by: J. McDonald Date: 4/2/83

Plant I.D. No.: ZSDH13B
Manufacturer: NAMCO

Component: Limit Switch
Model No.: D2400X

		THERMAL AGING		RADIATION	
Parts List *	Materials List *	Qualification	Reference	Qualification	Reference
Contact Block	Polyester, Glass Filled	40 Years @ 266°F	CAL-76	1×10^9 RADS	CAL-76
Contact Lever	Polyester, Glass Filled	40 Years @ 266°F	CAL-76	1×10^9 RADS	CAL-76
Top & Bottom Cover Gaskets	BUNA-N-Coated Nylon **	15.1 Years @ 122°F	CAL-76	1×10^7 RADS	CAL-76
Contact Lever	Alkyd, Mineral Filled	Greater than 40 Years @ 300°F	CAL-76	1×10^9 RADS	CAL-76
Top & Bottom Cover Gaskets	Koroseal	40 Years @ 140°F	CAL-76	1×10^7 RADS	CAL-76
Top & Bottom Cover Gaskets	Polyvinyl Chloride Plastic	40 Years @ 140°F	CAL-76	1×10^7 RADS	CAL-76

Material & Parts List Reference: V-29B, ROC-29C

* Only non-metallic parts are listed. Metallic parts are not considered sensitive to Thermal Aging and are not affected by radiation. The materials of these parts differ according to the date of manufacture. Since we are unable to determine the components manufacture date, all possible materials have been listed.

** Thermal aging life and radiation tolerance from more limiting BUNA-N.

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SYSTEM COMPONENT EVALUATION WORKSHEET

Index: 301H-056
Rev.: 2

Prepared by: N. Lewis Date: 11/1/82
Checked by: [Signature] Date: 11/2/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Display Instrumentation	Operating Time	1 Year	40 Years	Note 3	Note 2	Analysis	None
Plant ID No. ZSDH14A	Temperature (°F)	155.0	Exempt	C-113	Note 1	N/A	None
Component: Limit Switch	Pressure (PSIA)	16.06	Exempt	C-113	Note 1	N/A	None
Manufacturer: NAMCO	Relative Humidity (%)	100.0	Exempt	A	Note 1	N/A	None
Model Number: D2400X	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Valve Position Indication	Radiation	7.1×10^6 RADS	1.0×10^7 RADS	T	CAL-76 Note 2	Analysis	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	15.1 Years	I	CAL-76 Note 2	Analysis	None
Service: Decay Heat Cooler 2 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"/>							

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SYSTEM COMPONENT EVALUATION WORKSHEET

Index No. 301H-056A
Rev.: 2

NOTES

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

1. The component is a limit switch which is used for valve position indication only. The harsh environment seen by this component is due to a main feedline break.

The component is exempted from qualification since its associated valve would not be required to mitigate a high energy line break. The operator will not monitor this valve's position indication during the accident since it only performs a safety-related function during a loss of coolant accident. For this reason, limit switch failure will not mislead the operator. Failure of the limit switch would not degrade other safety-related functions since it does not provide any control function.

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

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Docket: 50-346

COMPONENT MATERIALS EVALUATION SHEET

Index No.: 301H-056B
Rev.: 2

Prepared by: N. Lee Date: 4/1/83
Checked by: J. MacLeod Date: 4/2/83

Plant I.D. No.: ZSDH14A
Manufacturer: NAMCO

Component: Limit Switch
Model No.: D2400X

		THERMAL AGING		RADIATION	
Parts List *	Materials List *	Qualification	Reference	Qualification	Reference
Contact Block	Polyester, Glass Filled	40 Years @ 266°F	CAL-76	1×10^9 RADS	CAL-76
Contact Lever	Polyester, Glass Filled	40 Years @ 266°F	CAL-76	1×10^9 RADS	CAL-76
Top & Bottom Cover Gaskets	BUNA-N-Coated Nylon **	15.1 Years @ 122°F	CAL-76	1×10^7 RADS	CAL-76
Contact Lever	Alkyd, Mineral Filled	Greater than 40 Years @ 300°F	CAL-76	1×10^9 RADS	CAL-76
Top & Bottom Cover Gaskets	Koroseal	40 Years @ 140°F	CAL-76	1×10^7 RADS	CAL-76
Top & Bottom Cover Gaskets	Polyvinyl Chloride Plastic	40 Years @ 140°F	CAL-76	1×10^7 RADS	CAL-76

Material & Parts List Reference: V-29B, ROC-29C

* Only non-metallic parts are listed. Metallic parts are not considered sensitive to Thermal Aging and are not affected by radiation. The materials of these parts differ according to the date of manufacture. Since we are unable to determine the components manufacture date, all possible materials have been listed.

** Thermal aging life and radiation tolerance from more limiting BUNA-N.

Facility: s-Besse Unit 1
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SYSTEM COMPONENT EVALUATION WORKSHEET

Index 301H-057
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: Display Instrumentation	Operating Time	1 Year	40 Years	Note 3	Note 2	Analysis	None
Plant ID No. ZSDH14A-1	Temperature (°F)	155.0	Exempt	C-113	Note 1	N/A	None
Component: Limit Switch	Pressure (PSIA)	16.06	Exempt	C-113	Note 1	N/A	None
Manufacturer: NAMCO	Relative Humidity (%)	100.0	Exempt	A	Note 1	N/A	None
Model Number: D2400X	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Valve Position Indication	Radiation	7.1 x 10 ⁶ RADS	1.0 x 10 ⁷ RADS	T	CAL-76 Note 2	Analysis	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	15.1 Years	I	CAL-76 Note 2	Analysis	None
Service: Decay Heat Cooler 2 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 type="checkbox"/>							
Cold Shutdown <input checked="" type="checkbox"/>							

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Docket: 50-346

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No. 301H-057A
Rev.: 2

NOTES

Prepared by: N Lewis Date 11/1/13
Checked by: G. Anderson Date 11/2/13

1. The component is a limit switch which is used for valve position indication only. The harsh environment seen by this component is due to a main feedline break.

The component is exempted from qualification since its associated valve would not be required to mitigate a high energy line break. The operator will not monitor this valve's position indication during the accident since it only performs a safety-related function during a loss of coolant accident. For this reason, limit switch failure will not mislead the operator. Failure of the limit switch would not degrade other safety-related functions since it does not provide any control function.

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

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

COMPONENT MATERIALS EVALUATION SHEET

Index No.: 301H-057B
Rev.: 2

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

Plant I.D. No.: ZSDH14A-1
Manufacturer: NAMCO

Component: Limit Switch
Model No.: D2400X

		THERMAL AGING		RADIATION	
Parts List *	Materials List *	Qualification	Reference	Qualification	Reference
Contact Block	Polyester, Glass Filled	40 Years @ 266°F	CAL-76	1×10^9 RADS	CAL-76
Contact Lever	Polyester, Glass Filled	40 Years @ 266°F	CAL-76	1×10^9 RADS	CAL-76
Top & Bottom Cover Gaskets	BUNA-N-Coated Nylon **	15.1 Years @ 122°F	CAL-76	1×10^7 RADS	CAL-76
Contact Lever	Alkyd, Mineral Filled	Greater than 40 Years @ 300°F	CAL-76	1×10^9 RADS	CAL-76
Top & Bottom Cover Gaskets	Koroseal	40 Years @ 140°F	CAL-76	1×10^7 RADS	CAL-76
Top & Bottom Cover Gaskets	Polyvinyl Chloride Plastic	40 Years @ 140°F	CAL-76	1×10^7 RADS	CAL-76

Material & Parts List Reference: V-29B, ROC-29C

* Only non-metallic parts are listed. Metallic parts are not considered sensitive to Thermal Aging and are not affected by radiation. The materials of these parts differ according to the date of manufacture. Since we are unable to determine the components manufacture date, all possible materials have been listed.

** Thermal aging life and radiation tolerance from more limiting BUNA-N.

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index: 301H-058
 Rev.: 2

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

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Display Instrumentation	Operating Time	1 Year	40 Years	Note 3	Note 2	Analysis	None
Plant ID No. ZSDH14B	Temperature (°F)	155.0	Exempt	C-113	Note 1	N/A	None
Component: Limit Switch	Pressure (PSIA)	16.06	Exempt	C-113	Note 1	N/A	None
Manufacturer: NAMCO	Relative Humidity (%)	100.0	Exempt	A	Note 1	N/A	None
Model Number: D2400X	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Valve Position Indication	Radiation	7.1×10^6 RADS	1.0×10^7 RADS	T	CAL-76 Note 2	Analysis	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	15.1 Years	I	CAL-76 Note 2	Analysis	None
Service: Decay Heat Removal Cooler 1 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: -Besse Unit 1
Docket: 50-346

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No. 301H-058A
Rev.: 2

NOTES

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

1. The component is a limit switch which is used for valve position indication only. The harsh environment seen by this component is due to a main feedline break.

The component is exempted from qualification since its associated valve would not be required to mitigate a high energy line break. The operator will not monitor this valve's position indication during the accident since it only performs a safety-related function during a loss of coolant accident. For this reason, limit switch failure will not mislead the operator. Failure of the limit switch would not degrade other safety-related functions since it does not provide any control function.

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

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

COMPONENT MATERIALS EVALUATION SHEET

Index No.: 301H-058B
Rev.: 2

Prepared by:

W. J. MacDonald

Date:

11/1/82

Checked by:

Date:

4/2/83

Plant I.D. No.: ZSDH14B

Component: Limit Switch

Manufacturer: NAMCO

Model No.: D2400X

THERMAL AGING

RADIATION

Parts List *	Materials List *	Qualification	Reference	Qualification	Reference
Contact Block	Polyester, Glass Filled	40 Years @ 266°F	CAL-76	1 x 10 ⁹ RADS	CAL-76
Contact Lever	Polyester, Glass Filled	40 Years @ 266°F	CAL-76	1 x 10 ⁹ RADS	CAL-76
Top & Bottom Cover Gaskets	BUNA-N-Coated Nylon **	15.1 Years @ 122°F	CAL-76	1 x 10 ⁷ RADS	CAL-76
Contact Lever	Alkyd, Mineral Filled	Greater than 40 Years @ 300°F	CAL-76	1 x 10 ⁹ RADS	CAL-76
Top & Bottom Cover Gaskets	Koroseal	40 Years @ 140°F	CAL-76	1 x 10 ⁷ RADS	CAL-76
Top & Bottom Cover Gaskets	Polyvinyl Chloride Plastic	40 Years @ 140°F	CAL-76	1 x 10 ⁷ RADS	CAL-76

Material & Parts List Reference: V-29B, ROC-29C

* Only non-metallic parts are listed. Metallic parts are not considered sensitive to Thermal Aging and are not affected by radiation. The materials of these parts differ according to the date of manufacture. Since we are unable to determine the components manufacture date, all possible materials have been listed.

** Thermal aging life and radiation tolerance from more limiting BUNA-N.

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No. 301H-059
Rev.: 2

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

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Display Instrumentation	Operating Time	1 Year	40 Years	Note 3	Note 2	Analysis	None
Plant ID No. ZSDH14B-1	Temperature (°F)	155.0	Exempt	C-113	Note 1	N/A	None
Component: Limit Switch	Pressure (PSIA)	16.06	Exempt	C-113	Note 1	N/A	None
Manufacturer: NAMCO	Relative Humidity (%)	100.0	Exempt	A	Note 1	N/A	None
Model Number: D2400X	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Valve Position Indication	Radiation	7.1 x 10 ⁶ RADS	1.0 x 10 ⁷ RADS	T	CAL-76 Note 2	Analysis	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	15.1 Years	I	CAL-76 Note 2	Analysis	None
Service: Decay Heat Cooler 1 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 type="checkbox"/> Cold Shutdown <input checked="" type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No. 301H-059A
Rev.: 2

NOTES

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

1. The component is a limit switch which is used for valve position indication only. The harsh environment seen by this component is due to a main feedline break.

The component is exempted from qualification since its associated valve would not be required to mitigate a high energy line break. The operator will not monitor this valve's position indication during the accident since it only performs a safety-related function during a loss of coolant accident. For this reason, limit switch failure will not mislead the operator. Failure of the limit switch would not degrade other safety-related functions since it does not provide any control function.

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

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

COMPONENT MATERIALS EVALUATION SHEET

Index No.: 301H-059B
Rev.: 2

Prepared by:

[Signature]

Date:

11/1/83

Checked by:

[Signature]

Date:

11/2/83

Plant I.D. No.: ZSDH14B-1

Component: Limit Switch

Manufacturer: NAMCO

Model No.: D2400X

THERMAL AGING

RADIATION

Parts List *	Materials List *	Qualification	Reference	Qualification	Reference
Contact Block	Polyester, Glass Filled	40 Years @ 266°F	CAL-76	1×10^9 RADS	CAL-76
Contact Lever	Polyester, Glass Filled	40 Years @ 266°F	CAL-76	1×10^9 RADS	CAL-76
Top & Bottom Cover Gaskets	BUNA-N-Coated Nylon **	15.1 Years @ 122°F	CAL-76	1×10^7 RADS	CAL-76
Contact Lever	Alkyd, Mineral Filled	Greater than 40 Years @ 300°F	CAL-76	1×10^9 RADS	CAL-76
Top & Bottom Cover Gaskets	Koroseal	40 Years @ 140°F	CAL-76	1×10^7 RADS	CAL-76
Top & Bottom Cover Gaskets	Polyvinyl Chloride Plastic	40 Years @ 140°F	CAL-76	1×10^7 RADS	CAL-76

Material & Parts List Reference: V-29B, ROC-29C

* Only non-metallic parts are listed. Metallic parts are not considered sensitive to Thermal Aging and are not affected by radiation. The materials of these parts differ according to the date of manufacture. Since we are unable to determine the components manufacture date, all possible materials have been listed.

** Thermal aging life and radiation tolerance from more limiting BUNA-N.

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-060

Rev.: 2

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

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification	Outstanding
	Parameter	Specification	Qualification	Specification	Qualification	Method	Items
System: Display Instrumentation	Operating Time	1 Year	1.1 Years	Note 2	J-30 Note 3	Simultaneous Test	None
Plant ID No. ZSICS11A	Temperature (°F)	344.0	391.0	C-602	J-30	Simultaneous Test	None
Component: Limit Switch	Pressure (PSIA)	20.0	133.7	C-602	J-30	Simultaneous Test	None
Manufacturer: NAMCO	Relative Humidity (%)	100.0	100.0	A	J-30	Simultaneous Test	None
Model Number: EA-180 Note 1	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Valve Position Indication	Radiation	1.86×10^4 RADS	2.04×10^8 RADS	T	J-30	Sequential Test, Analysis	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	19.1 Years Note 4	I	J-30 CAL-54	Sequential Test, Analysis	None
Service: Steam Generator #2 Atmospheric Vent Valve	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 602							
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
Socket: 50-346

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-060A
Rev.: 2

NOTES

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

- . This component replaces a Model LSB2B4N in accordance with FCR 82-101.
- . One-year operating time is used as a conservative maximum.
- 1. The test subjected the limit switch to 3 transients. The first transient lasted for 4 hours and 20 minutes, with maximum temperature of 391°F and a maximum pressure of 133.7 psia, ending with a return to ambient. The second transient immediately followed the first, lasting for 4 hours and 16 minutes, with maximum temperature of 391°F and maximum pressure of 133.7 psia, ending with a return to ambient. The limit switch was maintained at ambient for 18 hours and 19 minutes, and then was subjected to the third transient, which reached a maximum temperature of 320°F and a maximum pressure of 89.7 psia, and lasted for 2 hours and 55 minutes. At 26 hours and 55 minutes, the conditions are 258°F and 89.7 psia. After approximately 4 days, the temperature and pressure was 200°F and 64.7 psia and remained stable for the duration of the test (25 days). The temperature and pressure inside containment peak at 283°F and 52.0 psia in 17 minutes and 50 seconds, respectively. At 24 hours and 55 minutes, conditions are 148°F and 18.7 psia; at 26 hours and 55 minutes, conditions are 140°F and 17.7 psia; and after approximately 4 days, conditions are 124°F and 16.5 psia. The conditions returned to ambient in 7 days.

Based on this information, it can be concluded that the laboratory test subjected the limit switch to an overall more severe environment than that which would result from the postulated HELB. Since the limit switch remained functional throughout the test, it can be concluded that the limit switch will remain functional during and after exposure to the accident environment that would result from the postulated HELB. (Reference C-602.)

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No. 301H-060
 Rev.: 2

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

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Display Instrumentation	Operating Time	1 Year	36 Years	Note 5	Note 3	Analysis	Note 1
Plant ID No. ZSICS11A	Temperature (°F)	344.0	Note 2	C-602	N/A	N/A	Note 1
Component: Limit Switch	Pressure (PSIA)	20.0	Note 2	C-602	N/A	N/A	Note 1
Manufacturer: Microswitch	Relative Humidity (%)	100.0	Note 2	A	N/A	N/A	Note 1
Model Number: LSB2B4N	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Valve Position Indication	Radiation	1.86 x 10 ⁴ RADS	1.0 x 10 ⁷ RADS	T	CAL-77 Note 3	Analysis	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	36 Years Note 1	I	CAL-77 Note 3	Analysis	Note 1
Service: Steam Generator #2 Atmospheric Vent Valve	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 602							
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: Is-Besse Unit 1
Docket: 50-346

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-060A
Rev.: 2

Prepared by: N Lewis Date 11/1/82
Checked by: SM Donald Date 11/2/82

NOTES

1. This component is scheduled for replacement during the first refueling outage subsequent to component on-site availability.
2. This limit switch functions to provide valve indications only and serves no control function. Failure of the limit switch will not affect operation of the atmospheric vent valves. Failure of the atmospheric vent valves' solenoid valve in the harsh environment would cause the atmospheric vent valves to move to their fail-safe closed position. Failure of the limit switches will cause loss of valve position indication only. Once the environmental conditions have returned to normal, operation of the vent valve is necessary for plant cooldown. This can be accomplished by manual operation and repair of the limit switch. Failure of the limit switch will not impact safety-related functions. Based on the above discussion, interim plant operation is justified until component replacement can be accomplished.
3. Materials evaluation conducted; materials sensitive to radiation and/or thermal aging summarized on attached evaluation.
4. With grease lubricants, the effect of exposure to continuous operating temperature is for the lubricant to dry out. The continuous exposure thermal aging temperature is 104°F which is well within the operating range capability of hydrocarbon grease. This limit switch will have to be periodically inspected in accordance with the plant maintenance and replacement schedules. At this time, the limit switch lubricant will be inspected for evidence of breakdown and new lubricant will be added as necessary.
5. One-year operating time is used as a conservative maximum specification.

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

COMPONENT MATERIAL EVALUATION SHEET

Index No. 301H-060B
Rev.: 2

Prepared by: N Lewis Date: 11/1/83
Checked by: G. J. J. J. Date: 11/24/83

Plant I.D. No.: ZSICS11A
Manufacturer: Microswitch

Component: Limit Switch
Model No.: LSB2B4N

		THERMAL AGING		RADIATION	
Parts List *	Materials List *	Qualification	Reference	Qualification	Reference
Top Rotary Shaft	440F Stainless Steel	Not Sensitive	CAL-77	Not Affected	CAL-77
Seal	Viton A	40 Years @ 265°F	CAL-77	4.0×10^7 RADS	CAL-77
Cover	ARC Resistant Phenolic	40 Years @ 230°F	CAL-77	1.0×10^8 RADS	CAL-77
Case	ARC Resistant Phenolic	40 Years @ 230°F	CAL-77	1.0×10^8 RADS	CAL-77
Seal	Neoprene	36 Years @ 104°F	CAL-77	7.0×10^7 RADS	CAL-77
Seal	BUNA-N	40 Years @ 104°F	CAL-77	1.5×10^7 RADS	CAL-77
Housing	Glass-Filled Thermo Polyester	Greater than 40 Years @ 122°F	CAL-77	1.0×10^9 RADS	CAL-77
Cover	Glass-Filled Thermo Polyester	Greater than 40 Years @ 122°F	CAL-77	1.0×10^9 RADS	CAL-77
Carrier	ARC Resistant Phenolic	40 Years @ 230°F	CAL-77	1.0×10^8 RADS	CAL-77
Lubricant	Hydrocarbon Grease Epoxy Based Adhesive	Note 4	CAL-77	1.0×10^7 RADS	CAL-77

Material & Parts List Reference: V-28-B

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-061
Rev.: 2

Prepared by: J. L. MacDonald Date: 11/1/00
Checked by: J. L. MacDonald Date: 1/2/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Display Instrumentation	Operating Time	1 Year	36 Years	Note 5	Note 3	Analysis	Note 1
Plant ID No. ZSICS11B							
Component: Limit Switch	Temperature (°F)	262.0	Note 2	C-601	N/A	N/A	Note 1
Manufacturer: Microswitch							
Model Number: LSB2B4N	Pressure (PSIA)	17.0	Note 2	C-601	N/A	N/A	Note 1
Function: Valve Position Indication	Relative Humidity (%)	100.0	Note 2	A	N/A	N/A	Note 1
Accuracy: Spec: N/A Demon: N/A							
Service: Steam Generator #1 Atmospheric Vent Valve	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 601							
Flood Level Elev: N/A	Radiation	1.86 x 10 ⁴ RADS	1.0 x 10 ⁷ RADS	T	CAL-77 Note 3	Analysis	None
Above Flood Level: N/A	Aging	40 Years	36 Years Note 1	I	CAL-77 Note 3	Analysis	Note 1
Needed for:							
Hot Shutdown <input checked="" type="checkbox"/>	Submergence	N/A	N/A	N/A	N/A	N/A	None
Cold Shutdown <input checked="" type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index NO. 301H-061A
Rev.: 2

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

NOTES:

1. This component is scheduled for replacement during the first refueling outage subsequent to component on-site availability.
2. This limit switch functions to provide valve indications only and serves no control function. Failure of the limit switch will not affect operation of the atmospheric vent valves. Failure of the atmospheric vent valves' solenoid valve in the harsh environment would cause the atmospheric vent valves to move to their fail-safe closed position. Failure of the limit switches will cause loss of valve position indication only. Once the environmental conditions have returned to normal, operation of the vent valve is necessary for plant cooldown. This can be accomplished by manual operation and repair of the limit switch. Failure of the limit switch will not impact safety-related functions. Based on the above discussion, interim plant operation is justified until component replacement can be accomplished.
3. Materials evaluation conducted; materials sensitive to radiation and/or thermal aging summarized on attached evaluation.
4. With grease lubricants, the effect of exposure to continuous operating temperature is for the lubricant to dry out. The continuous exposure thermal aging temperature is 104°F which is well within the operating range capability of hydrocarbon grease. This limit switch will have to be periodically inspected in accordance with the plant maintenance and replacement schedules. At this time, the limit switch lubricant will be inspected for evidence of breakdown and new lubricant will be added as necessary.
5. One-year operating time is used as a conservative maximum specification.

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

COMPONENT MATERIAL EVALUATION SHEET

Index No. 801H-061B
Rev.: 2

Prepared by: N Lewis

Date: 11/1/83

Checked by: James D. ...

Date: 11/2/83

Plant I.D. No.: ZSICS11A

Component: Limit Switch

Manufacturer: Microswitch

Model No.: LSB2B4N

		THERMAL AGING		RADIATION	
Parts List *	Materials List *	Qualification	Reference	Qualification	Reference
Top Rotary Shaft	440F Stainless Steel	Not Sensitive	CAL-77	Not Affected	CAL-77
Seal	Viton A	40 Years @ 265°F	CAL-77	4.0×10^7 RADS	CAL-77
Cover	ARC Resistant Phenolic	40 Years @ 230°F	CAL-77	1.0×10^8 RADS	CAL-77
Case	ARC Resistant Phenolic	40 Years @ 230°F	CAL-77	1.0×10^8 RADS	CAL-77
Seal	Neoprene	36 Years @ 104 °F	CAL-77	7.0×10^7 RADS	CAL-77
Seal	BUNA-N	40 Years @ 104 °F	CAL-77	1.5×10^7 RADS	CAL-77
Housing	Glass-Filled Thermo Polyester	Greater than 40 Years @ 122°F	CAL-77	1.0×10^9 RADS	CAL-77
Cover	Glass-Filled Thermo Polyester	Greater than 40 Years @ 122°F	CAL-77	1.0×10^9 RADS	CAL-77
Carrier	ARC Resistant Phenolic	40 Years @ 230°F	CAL-77	1.0×10^8 RADS	CAL-77
Lubricant	Hydrocarbon Grease Epoxy Based Adhesive	Note 4	CAL-77	1.0×10^7 RADS	CAL-77

Material & Parts List Reference: V-28-B

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-061

Rev.: 2

Prepared by: N Lewis, Date: 11/1/83
Checked by: Michael J. T. Date: 11/2/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Display Instrumentation	Operating Time	1 Year	1.1 Years	Note 2	J-30	Simultaneous Test	None
Plant ID No. ZSICSl1B	Temperature (°F)	282.0	391.0	C-601	J-30	Simultaneous Test	None
Component: Limit Switch	Pressure (PSIA)	17.0	133.7	C-601	J-30	Simultaneous Test	None
Manufacturer: NAMCO	Relative Humidity (%)	100.0	100.0	A	J-30	Simultaneous Test	None
Model Number: EA-180 Note 1	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Valve Position Indication	Radiation	1.86×10^4 RADS	2.04×10^8 RADS	T	J-30	Sequential Test, Analysis	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	19.1 Years Note 4	I	J-30 CAL-54	Sequential Test, Analysis	None
Service: Steam Generator #1 Atmospheric Vent Valve	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 601	Hot Shutdown	<input checked="" type="checkbox"/>					
Flood Level Elev: N/A Above Flood Level: N/A	Cold Shutdown	<input checked="" type="checkbox"/>					
Needed for:							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-061A
Rev.: 1

NOTES

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

1. This component replaces a Model LSB2B4N in accordance with FCR 82-101.
2. One-year operating time is used as a conservative maximum.
3. The test subjected the limit switch to 3 transients. The first transient lasted for 4 hours and 20 minutes, with maximum temperature of 391°F and a maximum pressure of 133.7 psia, ending with a return to ambient. The second transient immediately followed the first, lasting for 4 hours and 16 minutes, with maximum temperature of 391°F and maximum pressure of 133.7 psia, ending with a return to ambient. The limit switch was maintained at ambient for 18 hours and 19 minutes, and then was subjected to the third transient, which reached a maximum temperature of 320°F and a maximum pressure of 89.7 psia, and lasted for 2 hours and 55 minutes. At 26 hours and 55 minutes, the conditions are 258°F and 89.7 psia. After approximately 4 days, the temperature and pressure was 200°F and 64.7 psia and remained stable for the duration of the test (25 days). The temperature and pressure inside containment peak at 283°F and 52.0 psia in 17 minutes and 50 seconds, respectively. At 24 hours and 55 minutes, conditions are 148°F and 18.7 psia; at 26 hours and 55 minutes, conditions are 140°F and 17.7 psia; and after approximately 4 days, conditions are 124°F and 16.5 psia. The conditions returned to ambient in 7 days.

Based on this information, it can be concluded that the laboratory test subjected the limit switch to an overall more severe environment than that which would result from the postulated HELB. Since the limit switch remained functional throughout the test, it can be concluded that the limit switch will remain functional during and after exposure to the accident environment that would result from the postulated HELB. (Reference C-601)

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No. 301H-062
Rev.: 0

Prepared by: N.V. Belland Date: 2.22.81
Checked by: John H. Harte Date: 9/29/81

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification	Outstanding
	Parameter	Specification	Qualification	Specification	Qualification	Method	Items
System: Display Instrumentation	Operating Time	30 Seconds	Note 1	K	N/A	N/A	Note 2
Plant ID No. ZSMU03	Temperature (°F)	192.0	Note 1	C-208	N/A	N/A	Note 2
Component: Limit Switch	Pressure (PSIA)	16.25	Note 1	C-208	N/A	N/A	Note 2
Manufacturer: NAMCO	Relative Humidity (%)	100.0	Note 1	A	N/A	N/A	Note 2
Model Number: SAL-33	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Valve Position Indication	Radiation	1.97 x 10 ⁶ RADS	Note 1	T	N/A	N/A	Note 2
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	Note 1	I	N/A	N/A	Note 2
Service: Reactor Coolant Letdown Isolation Valve	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 208							
Flood Level Elev: N/A Above Flood Level: N/A							
Needed for: Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input checked="" type="checkbox"/>							

Facility: Besse Unit 1
Docket: 50-346

SYSTEM COMPONENT EVALUATION WORKSHEET

Index: 01H-062A
Rev.: 0

NOTES

Prepared by: W. I. Bellows Date 10.7.81
Checked by: Rennett D. Thong Date 10/2/81

1. This component is a limit switch which is used for valve position indication only. The harsh environment seen by this component is due to a main feedline break.

This component's associated valve would not be required to mitigate a high energy line break. The operator will not monitor this valve's position indication during the accident because the valve's only safety-related function is the isolation of containment during a loss of coolant accident. For this reason, limit switch failure will not mislead the operator. Failure of the limit switch would not degrade other safety-related functions since it does not provide any control function. Based on the above discussion, interim operation is justified.

2. This component is scheduled for replacement during the first refueling outage subsequent to component on-site availability.

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-062
Rev.: 1

Prepared by: Julia Cooper Date: 12-15-82
Checked by: John W. Lybster Date: 12-17-82

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Display Instrumentation	Operating Time	1 Year	1.1 Years	K	J-30 Note 2	Simultaneous Test	None
Plant ID No. ZSMU03	Temperature (°F)	192.0	391.0	C-208	J-30	Simultaneous Test	None
Component: Limit Switch	Pressure (PSIA)	16.25	133.7	C-208	J-30	Simultaneous Test	None
Manufacturer: NAMCO	Relative Humidity (%)	100.0	100.0	A	J-30	Simultaneous Test	Note 2
Model Number: EA-180 Note 1	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Valve Position Indication	Radiation	1.97×10^6 RADS	2.04×10^8 RADS	T	J-30	Sequential Test, Analysis	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	19.13 Years Note 3	I	J-30 CAL-54	Sequential Test, Analysis	None
Service: Reactor Coolant Letdown Isolation Valve	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 208							
Flood Level Elev: N/A							
Above Flood Level: N/A							
Needed for: Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input checked="" type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-062A
Rev.: 1

NOTES

Prepared by: James C. [Signature] Date 12-15-82
Checked by: Paul W. [Signature] Date 12-17-82

1. This component replaces a Model SA1-33in accordance with FCR 82-101.
2. The test subjected the limit switch to 3 transients. The first transient lasted for 4 hours and 20 minutes, with maximum temperature of 391°F and a maximum pressure of 133.7 psia, ending with a return to ambient. The second transient immediately followed the first, lasting for 4 hours and 16 minutes, with maximum temperature of 391°F and maximum pressure of 133.7 psia, ending with a return to ambient. The limit switch was maintained at ambient for 18 hours and 19 minutes, and then was subjected to the third transient, which reached a maximum temperature of 320°F and a maximum pressure of 89.7 psia, and lasted for 2 hours and 55 minutes. At 26 hours and 55 minutes, the conditions are 258°F and 89.7 psia. After approximately 4 days, the temperature and pressure was 200°F and 64.7 psia and remained stable for the duration of the test (25 days). The temperature and pressure in Room 208 peak at 192°F and 16.25 psia in 7.1 seconds and 1.55 seconds, respectively. The conditions return to ambient in 20 minutes.

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

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

Facility: Davis-Besse Unit 1

Docket: 50-346

SYSTEM COMPONENT EVALUATION WORKSHEET

Index 301H-063

Rev.: 0

Prepared by: W.V. Belland Date: 9-29-81Checked by: John P. Bate Date: 9/29/81

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Display Instrumentation	Operating Time	30 Seconds	Note 1	K	N/A	N/A	Note 2
Plant ID No. ZSMU33	Temperature (°F)	198.0	Note 1	C-236	N/A	N/A	Note 2
Component: Limit Switch	Pressure (PSIA)	15.51	Note 1	C-236	N/A	N/A	Note 2
Manufacturer: NAMCO	Relative Humidity (%)	100.0	Note 1	A	N/A	N/A	Note 2
Model Number: SA1-33	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Valve Position Indication	Radiation	1.97×10^6 RADS	Note 1	T	N/A	N/A	Note 2
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	Note 1	I	N/A	N/A	Note 2
Service: Reactor Coolant Normal Warm-Up Isolation Valve	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 236							
Flood Level Elev: N/A							
Above Flood Level: N/A							
Needed for: Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input checked="" type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No. 301H-063A
Rev.: 0

NOTES

Prepared by: W. V. Bellard Date 7-29-81
Checked by: Ronald A. Moody Date 8/29/81

1. The component is a limit switch which is used for valve position indication only. The harsh environment seen by this component is due to a main feedline break.

The limit switch is used to monitor the valve position of MU33 (an air-operated reactor coolant normal MU isolation valve). In the event of a high energy line break, the solenoid valve would be exposed to the harsh environment. If the valve fails, it would move to its fail-safe position and could be manually operated to add make-up to the reactor coolant.

Failure of the limit switch ZSMU33 in the harsh environment would not mislead the operator since he would be aware of the valve's position from its manual operation.

Failure of the limit switch would not degrade other safety-related functions since it does not provide a control function. Based on the above discussion, interim operation is justified.

2. This component is scheduled for replacement during the first refueling outage subsequent to component on-site availability.

Index No.: 301H-063
Rev.: 1

Prepared by: Erma Campbell Date: 12-15-92
Checked by: Paul W. Lipke Date: 12-17-92

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Display Instrumentation	Operating Time	1 Year	1.1 Years	K	J-30 Note 2	Simultaneous Test	None
Plant ID No. ZSMU33	Temperature (°F)	198.0	391.0	C-236	J-30	Simultaneous Test	None
Component: Limit Switch							
Manufacturer: NAMCO	Pressure (PSIA)	15.51	133.7	C-236	J-30	Simultaneous Test	None
Model Number: EA-180 Note 1							
Function: Valve Position Indication	Relative Humidity (%)	100.0	100.0	A	J-30	Simultaneous Test	None
Accuracy: Spec: N/A Demon: N/A	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Service: Reactor Coolant Normal Warm-Up Isolation Valve							
Location: Auxiliary Bldg. Rm. 236	Radiation	1.97 x 10 ⁶ RADS	2.04 x 10 ⁸ RADS	T	J-30	Sequential Test, Analysis	None
Flood Level Elev: N/A Above Flood Level: N/A	Aging	40 Years	19.13 Years Note 3	I	J-30 CAL-54	Sequential Test, Analysis	None
Needed for: Hot Shutdown <input checked="" type="checkbox"/>	Submergence	N/A	N/A	N/A	N/A	N/A	None
Cold Shutdown <input checked="" type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-063A

Rev.: 1

NOTES

Prepared by: John Campbell Date 12-15-82
Checked by: Paul W. Snyder Date 12-11-82

1. This component replaces a Model SA1-33 in accordance with FCR 82-101.
2. The test subjected the limit switch to 3 transients. The first transient lasted for 4 hours and 20 minutes, with maximum temperature of 391°F and a maximum pressure of 133.7 psia, ending with a return to ambient. The second transient immediately followed the first, lasting for 4 hours and 16 minutes, with maximum temperature of 391°F and maximum pressure of 133.7 psia, ending with a return to ambient. The limit switch was maintained at ambient for 18 hours and 19 minutes, and then was subjected to the third transient, which reached a maximum temperature of 320°F and a maximum pressure of 89.7 psia, and lasted for 2 hours and 55 minutes. At 26 hours and 55 minutes, the conditions are 258°F and 89.7 psia. After approximately 4 days, the temperature and pressure was 200°F and 64.7 psia and remained stable for the duration of the test (25 days). The temperature and pressure in Room 236 peak at 198°F and 15.51 psia in 18.5 seconds and 1.7 seconds, respectively. The conditions return to ambient in 6.7 minutes.

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

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index: 301H-064
Rev.: 0

Prepared by: W. V. Bellamy Date: 7-29-81
Checked by: John S. Albate Date: 9/29/81

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Display Instrumentation	Operating Time	17 Seconds	Note 1	K	N/A	N/A	Note 2
Plant ID No. ZSMU38	Temperature (°F)	192.0	Note 1	C-208	N/A	N/A	Note 2
Component: Limit Switch	Pressure (PSIA)	16.25	Note 1	C-208	N/A	N/A	Note 2
Manufacturer: NAMCO	Relative Humidity (%)	100.0	Note 1	A	N/A	N/A	Note 2
Model Number: SA1-33	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Valve Position Indication	Radiation	1.97×10^6 RADS	Note 1	T	N/A	N/A	Note 2
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	Note 1	I	N/A	N/A	Note 2
Service: Reactor Coolant Pump Seal Return Isolation Valve	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 208							
Flood Level Elev: N/A Above Flood Level: N/A							
Needed for: Hot Shutdown <input checked="" type="checkbox"/> Cold Shutdown <input checked="" type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No. 301H-064A
Rev.: 0

NOTES

Prepared by: W.V. Bellando Date 9.29.81.
Checked by: Kenneth D. Moody Date 9/28/81

1. The component is a limit switch which is used for valve position indication only. The harsh environment seen by this component is due to a main feedline break.

The limit switch is used to monitor the valve position of MU38 (an air-operated reactor coolant pump seal return isolation valve). In the event of a high energy line break, the solenoid valve would be exposed to the harsh environment. If the valve fails, it would move to its fail-safe position and could be manually operated.

Failure of the limit switch ZSMU38 in the harsh environment would not mislead the operator since he would be aware of the valve's position from its manual operation.

Failure of the limit switch would not degrade other safety-related functions since it does not provide a control function. Based on the above discussion, interim operation is justified.

2. This component is scheduled for replacement during the first refueling outage subsequent to component on-site availability.

Facility: Davis-Besse Unit 1
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SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-064
 Rev.: 1

Prepared by: Erica Cooper Date: 12-15-82
 Checked by: Paul W. Lyndes Date: 12-17-82

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Display Instrumentation	Operating Time	1 Year	1.1 Years	K	J-30 Note 2	Simultaneous Test	None
Plant ID No. ZSMU38	Temperature (°F)	192.0	391.0	C-208	J-30	Simultaneous Test	None
Component: Limit Switch	Pressure (PSIA)	16.25	133.7	C-208	J-30	Simultaneous Test	None
Manufacturer: NAMCO	Relative Humidity (%)	100.0	100.0	A	J-30	Simultaneous Test	None
Model Number: EA-180 Note 1	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Valve Position Indication	Radiation	1.97 x 10 ⁶ RADS	2.04 x 10 ⁸ RADS	T	J-30	Sequential Test, Analysis	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	19.13 Years Note 3	I	J-30 CAL-54	Sequential Test, Analysis	None
Service: Reactor Coolant Pump Seal Return Isolation Valve	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 208							
Flood Level Elev: N/A Above Flood Level: N/A							
Needed for: Hot Shutdown <input checked="" type="checkbox"/> Cold Shutdown <input checked="" type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 30Li-064A
Rev.: 1

NOTES

Prepared by: John C. Grogan Date 12-15-82
Checked by: Paul W. Grogan Date 12-17-82

1. This component replaces a Model SA1-33 in accordance with FCR 82-101.
2. The test subjected the limit switch to 3 transients. The first transient lasted for 4 hours and 20 minutes, with maximum temperature of 391°F and a maximum pressure of 133.7 psia, ending with a return to ambient. The second transient immediately followed the first, lasting for 4 hours and 16 minutes, with maximum temperature of 391°F and maximum pressure of 133.7 psia, ending with a return to ambient. The limit switch was maintained at ambient for 18 hours and 19 minutes, and then was subjected to the third transient, which reached a maximum temperature of 320°F and a maximum pressure of 89.7 psia, and lasted for 2 hours and 55 minutes. At 26 hours and 55 minutes, the conditions are 258°F and 89.7 psia. After approximately 4 days, the temperature and pressure was 200°F and 64.7 psia and remained stable for the duration of the test (25 days). The temperature and pressure in Room 208 peak at 192°F and 16.25 psia in 7.1 seconds and 1.55 seconds, respectively. The conditions return to ambient in 20 minutes.

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

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index: 301H-065A
Rev.: 0

NOTES

Prepared by: N. V. Belleneh Date 10.2.81
Checked by: Renneth D. Moody Date 10/2/81

1. This component is a limit switch which is used for valve position indication only. The harsh environment seen by this component is due to a main feedline break.

This component's associated valve would not be required to mitigate a high energy line break. The operator will not monitor this valve's position indication during the accident because the valve's only safety-related function is the isolation of containment during a loss of coolant accident. For this reason, limit switch failure will not mislead the operator. Failure of the limit switch would not degrade other safety-related functions since it does not provide any control function. Based on the above discussion, interim operation is justified.

2. This component is scheduled for replacement during the first refueling outage subsequent to component on-site availability.

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-055
Rev.: 1

Prepared by: John C. Cooper Date: 12-15-92
Checked by: Paul W. Dyer Date: 12-17-92

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Display Instrumentation	Operating Time	1 Year	1.1 Years	K	J-30 Note 2	Simultaneous Test	None
Plant ID No. ZSMU66A	Temperature (°F)	192.0	391.0	C-208	J-30	Simultaneous Test	None
Component: Limit Switch	Pressure (PSIA)	16.25	133.7	C-208	J-30	Simultaneous Test	None
Manufacturer: NAMCO	Relative Humidity (%)	100.0	100.0	A	J-30	Simultaneous Test	None
Model Number: EA-180 Note 1	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Valve Position Indication	Radiation	1.97 x 10 ⁶ RADS	2.04 x 10 ⁸ RADS	T	J-30	Sequential Test, Analysis	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	19.1 Years Note 3	I	J-30 CAL-54	Sequential Test, Analysis	None
Service: Reactor Coolant Pump 2-1 Seal Injection Isolation Valve	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 208							
Flood Level Elev: N/A Above Flood Level: N/A							
Needed for: Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input checked="" type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-065A
Rev.: 1

NOTES

Prepared by: Jana Cuyarc Date 12-15-82
Checked by: Paul W. Linder Date 12-17-82

1. This component replaces a Model SA1-33 in accordance with FCR 82-101.
2. The test subjected the limit switch to 3 transients. The first transient lasted for 4 hours and 20 minutes, with maximum temperature of 391°F and a maximum pressure of 133.7 psia, ending with a return to ambient. The second transient immediately followed the first, lasting for 4 hours and 16 minutes, with maximum temperature of 391°F and maximum pressure of 133.7 psia, ending with a return to ambient. The limit switch was maintained at ambient for 18 hours and 19 minutes, and then was subjected to the third transient, which reached a maximum temperature of 320°F and a maximum pressure of 89.7 psia, and lasted for 2 hours and 55 minutes. At 26 hours and 55 minutes, the conditions are 258°F and 89.7 psia. After approximately 4 days, the temperature and pressure was 200°F and 64.7 psia and remained stable for the duration of the test (25 days). The temperature and pressure in Room 208 peak at 192°F and 16.25 psia in 7.1 seconds and 1.55 seconds, respectively. The conditions return to ambient in 20 minutes.

Based on this information, it can be concluded that the laboratory test subjected the limit switch to an overall more severe environment than that which would result from the postulated HELB. Since the limit switch remained functional throughout the test, it can be concluded that the limit switch will remain functional during and after exposure to the accident environment that would result from the postulated HELB. (Reference C-208.)
3. Materials and/or components sensitive to thermal aging will be replaced as per maintenance and replacement schedules to assure that associated component will maintain functional operability in harsh environments.

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-066
Rev.: 0

Prepared by: M. V. Bellamy Date: 9.29.81
Checked by: Plant H. H. H. H. Date: 9/29/81

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Display Instrumentation	Operating Time	17 Seconds	Note 1	X	N/A	N/A	Note 2
Plant ID No. ZSMU66B	Temperature (°F)	192.0	Note 1	C-208	N/A	N/A	Note 2
Component: Limit Switch	Pressure (PSIA)	16.25	Note 1	C-208	N/A	N/A	Note 2
Manufacturer: NAMCO	Relative Humidity (%)	100.0	Note 1	A	N/A	N/A	Note 2
Model Number: SAL-33	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Valve Position Indication	Radiation	1.97 x 10 ⁶ RADS	Note 1	T	N/A	N/A	Note 2
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	Note 1	I	N/A	N/A	Note 2
Service: Reactor Coolant Pump 2-2 Seal Injection Isolation Valve	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 208							
Flood Level Elev: N/A							
Above Flood Level: N/A							
Needed for:							
Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input checked="" type="checkbox"/>							

Facility: -Besse Unit 1
Docket: 50-346

SYSTEM COMPONENT EVALUATION WORKSHEET

Index 301H-066A
Rev.: 0

NOTES

Prepared by: W.V. Belland Date 10.2-81
Checked by: Kenneth L. Morley Date 10/2/81

1. This component is a limit switch which is used for valve position indication only. The harsh environment seen by this component is due to a main feedline break.

This component's associated valve would not be required to mitigate a high energy line break. The operator will not monitor this valve's position indication during the accident because the valve's only safety-related function is the isolation of containment during a loss of coolant accident. For this reason, limit switch failure will not mislead the operator. Failure of the limit switch would not degrade other safety-related functions since it does not provide any control function. Based on the above discussion, interim operation is justified.

2. This component is scheduled for replacement during the first refueling outage subsequent to component on-site availability.

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-066
Rev.: 1

Prepared by: Teria C. Brown Date: 12-15-82
Checked by: Paul W. Lynch Date: 12-17-82

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Display Instrumentation	Operating Time	1 Year	1.1 Years	K	J-30 Note 2	Simultaneous Test	None
Plant ID No. ZSMU66B	Temperature (°F)	192.0	391.0	C-208	J-30	Simultaneous Test	None
Component: Limit Switch	Pressure (PSIA)	16.25	133.7	C-208	J-30	Simultaneous Test	None
Manufacturer: NAMCO	Relative Humidity (%)	100.0	100.0	A	J-30	Simultaneous Test	None
Model Number: EA-180 Note 1	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Valve Position Indication	Radiation	1.97 x 10 ⁶ RADS	2.04 x 10 ⁸ RADS	T	J-30	Sequential Test, Analysis	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	19.13 Years Note 3	I	J-30 CAL-54	Sequential Test, Analysis	None
Service: Reactor Coolant Pump 2-2 Seal Injection Isolation Valve	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 208							
Flood Level Elev: N/A							
Above Flood Level: N/A							
Needed for:							
Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input checked="" type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-066A
Rev.: 1

NOTES

Prepared by: John C. Gypko Date 12-15-82
Checked by: David W. Lybster Date 12-17-82

1. This component replaces a Model SA1-33 in accordance with FCR 82-101.
2. The test subjected the limit switch to 3 transients. The first transient lasted for 4 hours and 20 minutes, with maximum temperature of 391°F and a maximum pressure of 133.7 psia, ending with a return to ambient. The second transient immediately followed the first, lasting for 4 hours and 16 minutes, with maximum temperature of 391°F and maximum pressure of 133.7 psia, ending with a return to ambient. The limit switch was maintained at ambient for 18 hours and 19 minutes, and then was subjected to the third transient, which reached a maximum temperature of 320°F and a maximum pressure of 89.7 psia, and lasted for 2 hours and 55 minutes. At 26 hours and 55 minutes, the conditions are 258°F and 89.7 psia. After approximately 4 days, the temperature and pressure was 200°F and 64.7 psia and remained stable for the duration of the test (25 days). The temperature and pressure in Room 208 peak at 192°F and 16.25 psia in 7.1 seconds and 1.55 seconds, respectively. The conditions return to ambient in 20 minutes.

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

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No. 301H-067
 Rev.: 0

Prepared by: H. J. Bellando Date: 9-29-81
 Checked by: Kenneth D. Morley Date: 9/29/81

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Display Instrumentation	Operating Time	17 Seconds	Note 1	K	N/A	N/A	Note 2
Plant ID No. ZSMU66C	Temperature (°F)	192.0	Note 1	C-208	N/A	N/A	Note 2
Component: Limit Switch	Pressure (PSIA)	16.25	Note 1	C-208	N/A	N/A	Note 2
Manufacturer: NAMCO	Relative Humidity (%)	100.0	Note 1	A	N/A	N/A	Note 2
Model Number: SA1-33	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Valve Position Indication	Radiation	1.97 x 10 ⁶ RADS	Note 1	T	N/A	N/A	Note 2
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	Note 1	I	N/A	N/A	Note 2
Service: Reactor Coolant Pump 1-1 Seal Injection Isolation Valve	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 208							
Flood Level Elev: N/A							
Above Flood Level: N/A							
Needed for:							
Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input checked="" type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-067A
Rev.: 0

NOTES

Prepared by: N.V. Bellardi Date: 10-2-81
Checked by: Harold D. Hardy Date: 10/2/81

1. This component is a limit switch which is used for valve position indication only. The harsh environment seen by this component is due to a main feedline break.

This component's associated valve would not be required to mitigate a high energy line break. The operator will not monitor this valve's position indication during the accident because the valve's only safety-related function is the isolation of containment during a loss of coolant accident. For this reason, limit switch failure will not mislead the operator. Failure of the limit switch would not degrade other safety-related functions since it does not provide any control function. Based on the above discussion, interim operation is justified.

2. This component is scheduled for replacement during the first refueling outage subsequent to component on-site availability.

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-067
 Rev.: 1

Prepared by: Sonia G. Gage Date: 12-15-82
 Checked by: Paul W. Gage Date: 12-17-82

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Display Instrumentation	Operating Time	1 Year	1.1 Years	K	J-30 Note 2	Simultaneous Test	None
Plant ID No. ZSMU66C	Temperature (°F)	192.0	391.0	C-208	J-30	Simultaneous Test	None
Component: Limit Switch	Pressure (PSIA)	16.25	133.7	C-208	J-30	Simultaneous Test	None
Manufacturer: NAMCO	Relative Humidity (%)	100.0	100.0	A	J-30	Simultaneous Test	None
Model Number: EA-180 Note 1	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Valve Position Indication	Radiation	1.97×10^6 RADS	2.04×10^8 RADS	T	J-30	Sequential Test, Analysis	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	19.13 Years Note 3	I	J-30 CAL-54	Sequential Test, Analysis	None
Service: Reactor Coolant Pump 1-1 Seal Injection Isolation Valve	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 208							
Flood Level Elev: N/A Above Flood Level: N/A							
Needed for: Hot Shutdown <input checked="" type="checkbox"/> Cold Shutdown <input checked="" type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-067A
Rev.: 1

NOTES

Prepared by: John C. Cyprien Date 12-15-82
Checked by: Paul W. Lipke Date 12-17-82

1. This component replaces a Model SA1-33 in accordance with FCR 82-101.
2. The test subjected the limit switch to 3 transients. The first transient lasted for 4 hours and 20 minutes, with maximum temperature of 391°F and a maximum pressure of 133.7 psia, ending with a return to ambient. The second transient immediately followed the first, lasting for 4 hours and 16 minutes, with maximum temperature of 391°F and maximum pressure of 133.7 psia, ending with a return to ambient. The limit switch was maintained at ambient for 18 hours and 19 minutes, and then was subjected to the third transient, which reached a maximum temperature of 320°F and a maximum pressure of 89.7 psia, and lasted for 2 hours and 55 minutes. At 26 hours and 55 minutes, the conditions are 258°F and 89.7 psia. After approximately 4 days, the temperature and pressure was 200°F and 64.7 psia and remained stable for the duration of the test (25 days). The temperature and pressure in Room 208 peak at 192°F and 16.25 psia in 7.1 seconds and 1.55 seconds, respectively. The conditions return to ambient in 20 minutes.

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

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index: 301H-068
Rev.: 0

Prepared by: W. V. Bellanich Date: 9.29.81
Checked by: Robert Adams Date: 9/29/81

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Display Instrumentation	Operating Time	1 Year	Note 1	L	N/A	N/A	Note 2
Plant ID No. ZSMU66D	Temperature (°F)	192.0	Note 1	C-208	N/A	N/A	Note 2
Component: Limit Switch	Pressure (PSIA)	16.25	Note 1	C-208	N/A	N/A	Note 2
Manufacturer: NAMCO	Relative Humidity (%)	100.0	Note 1	A	N/A	N/A	Note 2
Model Number: SAL-33							
Function: Valve Position Indication	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Accuracy: Spec: N/A Demon: N/A	Radiation	1.97 x 10 ⁶ RADS	Note 1	T	N/A	N/A	Note 2
Service: Reactor Coolant Pump 1-2 Seal Injection Isolation Valve	Aging	40 Years	Note 1	I	N/A	N/A	Note 2
Location: Auxiliary Bldg. Rm. 208	Submergence	N/A	N/A	N/A	N/A	N/A	None
Flood Level Elev: N/A Above Flood Level: N/A							
Needed for: Hot Shutdown <input checked="" type="checkbox"/> Cold Shutdown <input type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-068A
Rev.: 0

NOTES

Prepared by: W. V. Bellandi Date 10.2.84
Checked by: Kenneth A. Murdy Date 10/2/84

-
1. This component is a limit switch which is used for valve position indication only. The harsh environment seen by this component is due to a main feedline break.

This component's associated valve would not be required to mitigate a high energy line break. The operator will not monitor this valve's position indication during the accident because the valve's only safety-related function is the isolation of containment during a loss of coolant accident. For this reason, limit switch failure will not mislead the operator. Failure of the limit switch would not degrade other safety-related functions since it does not provide any control function. Based on the above discussion, interim operation is justified.

2. This component is scheduled for replacement during the first refueling outage subsequent to component on-site availability.

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-068
Rev.: 1

Prepared by: Gina Cooper Date: 12-15-82
Checked by: Paul W. Cooper Date: 12-17-82

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Display Instrumentation	Operating Time	1 Year	1.1 Years	K	J-30 Note 2	Simultaneous Test	None
Plant ID No. ZSMU66D	Temperature (°F)	192.0	391.0	C-208	J-30	Simultaneous Test	None
Component: Limit Switch	Pressure (PSIA)	16.25	133.7	C-208	J-30	Simultaneous Test	None
Manufacturer: NAMCO	Relative Humidity (%)	100.0	100.0	A	J-30	Simultaneous Test	None
Model Number: EA-180 Note 1	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
Function: Valve Position Indication	Radiation	1.97 x 10 ⁶ RADS	2.04 x 10 ⁸ RADS	T	J-30	Sequential Test, Analysis	None
Accuracy: Spec: N/A Demon: N/A	Aging	40 Years	19.13 Years Note 3	I	J-30 CAL-54	Sequential Test, Analysis	None
Service: Reactor Coolant Pump 1-2 Seal Injection Isolation Valve	Submergence	N/A	N/A	N/A	N/A	N/A	None
Location: Auxiliary Bldg. Rm. 208							
Flood Level Elev: N/A Above Flood Level: N/A							
Needed for: Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Prepared by: Janice Campbell Date 12-15-82
Checked by: Paul W. Smith Date 12-17-82

NOTES

Index No.: 301H-068A
Rev.: 1

1. This component replaces a Model SAL-33 in accordance with FCR 82-101.
2. The test subjected the limit switch to 3 transients. The first transient lasted for 4 hours and 20 minutes, with maximum temperature of 391°F and a maximum pressure of 133.7 psia, ending with a return to ambient. The second transient immediately followed the first, lasting for 4 hours and 16 minutes, with maximum temperature of 391°F and maximum pressure of 133.7 psia, ending with a return to ambient. The limit switch was maintained at ambient for 18 hours and 19 minutes, and then was subjected to the third transient, which reached a maximum temperature of 320°F and a maximum pressure of 89.7 psia, and lasted for 2 hours and 55 minutes. At 26 hours and 55 minutes, the conditions are 258°F and 89.7 psia. After approximately 4 days, the temperature and pressure was 200°F and 64.7 psia and remained stable for the duration of the test (25 days). The temperature and pressure in Room 208 peak at 192°F and 16.25 psia in 7.1 seconds and 1.55 seconds, respectively. The conditions returned to ambient in 20 minutes.

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

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-070
Rev.: 2

Prepared by: N. Lewis Date: 11/1/83
Checked by: James Owens Date: 11/10/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Reactor Protection	Operating Time	1 Year	24 Hours	Note 1	ROC-34A	N/A	N/A
Plant ID No. TERC4A2	Temperature (°F)	283.0	325.0	H, X	AG	Simultaneous Test	None
Component: Resistance Temperature Detector							
Manufacturer: Rosemount	Pressure (PSIA)	52.0	74.7	G, X	AG	Simultaneous Test	None
Model Number: 177HW-2	Relative Humidity (%)	100.0	100.0	A	AG	Simultaneous Test	None
Function: Senses Temperature							
Accuracy: Spec: 0.5% Demon: 0.5%	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	CAL-42	Analysis	None
Service: RCP 2-1 Discharge Cold Leg Wide Range Temp. Indication							
Location: Containment El. 2	Radiation	3.87×10^7 RADS	3.8×10^8 RADS	CAL-44	J-3	Sequential Test	None
Flood Level Elev: 572'-2" Above Flood Level: No	Aging	40 Years	40 Years	I	CAL-89 Note 2	Analysis	None
Needed for: Hot Shutdown <input checked="" type="checkbox"/> Cold Shutdown <input checked="" type="checkbox"/>	Submergence	572'-2"	572'-0" Note 3	B	ROC-34D	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-070A
Rev.: 2

NOTES

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

-
1. One-hour operating time is used as a conservative specification for the initiation of the reactor protection system following a loss of coolant accident.
 2. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

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

COMPONENT MATERIALS EVALUATION SHEET

Index No.: 301H-070B
Rev.: 2

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

Plant I.D. No.: TERC4A2
Manufacturer: Rosemount

Component: Resistance Temperature Detector
Model No.: 177HW-2

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Q-Felt	Felted Micro-Quartz	Not Sensitive	CAL-89	N/A	N/A
Varglass Tubing	Fiber-Glass	Not Sensitive	CAL-89	N/A	N/A
Flexitallic Gasket	S.S., Asbestos	Not Sensitive	CAL-89	N/A	N/A
Never Seez	Nickel-Based Lubricant	Not Sensitive	CAL-89	N/A	N/A
Terminal Block	Porcelain	Not Sensitive *	CAL-89	N/A	N/A
Epoxy	Epoxy	40 Years @ 147°F	CAL-89	N/A	N/A
O-Ring Lubricant	Silicon Grease	Not Sensitive *	CAL-89	N/A	N/A
Header	S.S., Glass	Not Sensitive	CAL-89	N/A	N/A
PBX Solvent & Cement	Inorganic Ceramic Cement	Not Sensitive	CAL-89	N/A	N/A
Housing	Aluminum	Not Sensitive	CAL-89	N/A	N/A
Connection Head	Aluminum	Not Sensitive	CAL-89	N/A	N/A
Screws	Brass	Not Sensitive	CAL-89	N/A	N/A
Washer	Brass	Not Sensitive	CAL-89	N/A	N/A
Connector Plate	Metallic	Not Sensitive	CAL-89	N/A	N/A
Sensor Assembly	Platinum	Not Sensitive	CAL-89	N/A	N/A
Thermowell	Stainless Steel	Not Sensitive	CAL-89	N/A	N/A
Mounting Nut	Stainless Steel	Not Sensitive	CAL-89	N/A	N/A
Lead Extension	Stainless Steel	Not Sensitive	CAL-89	N/A	N/A
Wire	Nickel-Clad Copper	Not Sensitive	CAL-89	N/A	N/A
Insulation	Inorganic Fiber, Mica	Not Sensitive	CAL-89	N/A	N/A
Head-O-Ring	Ethylene Propylene	40 Years @ 172°F	CAL-89	N/A	N/A

Material & Parts List Reference: AA, V-34A, ROC-34E

* Lubricant will be renewed at normal maintenance intervals.

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-071
Rev.: 2

Prepared by: V. Lewis Date: 11/6/83
Checked by: Stella Goulet Date: 11/6/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Reactor Protection	Operating Time	1 Year	24 Hours	Note 1	ROC-34A	N/A	None
Plant ID No. TERC4A4	Temperature (°F)	283.0	325.0	H, X	AG	Simultaneous Test	None
Component: Resistance Temperature Detector	Pressure (PSIA)	52.0	74.7	G, X	AG	Simultaneous Test	None
Manufacturer: Rosemount	Relative Humidity (%)	100.0	100.0	A	AG	Simultaneous Test	None
Model Number: 177HW-2	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	CAL-42	Analysis	None
Function: Senses Temperature	Radiation	3.87×10^7 RADS	3.8×10^8 RADS	CAL-44	J-3	Sequential Test	None
Accuracy: Spec: 0.5% Demon: 0.5%	Aging	40 Years	40 Years	I	CAL-89 Note 2	Analysis	None
Service: RCP 2-2	Submergence	572'-2"	572'-0" Note 3	B	ROC-34D	N/A	None
Discharge Cold Leg Wide Range Temp. Indication							
Location: Containment El. 2							
Flood Level Elev: 572'-2"							
Above Flood Level: No							
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.: 301H-071A
Rev.: 2

NOTES

Prepared by: N. Lewis Date 11/6/83
Checked by: Dr. [Signature] Date 11/10/83

-
1. One-hour operating time is used as a conservative specification for the initiation of the reactor protection system following a loss of coolant accident.
 2. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

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

COMPONENT MATERIALS EVALUATION SHEET

Index No.: 301H-071B
Rev.: 2

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

Plant I.D. No.: TERC4A4
Manufacturer: Rosemount

Component: Resistance Temperature Detector
Model No.: 177HW-2

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Q-Felt	Felted Micro-Quartz	Not Sensitive	CAL-89	N/A	N/A
Varglass Tubing	Fiber-Glass	Not Sensitive	CAL-89	N/A	N/A
Flexitallic Gasket	S.S., Asbestos	Not Sensitive	CAL-89	N/A	N/A
Never Seaz	Nickel-Based Lubricant	Not Sensitive	CAL-89	N/A	N/A
Terminal block	Porcelain	Not Sensitive *	CAL-89	N/A	N/A
Epoxy	Epoxy	40 Years @ 147°F	CAL-89	N/A	N/A
O-Ring Lubricant	Silicon Grease	Not Sensitive *	CAL-89	N/A	N/A
Header	S.S., Glass	Not Sensitive	CAL-89	N/A	N/A
PBX Solvent & Cement	Inorganic Ceramic Cement	Not Sensitive	CAL-89	N/A	N/A
Housing	Aluminum	Not Sensitive	CAL-89	N/A	N/A
Connection Head	Aluminum	Not Sensitive	CAL-89	N/A	N/A
Screws	Brass	Not Sensitive	CAL-89	N/A	N/A
Washer	Brass	Not Sensitive	CAL-89	N/A	N/A
Connector Plate	Metallic	Not Sensitive	CAL-89	N/A	N/A
Sensor Assembly	Platinum	Not Sensitive	CAL-89	N/A	N/A
Thermowell	Stainless Steel	Not Sensitive	CAL-89	N/A	N/A
Mounting Nut	Stainless Steel	Not Sensitive	CAL-89	N/A	N/A
Lead Extension	Stainless Steel	Not Sensitive	CAL-89	N/A	N/A
Wire	Nickel-Clad Copper	Not Sensitive	CAL-89	N/A	N/A
Insulation	Inorganic Fiber, Mica	Not Sensitive	CAL-89	N/A	N/A
Head-O-Ring	Ethylene Propylene	40 Years @ 172°F	CAL-89	N/A	N/A

Material & Parts List Reference: AA, V-34A, ROC-34E

* Lubricant will be renewed at normal maintenance intervals.

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-072
Rev.: 2

Prepared by: H. Lewis Date: 11/6/83
Checked by: Donald Date: 11/2/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Reactor Protection	Operating Time	1 Year	24 Hours	Note 1	ROC-34A	N/A	None
Plant ID No. TERC4B2	Temperature (°F)	283.0	325.0	H, X	AG	Simultaneous Test	None
Component: Resistance Temperature Detector	Pressure (PSIA)	52.0	74.7	G, X	AG	Simultaneous Test	None
Manufacturer: Rosemount	Relative Humidity (%)	100.0	100.0	A	AG	Simultaneous Test	None
Model Number: 177HW-2	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	CAL-42	Analysis	None
Function: Senses Temperature	Radiation	3.87×10^7 RADS	3.8×10^8 RADS	CAL-44	J-3	Sequential Test	None
Accuracy: Spec: 0.5% Demon: 0.5%	Aging	40 Years	40 Years	I	CAL-89 Note 2	Analysis	None
Service: RCP 1-1 Discharge Cold Leg Wide Range Temp. Indication	Submergence	572'-2"	571'-10" Note 3	B	ROC-34D	N/A	None
Location: Containment El. 2							
Flood Level Elev: 572'-2"							
Above Flood Level: No							
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.: 301H-072A
Rev.: 2

NOTES

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

-
1. One-hour operating time is used as a conservative specification for the initiation of the reactor protection system following a loss of coolant accident.
 2. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

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

COMPONENT MATERIALS EVALUATION SHEET

Index No.: 301H-072B
Rev.: 2

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

Plant I.D. No.: TERC4B2
Manufacturer: Rosemount

Component: Resistance Temperature Detector
Model No.: 177HW-2

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Q-Felt	Felted Micro-Quartz	Not Sensitive	CAL-89	N/A	N/A
Varglass Tubing	Fiber-Glass	Not Sensitive	CAL-89	N/A	N/A
Flexitallic Gasket	S.S., Asbestos	Not Sensitive	CAL-89	N/A	N/A
Never Seez	Nickel-Based Lubricant	Not Sensitive	CAL-89	N/A	N/A
Terminal Block	Porcelain	Not Sensitive *	CAL-89	N/A	N/A
Epoxy	Epoxy	40 Years @ 147°F	CAL-89	N/A	N/A
O-Ring Lubricant	Silicon Grease	Not Sensitive *	CAL-89	N/A	N/A
Header	S.S., Glass	Not Sensitive	CAL-89	N/A	N/A
PBX Solvent & Cement	Inorganic Ceramic Cement	Not Sensitive	CAL-89	N/A	N/A
Housing	Aluminum	Not Sensitive	CAL-89	N/A	N/A
Connection Head	Aluminum	Not Sensitive	CAL-89	N/A	N/A
Screws	Brass	Not Sensitive	CAL-89	N/A	N/A
Washer	Brass	Not Sensitive	CAL-89	N/A	N/A
Connector Plate	Metallic	Not Sensitive	CAL-89	N/A	N/A
Sensor Assembly	Platinum	Not Sensitive	CAL-89	N/A	N/A
Thermowell	Stainless Steel	Not Sensitive	CAL-89	N/A	N/A
Mounting Nut	Stainless Steel	Not Sensitive	CAL-89	N/A	N/A
Lead Extension	Stainless Steel	Not Sensitive	CAL-89	N/A	N/A
Wire	Nickel-Clad Copper	Not Sensitive	CAL-89	N/A	N/A
Insulation	Inorganic Fiber, Mica	Not Sensitive	CAL-89	N/A	N/A
Head-O-Ring	Ethylene Propylene	40 Years @ 172°F	CAL-89	N/A	N/A

Material & Parts List Reference: AA, V-34A, ROC-34E

* Lubricant will be renewed at normal maintenance intervals.

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-073
Rev.: 2

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

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Reactor Protection	Operating Time	1 Year	24 Hours	Note 1	ROC-34A	N/A	None
Plant ID No. TERC4B4	Temperature (°F)	283.0	325.0	H, X	AG	Simultaneous Test	None
Component: Resistance Temperature Detector	Pressure (PSIA)	52.0	74.7	G, X	AG	Simultaneous Test	None
Manufacturer: Rosemount	Relative Humidity (%)	100.0	100.0	A	AG	Simultaneous Test	None
Model Number: 177HW-2	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	CAL-42	Analysis	None
Function: Senses Temperature	Radiation	3.87×10^7 RADS	3.8×10^8 RADS	CAL-44	J-3	Sequential Test	None
Accuracy: Spec: 0.5% Demon: 0.5%	Aging	40 Years	40 Years	I	CAL-89 Note 2	Analysis	None
Service: RCP 1-2	Submergence	572'-2"	571'-10" Note 3	B	ROC-34D	N/A	None
Discharge Cold Leg Wide Range Temp. Indication							
Location: Containment El. 2							
Flood Level Elev: 572'-2"							
Above Flood Level: No							
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.: 301H-073A
Rev.: 2

NOTES

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

-
1. One-hour operating time is used as a conservative specification for the initiation of the reactor protection system following a loss of coolant accident.
 2. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

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

COMPONENT MATERIALS EVALUATION SHEET

Index No.: 301H-073B
Rev.: 2

Prepared by: N. Lewis Date: 11/1/83
Checked by: William Land Date: 11/1/83

Plant I.D. No.: TERC4B4
Manufacturer: Rosemount

Component: Resistance Temperature Detector
Model No.: 177HW-2

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Q-Felt	Felted Micro-Quartz	Not Sensitive	CAL-89	N/A	N/A
Varglass Tubing	Fiber-Glass	Not Sensitive	CAL-89	N/A	N/A
Flexitallic Gasket	S.S., Asbestos	Not Sensitive	CAL-89	N/A	N/A
Never Seez	Nickel-Based Lubricant	Not Sensitive	CAL-89	N/A	N/A
Terminal Block	Porcelain	Not Sensitive *	CAL-89	N/A	N/A
Epoxy	Epoxy	40 Years @ 147°F	CAL-89	N/A	N/A
O-Ring Lubricant	Silicon Grease	Not Sensitive *	CAL-89	N/A	N/A
Header	S.S., Glass	Not Sensitive	CAL-89	N/A	N/A
PBX Solvent & Cement	Inorganic Ceramic Cement	Not Sensitive	CAL-89	N/A	N/A
Housing	Aluminum	Not Sensitive	CAL-89	N/A	N/A
Connection Head	Aluminum	Not Sensitive	CAL-89	N/A	N/A
Screws	Brass	Not Sensitive	CAL-89	N/A	N/A
Washer	Brass	Not Sensitive	CAL-89	N/A	N/A
Connector Plate	Metallic	Not Sensitive	CAL-89	N/A	N/A
Sensor Assembly	Platinum	Not Sensitive	CAL-89	N/A	N/A
Thermowell	Stainless Steel	Not Sensitive	CAL-89	N/A	N/A
Mounting Nut	Stainless Steel	Not Sensitive	CAL-89	N/A	N/A
Lead Extension	Stainless Steel	Not Sensitive	CAL-89	N/A	N/A
Wire	Nickel-Clad Copper	Not Sensitive	CAL-89	N/A	N/A
Insulation	Inorganic Fiber, Mica	Not Sensitive	CAL-89	N/A	N/A
Head-O-Ring	Ethylene Propylene	40 Years @ 172°F	CAL-89	N/A	N/A

Material & Parts List Reference: AA, V-34A, ROC-34E

* Lubricant will be renewed at normal maintenance intervals.

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-074
Rev.: 0

Prepared by: M. Lewis Date: 11/1/83
Checked by: [Signature] Date: 11/2/81

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Display Instrumentation	Operating Time	1 Year	1.1 Years	Note 2	J-1 Note 3	Analysis	None
Plant ID No. LTRC14-1	Temperature (°F)	283.0	300.0	H, X	J-1	Simultaneous Test	None
Component: Level Transmitter	Pressure (PSIA)	52.0	74.7	G, X	J-1	Simultaneous Test	None
Manufacturer: Bailey Meter	Relative Humidity (%)	100.0	100.0	A	J-1	Simultaneous Test	None
Model Number: BY3B40X-A	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	CAL-42	Analysis	None
Function: Transmits Level Signals	Radiation	1.7×10^7 RADS	4.0×10^7 RADS	CAL-44	AG	Sequential Test	None
Accuracy: Spec: + .5% Demon: + .23%	Aging	40 Years	10.83 Years Note 1	I	CAL-38	Analysis	None
Service: Reactor Coolant Pressurizer Level Indication	Submergence	572' - 2"	585' - 0"	B	J-29	N/A	None
Location: Containment El. 3							
Flood Level Elev: 572'-2"							
Above Flood Level: Yes							
Needed for:							
Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input checked="" type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 301H-074A
Rev.: 0

NOTES

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

1. This component is scheduled for replacement during the first refueling outage subsequent to component on-site availability.
2. One-year operating time is used as a conservative maximum specification.
3. According to profiles G and H, containment conditions will nearly return to ambient (2.5 psig, 104°F) within 24 hours, with a complete return to ambient within seven days. Ambient conditions will remain for the duration of the accident and ensuing cooldown. The 24-hour LOCA simulation test exposed the transmitter to a more severe environment than that which would result from the postulated loss-of-coolant accident. Since the transmitter remained operable throughout the test, it can be concluded that it will also maintain functional operability during the short-term accident environment and the long-term cooldown at ambient conditions.

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No. 301H-074
Rev.: 2

Prepared by: N Lewis
Checked by: W. M. Smith

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

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Display Instrumentation	Operating Time	1 Year	1.1 Years	Notes 1 and 3	J-36	Simultaneous Test	None
Plant ID No. LTRC14-1	Temperature (°F)	283.0	350.0	H, X	J-36	Simultaneous Test	None
Component: Level Transmitter	Pressure (PSIA)	52.0	85.0	G, X	J-36	Simultaneous Test	None
Manufacturer: Rosemount	Relative Humidity (%)	100.0	100.0	A	J-36	Simultaneous Test	None
Model Number: 1153	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 8.5 to 11	T	J-36 CAL-40 Note 2	Simultaneous Test	None
Function: Transmits Level Signals	Radiation	1.7×10^7 RADS	5.0×10^7 RADS	CAL-44	AG	Sequential Test	None
Accuracy: Spec: + 5.0% Demon: + .42%	Aging	40 Years	10 Years Note 4	I	CAL-66 J-36	Sequential Test	None
Service: Pressurizer Level	Submergence	572' - 2"	585' - 0"	B	J-29	N/A	None
Location: Containment El.							
Flood Level Elev: 572'-2"							
Above Flood Level: Yes							
Needed for: Hot Shutdown <input checked="" type="checkbox"/>							
Cold Shutdown <input checked="" type="checkbox"/>							

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

SYSTEM COMPONENT EVALUATION WORKSHEET

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Rev.: 2

NOTES

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

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1. The Rosemount replaces the Bailey Meter in accordance with FCR 78-525.
 2. CAL-40 qualifies components tested in a high pH Boric Acid spray to a pH value of 5.0.
 3. One year operating time is used as a conservative maximum specification.
 4. Materials and/or components sensitive to thermal aging will be replaced as per maintenance and replacement schedules to ensure that associated component will maintain functional operability in harsh environments.