CALCULATION/PROBLEM COVER SHEET

Calculation/Problem No: 1040-001-021

Title: Reactor Protection System 2.18

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

Job No: 1040-001-671

I & E Bulletin 79-01B
Equipment Qualification

Design Input/References:

Design Inputs are outlined in the Cover Report.

Assumptions:

Assumptions are outlined in the Cover Report.

Method:

Methods are outlined in the Cover Report.

Remarks:

EDS Nuclear Report No. 02-1040-1076.

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

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

MASTER LIST
HARSH ENVIRONMENT
REACTOR PROTECTION SYSTEM

Index No: 218M-001
Rev.: 2

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

Worksheet Index No.	Rev.	Plant ID Number	Generic Name	LOCATION		REMARKS
				Inside Primary Containment	Outside Primary Containment	
218H-004	0	FTRC1A1	Flow Transmitter	El. 4		
218H-004	2	FTRC1A1	Flow Transmitter	El. 4		
218H-005	0	FTRC1A2	Flow Transmitter	El. 4		
218H-005	2	FTRC1A2	Flow Transmitter	El. 4		
218H-006	0	FTRC1A3	Flow Transmitter	El. 4		
218H-006	2	FTRC1A3	Flow Transmitter	El. 4		
218H-007	0	FTRC1A4	Flow Transmitter	El. 4		
218H-007	2	FTRC1A4	Flow Transmitter	El. 4		
218H-008	0	FTRC1B1	Flow Transmitter	El. 4		
218H-008	2	FTRC1B1	Flow Transmitter	El. 4		
218H-009	0	FTRC1B2	Flow Transmitter	El. 4		
218H-009	2	FTRC1B2	Flow Transmitter	El. 4		
218H-010	0	FTRC1B3	Flow Transmitter	El. 4		
218H-010	2	FTRC1B3	Flow Transmitter	El. 4		
218H-011	0	FTRC1B4	Flow Transmitter	El. 4		
218H-011	2	FTRC1B4	Flow Transmitter	El. 4		
218H-012	2	PSNI-15-1	Pressure Switch		Rm. 501	
218H-013	2	PSNI-15-3	Pressure Switch		Rm. 426	
218H-014	2	PSNI-15-4	Pressure Switch		Rm. 500	
218H-015	2	PTRC2A1	Pressure Transmitter	Rm. 410		
218H-016	2	PTRC2A2	Pressure Transmitter	Rm. 410		
218H-017	2	PTRC2B1	Pressure Transmitter	Rm. 407		
218H-018	2	PTRC2B2	Pressure Transmitter	Rm. 407		
218H-019	2	TERC3A2	Resistance Temperature Detector	El. 4		
218H-020	2	TERC3A4	Resistance Temperature Detector	El. 4		
218H-021	2	TERC3B2	Resistance Temperature Detector	El. 5		
218H-022	2	TERC3B4	Resistance Temperature Detector	El. 5		

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

MASTER LIST
NON-HARSH ENVIRONMENT
REACTOR PROTECTION SYSTEM

Index No: 218M-002
Rev.: 2

Prepared by: F Lewis Date: 9/30/83
Checked by: [illegible] Date: [illegible]

Worksheet Index No.	Rev.	Plant ID Number	Generic Name	LOCATION: Inside Primary Containment	LOCATION: Outside Primary Containment	REMARKS
	0	C3630	Auxiliary Shutdown Panel		Rm. 324	
	0	C5755E	RPS Panel Ch. 2		Rm. 505	
	0	C5755F	RPS Panel Ch. 2		Rm. 505	
	0	C5756E	RPS Panel Ch. 4		Rm. 505	
	0	C5756F	RPS Panel Ch. 4		Rm. 505	
	0	C5762E	RPS Panel Ch. 1		Rm. 505	
	0	C5762F	RPS Panel Ch. 1		Rm. 505	
	0	C5763E	RPS Panel Ch. 3		Rm. 505	
	0	C5763F	RPS Panel Ch. 3		Rm. 505	
	0	PSNI-15-2	Pressure Switch		Rm. 400	
	0	RC3601	Relay Cabinet		Rm. 325	
	0	RC3602	Relay Cabinet		Rm. 323	
	0	RC3603	Relay Cabinet		Rm. 324	
	0	RC3604	Relay Cabinet		Rm. 322	

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

MASTER LIST

Index No: [redacted]8M-003
Rev.: 2

REACTOR PROTECTION SYSTEM

Prepared by: E Lewis Date: 9/24/85
Checked by: [redacted] Date: [redacted]

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

Facility: [redacted]s-Besse Unit 1
Docket: 50-346

SYSTEM COMPONENT EVALUATION WORKSHEET

Prepared by: W. V. Bellando Date: 2-28-81
Checked by: John T. Albiate Date: 3/20/81

Index No.: 218H-004
Rev.: 0

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Reactor Protection System Plant ID No. FTRC1A1 Component: Flow Transmitter Manufacturer: Bailey Meter Model Number: BY3X41X-A Function: Transmits Flow Signals Accuracy: Spec: ± .5% Spec: ± .23% Service: Reactor Coolant Loop 2 Hot Leg Flow for RPS Channel 1 and Indication Location: Containment El. 4 Flood Level Elev: 572'-2" Above Flood Level: Yes Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	1.1 Years	Note 2	J-1 Note 3	Analysis	None
	Temperature (°F)	283.0	300.0	H, X	J-1	Simultaneous Test	None
	Pressure (PSIA)	52.0	74.7	G, X	J-1	Simultaneous Test	None
	Relative Humidity (%)	100.0	100.0	A	J-1	Simultaneous Test	None
	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	CAL-42	Analysis	None
	Radiation	1.7×10^7 RADS	4.0×10^7 RADS	CAL-44	AG	Sequential Test	None
	Aging	40 Years	10.83 Years Note 1	I	CAL-38	Analysis	None
	Submergence	572' - 2"	603' - 0"	B	J-28	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 218H-004A
Rev.: 0

NOTES

Prepared by: W. V. Bellanca Date: 10-2-81
Checked by: Kenneth D. Mody Date: 10/2/81

. This component is scheduled for replacement during the first refueling outage subsequent to component on-site availability. Interim operation will not be affected due to the time margin provided.

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

. 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.: 218H-004
Rev.: 2

Prepared by: N Lewis Date: 9/30/83
Checked by: Gallagher Date: 9/30/83

EQUIPMENT DESCRIPTION

System: Reactor Protection System

Plant ID No. FTRC1A1

Component: Flow Transmitter

Manufacturer: Rosemount

Model Number: 1153

Function: Transmits Flow Signals

Accuracy: Spec: 5.0%
Demon: .42%

Service: Reactor Coolant Loop 2 Hot Leg Flow for RPS Ch. 1 and Indication

Location: Containment El. 4

Flood Level Elev: 572'-2"

Above Flood Level: Yes

Needed for:
Hot Shutdown [X]
Cold Shutdown [X]

ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
Parameter	Specification	Qualification	Specification	Qualification		
Operating Time	1 Year	1.1 Years	Notes 1 and 2	J-36	Simultaneous Test	None
Temperature (°F)	283.0	350.0	H, X	J-36	Simultaneous Test	None
Pressure (PSIA)	52.0	85.0	G, X	J-36	Simultaneous Test	None
Relative Humidity (%)	100.0	100.0	A	J-36	Simultaneous Test	None
Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	CAL-40 J-36 Note 3	Simultaneous Test	None
Radiation	1.7×10^7 RADS	5.0×10^7 RADS	CAL-44	J-36	Sequential Test	None
Aging	40 Years	10 Years Note 4	I	CAL-66 J-36	Sequential Test	None
Submergence	572' - 2"	603' - 0"	B	J-28	N/A	None

Facility: Davis-Besse Unit 1 SYSTEM COMPONENT EVALUATION WORKSHEET Index No.: 218H-004A
Docket: 50-346 Rev.: 2

NOTES

Prepared by: T Lewis Date 9/30/83
Checked by: T Mackowiak Date 9/30/83

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1. The Rosemount replaces the Bailey Meter in accordance with FCR 78-525.

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 5.0.

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 218H-005
Rev.: 0

Prepared by: W. V. Bellard Date: 9-28-81.
Checked by: [signature] Date: 9/28/81

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Reactor Protection System Plant ID No. FTRC1A2 Component: Flow Transmitter Manufacturer: Bailey Meter Model Number: BY3X41X-A Function: Transmits Flow Signals Accuracy: Spec: ± .5% Demon: ± .23% Service: Reactor Coolant Loop 2 Hot Leg Flow for RPS Channel 2 and Indication Location: Containment El. 4 Flood Level Elev: 572'-2" Above Flood Level: Yes Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	1.1 Years	Note 2	J-1 Note 3	Analysis	None
	Temperature (°F)	283.0	300.0	H, X	J-1	Simultaneous Test	None
	Pressure (PSIA)	52.0	74.7	G, X	J-1	Simultaneous Test	None
	Relative Humidity (%)	100.0	100.0	A	J-1	Simultaneous Test	None
	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	CAL-42	Analysis	None
	Radiation	1.7×10^7 RADS	4.0×10^7 RADS	CAL-44	AG	Sequential Test	None
	Aging	40 Years	10.83 Years Note 1	I	CAL-38	Analysis	None
	Submergence	572' - 2"	603' - 0"	B	J-28	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 218H-005A
Rev.: 0

NOTES

'repared by: W. J. Bellanca Date: 10/8/81
'hecked by: Kenneth D. Moody Date: 10/1/81

- This component is scheduled for replacement during the first refueling outage subsequent to component on-site availability. Interim operation will not be affected due to the time margin provided.

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

- 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.: 218H-005
Rev.: 2

Prepared by: J Lewis Date: 9/30/83
Checked by: D MacDonald Date: 9/30/83

EQUIPMENT DESCRIPTION

System: Reactor Protection System

Plant ID No. FTRC1A2

Component: Flow Transmitter

Manufacturer: Rosemount

Model Number: 1153

Function: Transmits Flow Signals

Accuracy: Spec: 5.0%
Demon: .42%

Service: Reactor Coolant Loop 2 Hot Leg Flow for RPS Ch. 2 and Indication

Location: Containment El. 4

Flood Level Elev: 572'-2"

Above Flood Level: Yes

Needed for:
Hot Shutdown [X]
Cold Shutdown [X]

ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
Parameter	Specification	Qualification	Specification	Qualification		
Operating Time	1 Year	1.1 Years	Notes 1 and 2	J-36	Simultaneous Test	None
Temperature (°F)	283.0	350.0	H, X	J-36	Simultaneous Test	None
Pressure (PSIA)	52.0	85.0	G, X	J-36	Simultaneous Test	None
Relative Humidity (%)	100.0	100.0	A	J-36	Simultaneous Test	None
Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	CAL-40 J-36 Note 3	Simultaneous Test	None
Radiation	1.7×10^7 RADS	5.0×10^7 RADS	CAL-44	J-36	Sequential Test	None
Aging	40 Years	10 Years Note 4	I	CAL-66 J-36	Sequential Test	None
Submergence	572' - 2"	603' - 0"	B	J-28	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 218H-005A
Rev.: 2

NOTES

Prepared by: R Lewis Date 9/30/83
Checked by: Gordon Crandall Date 9/30/83

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1. The Rosemount replaces the Bailey Meter in accordance with FCR 78-525.

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 5.0.

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

Facility: [redacted]s-Besse Unit 1
Docket: 50-346

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 218H-006
Rev.: 0

Prepared by: W. J. Bellanger Date: 9-28-81
Checked by: John T Abbatt Date: 9/29/81

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Reactor Protection System Plant ID No. FTRC1A3 Component: Flow Transmitter Manufacturer: Bailey Meter Model Number: BY3X41X-A Function: Transmits Flow Signals Accuracy: Spec: ± .5% Demon: ± .23% Service: Reactor Coolant Loop 2 Hot Leg Flow for RPS Channel 3 and Indication Location: Containment El. 4 Flood Level Elev: 572'-2" Above Flood Level: Yes Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	1.1 Years	Note 2	J-1 Note 3	Analysis	None
	Temperature (°F)	283.0	300.0	H, X	J-1	Simultaneous Test	None
	Pressure (PSIA)	52.0	74.7	G, X	J-1	Simultaneous Test	None
	Relative Humidity (%)	100.0	100.0	A	J-1	Simultaneous Test	None
	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	CAL-42	Analysis	None
	Radiation	1.7×10^7 RADS	4.0×10^7 RADS	CAL-44	AG	Sequential Test	None
	Aging	40 Years	10.83 Years Note 1	I	CAL-38	Analysis	None
	Submergence	572' - 2"	603' - 0"	B	J-28	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 218H-006A
Rev.: 0

NOTES

Prepared by: W.V. Bellard Date: 10.2.81
Checked by: Kenneth D. Mordy Date: 10/2/81

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1. This component is scheduled for replacement during the first refueling outage subsequent to component on-site availability. Interim operation will not be affected due to the time margin provided.

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.: 218H-006
Rev.: 2

Prepared by: F Lewis Date: 9/30/83
Checked by: [signature] Date: 9/30/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Reactor Protection System Plant ID No. FTRC1A3 Component: Flow Transmitter Manufacturer: Rosemount Model Number: 1153 Function: Transmits Flow Signals Accuracy: Spec: 5.0% Demon: .42% Service: Reactor Coolant Loop 2 Hot Leg Flow for RPS Ch. 3 and Indication Location: Containment El. 4 Flood Level Elev: 572'-2" Above Flood Level: Yes Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	1.1 Years	Notes 1 and 2	J-36	Simultaneous Test	None
	Temperature (°F)	283.0	350.0	H, X	J-36	Simultaneous Test	None
	Pressure (PSIA)	52.0	85.0	H, X	J-36	Simultaneous Test	None
	Relative Humidity (%)	100.0	100.0	A	J-36	Simultaneous Test	None
	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	CAL-40 J-36 Note 3	Simultaneous Test	None
	Radiation	1.7×10^7 RADS	5.0×10^7 RADS	CAL-44	J-36	Sequential Test	None
	Aging	40 Years	10 Years Note 4	I	CAL-66 J-36	Sequential Test	None
	Submergence	572' - 2"	603' - 0"	B	J-28	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

NOTES

Index No.: 218H-006A
Rev.: 2

Prepared by: T Lewis Date 9/30/83
Checked by: [illegible] Date 9/30/83

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1. The Rosemount replaces the Bailey Meter in accordance with FCR 78-525.

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 5.0.

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

Facility: [redacted]is-Besse Unit 1
Docket: 50-346

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 218H-007
Rev.: 0

Prepared by: W. J. Bellanca Date: 9-28-81
Checked by: John T. Abbate Date: 9/28/81

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Reactor Protection System Plant ID No. FTRC1A4 Component: Flow Transmitter Manufacturer: Bailey Meter Model Number: BY3X41X-A Function: Transmits Flow Signals Accuracy: Spec: ± .5% Demon: ± .23% Service: Reactor Coolant Loop 2 Hot Leg Flow for RPS Channel 4 and Indication Location: Containment El. 4 Flood Level Elev: 572'-2" Above Flood Level: Yes Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	1.1 Years	Note 2	J-1 Note 3	Analysis	None
	Temperature (°F)	283.0	300.0	H, X	J-1	Simultaneous Test	None
	Pressure (PSIA)	52.0	74.7	G, X	J-1	Simultaneous Test	None
	Relative Humidity (%)	100.0	100.0	A	J-1	Simultaneous Test	None
	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	CAL-42	Analysis	None
	Radiation	1.7×10^7 RADS	4.0×10^7 RADS	CAL-41	AG	Sequential Test	None
	Aging	40 Years	10.83 Years Note 1	I	CAL-38	Analysis	None
	Submergence	572' - 2"	603' - 0"	B	J-28	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 218H-007A
Rev.: 0

Prepared by: W. V. Rellenb Date: 10.2.81.
Checked by: Kenneth A. Mordy Date: 10/2/81

NOTES

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1. This component is scheduled for replacement during the first refueling outage subsequent to component on-site availability. Interim operation will not be affected due to the time margin provided.

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.: 218H-007
Rev.: 2

Prepared by: F Lewis Date: 9/30/83
Checked by: [illegible] Date: 9/30/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Reactor Protection System Plant ID No. FTRC1A4 Component: Flow Transmitter Manufacturer: Rosemount Model Number: 1153 Function: Transmits Flow Signals Accuracy: Spec: 5.0% Demon: .42% Service: Reactor Coolant Loop 2 Hot Leg Flow for RPS Ch. 4 and Indication Location: Containment El. 4 Flood Level Elev: 572'-2" Above Flood Level: Yes Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	1.1 Years	Notes 1 and 2	J-36	Simultaneous Test	None
	Temperature (°F)	283.0	350.0	H, X	J-36	Simultaneous Test	None
	Pressure (PSIA)	52.0	85.0	G, X	J-36	Simultaneous Test	None
	Relative Humidity (%)	100.0	100.0	A	J-36	Simultaneous Test	None
	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	CAL-40 J-36 Note 3	Simultaneous Test	None
	Radiation	1.7×10^7 RADS	5.0×10^7 RADS	CAL-44	J-36	Sequential Test	None
	Aging	40 Years	10 Years Note 4	I	CAL-66 J-36	Sequential Test	None
	Submergence	572' - 2"	603' - 0"	B	J-28	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

NOTES

Index No.: 218H-007A
Rev.: 2

Prepared by: T Lewis Date 9/30/83
Checked by: [illegible] Date 9/30/83

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1. The Rosemount replaces the Bailey Meter in accordance with FCR 78-525.

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 5.0.

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 218H-008
Rev.: 0

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

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Reactor Protection System Plant ID No. FTRC1B1 Component: Flow Transmitter Manufacturer: Bailey Meter Model Number: BY3X41X-A Function: Transmits Flow Signals Accuracy: Spec: ± .5% Demon: ± .23% Service: Reactor Coolant Loop 1 Hot Leg Flow for RPS Channel 1 and Indication Location: Containment El. 4 Flood Level Elev: 572'-2" Above Flood Level: Yes Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	1.1 Years	Note 2	J-1 Note 3	Analysis	None
	Temperature (°F)	283.0	300.0	H, X	J-1	Simultaneous Test	None
	Pressure (PSIA)	52.0	74.7	G, X	J-1	Simultaneous Test	None
	Relative Humidity (%)	100.0	100.0	A	J-1	Simultaneous Test	None
	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	CAL-42	Analysis	None
	Radiation	1.7×10^7 RADS	4.0×10^7 RADS	CAL-44	AG	Sequential Test	None
	Aging	40 Years	10.83 Years Note 1	I	CAL-38	Analysis	None
	Submergence	572' - 2"	603' - 0"	B	J-28	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 218H-008A
Rev.: 0

NOTES

repared by: W. P. Kellam Date: 10.2.81
hecked by: Kenneth D. Moody Date: 10/2/81

- This component is scheduled for replacement during the first refueling outage subsequent to component on-site availability. Interim operation will not be affected due to the time margin provided.

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

- 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.: 218H-008
Rev.: 2

Prepared by: T Lewis Date: 9/30/83
Checked by: [illegible] Date: 9/30/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Reactor Protection System Plant ID No. FTRC1B1 Component: Flow Transmitter Manufacturer: Rosemount Model Number: 1153 Function: Transmits Flow Signals Accuracy: Spec: 5.0% Demon: .42% Service: Reactor Coolant Loop 1 Hot Leg Flow for RPS Ch. 1 and Indication Location: Containment El. 4 Flood Level Elev: 572'-2" Above Flood Level: Yes Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	1.1 Years	Notes 1 and 2	J-36	Simultaneous Test	None
	Temperature (°F)	283.0	350.0	H, X	J-36	Simultaneous Test	None
	Pressure (PSIA)	52.0	85.0	G, X	J-36	Simultaneous Test	None
	Relative Humidity (%)	100.0	100.0	A	J-36	Simultaneous Test	None
	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	CAL-40 J-36 Note 3	Simultaneous Test	None
	Radiation	1.7×10^7 RADS	5.0×10^7 RADS	CAL-44	J-36	Sequential Test	None
	Aging	40 Years	10 Years Note 4	I	CAL-66 J-36	Sequential Test	None
	Submergence	572' - 2"	603' - 0"	B	J-28	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 218H-008A
Rev.: 2

Prepared by: T Lewis Date 9/30/83
Checked by: [signature] Date 9/30/83

NOTES

1. The Rosemount replaces the Bailey Meter in accordance with FCR 78-525.

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 5.0.

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 218H-009
Rev.: 0

Prepared by: W. V. Bellanca Date: 9/28/81
Checked by: John T. Abbate Date: 9/28/81

EQUIPMENT DESCRIPTION	ENVIRONMENT		DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter / Specification	Qualification	Specification	Qualification		
System: Reactor Protection System Plant ID No. FTRC1B2 Component: Flow Transmitter Manufacturer: Bailey Meter Moder Number: BY3X41X-A Function: Transmits Flow Signals Accuracy: Spec: ± .5% Demon: ± .23% Service: Reactor Coolant Loop 1 Hot Leg Flow for RPS Channel 2 and Indication Location: Containment El. 4 Flood Level Elev: 572'-2" Above Flood Level: Yes Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time / 1 Year	1.1 Years	Note 2	J-1 Note 3	Analysis	None
	Temperature (°F) / 283.0	300.0	H, X	J-1	Simultaneous Test	None
	Pressure (PSIA) / 52.0	74.7	G, X	J-1	Simultaneous Test	None
	Relative Humidity (%) / 100.0	100.0	A	J-1	Simultaneous Test	None
	Chemical Spray / Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	CAL-42	Analysis	None
	Radiation / 1.7×10^7 RADS	4.0×10^7 RADS	CAL-44	AG	Sequential Test	None
	Aging / 40 Years	10.83 Years Note 1	I	CAL-38	Analysis	None
	Submergence / 572' - 2"	603 - 0"	B	J-28	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 218H-069A
Rev.: 0

NOTES

Prepared by: W. Bellamy Date: 10.2.81.
Checked by: Kenneth D. Moody Date: 10/2/81

.. This component is scheduled for replacement during the first refueling outage subsequent to component on-site availability. Interim operation will not be affected due to the time margin provided.

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

1. 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.: 218H-009
Rev.: 2

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

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Reactor Protection System	Operating Time	1 Year	1.1 Years	Notes 1 and 2	J-36	Simultaneous Test	None
Plant ID No. FTRC1B2 Component: Flow Transmitter	Temperature (°F)	283.0	350.0	H, X	J-36	Simultaneous Test	None
Manufacturer: Rosemount	Pressure (PSIA)	52.0	85.0	G, X	J-36	Simultaneous Test	None
Model Number: 1153 Function: Transmits Flow Signals	Relative Humidity (%)	100.0	100.0	A	J-36	Simultaneous Test	None
Accuracy: Spec: 5.0% Demon: .42% Service: Reactor Coolant Loop 1 Hot Leg Flow for RPS Ch. 2 and Indication	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	CAL-40 J-36 Note 3	Simultaneous Test	None
Location: Containment El. 4	Radiation	1.7×10^7 RADS	5.0×10^7 RADS	CAL-44	J-36	Sequential Test	None
Flood Level Elev: 572'-2" Above Flood Level: Yes	Aging	40 Years	10 Years Note 4	I	CAL-66 J-36	Sequential Test	None
Needed for: Hot Shutdown [X] Cold Shutdown [X]	Submergence	572' - 2"	603' - 0"	B	J-28	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

NOTES

Index No.: 218H-009A
Rev.: 2

Prepared by: R Lewis Date 9/30/83
Checked by: [signature] Date 9/30/83

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1. The Rosemount replaces the Bailey Meter in accordance with FCR 78-525.

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 5.0.

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 218H-010
Rev.: 0

Prepared by: W. L. Bellamy Date: 9-28-81
Checked by: John T. Abbate Date: 9/28/81

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Reactor Protection System Plant ID No. FTRC1B3 Component: Flow Transmitter Manufacturer: Bailey Meter Model Number: BY3X41X-A Function: Transmits Flow Signals Accuracy: Spec: ± .5% Demon: ± .23% Service: Reactor Coolant Loop 1 Hot Leg Flow for RPS Channel 3 and Indication Location: Containment El. 4 Flood Level Elev: 572'-2" Above Flood Level: Yes Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	1.1 Years	Note 2	J-1 Note 3	Analysis	None
	Temperature (°F)	283.0	300.0	H, X	J-1	Simultaneous Test	None
	Pressure (PSIA)	52.0	74.7	G, X	J-1	Simultaneous Test	None
	Relative Humidity (%)	100.0	100.0	A	J-1	Simultaneous Test	None
	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	CAL-42	Analysis	None
	Radiation	1.7×10^7 RADS	4.0×10^7 RADS	CAL-44	AG	Sequential Test	None
	Aging	40 Years	10.83 Years Note 1	I	CAL-38	Analysis	None
	Submergence	572' - 2"	603' - 0"	B	J-28	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

NOTES

Index No.: 218H-010A
Rev.: 0

Prepared by: W. J. Zellers Date: 10-1-81
Checked by: Kenneth D. Mowry Date: 10/1/81

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1. This component is scheduled for replacement during the first refueling outage subsequent to component on-site availability. Interim operation will not be affected due to the time margin provided.

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.: 218H-010
Rev.: 2

Prepared by: J Lewis Date: 9/30/83
Checked by: L MacDonald Date: 9/30/83

EQUIPMENT DESCRIPTION

System: Reactor Protection System

Plant ID No. FTRC1B3

Component: Flow Transmitter

Manufacturer: Rosemount

Model Number: 1153

Function: Transmits Flow Signals

Accuracy: Spec: 5.0%
Demon: .42%

Service: Reactor Coolant Loop 1 Hot Leg Flow for RPS Ch. 3 and Indication

Location: Containment El. 4

Flood Level Elev: 572'-2"

Above Flood Level: Yes

Needed for:
Hot Shutdown [X]
Cold Shutdown [X]

ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
Parameter	Specification	Qualification	Specification	Qualification		
Operating Time	1 Year	1.1 Years	Notes 1 and 2	J-36	Simultaneous Test	None
Temperature (°F)	283.0	350.0	H, X	J-36	Simultaneous Test	None
Pressure (PSIA)	52.0	85.0	G, X	J-36	Simultaneous Test	None
Relative Humidity (%)	100.0	100.0	A	J-36	Simultaneous Test	None
Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	CAL-40 J-36 Note 3	Simultaneous Test	None
Radiation	1.7×10^7 RADS	5.0×10^7 RADS	CAL-44	J-36	Sequential Test	None
Aging	40 Years	10 Years Note 4	I	CAL-66 J-36	Sequential Test	None
Submergence	572' - 2"	603' - 0"	B	J-28	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 218H-010A
Rev.: 2

Prepared by: F Lewis Date 9/30/83
Checked by: [signature] Date 9/30/83

NOTES

1. The Rosemount replaces the Bailey Meter in accordance with FCR 78-525.

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 5.0.

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

Facility: [redacted]is-Besse Unit 1
Docket: 50-346

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 218H-011
Rev.: 0

Prepared by: W. F. Bellamy Date: 2-29-91
Checked by: John T Abbate Date: 9/29/91

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Reactor Protection System Plant ID No. FTRC1B4 Component: Flow Transmitter Manufacturer: Bailey Meter Model Number: BY3X41X-A Function: Transmits Flow Signals Accuracy: Spec: ± .5% Demon: ± .23% Service: Reactor Coolant Loop 1 Hot Leg Flow for RPS Channel 4 and Indication Location: Containment El. 4 Flood Level Elev: 572'-2" Above Flood Level: Yes Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Year	1.1 Years	Note 2	J-1 Note 3	Analysis	None
	Temperature (°F)	283.0	300.0	H, X	J-1	Simultaneous Test	None
	Pressure (PSIA)	52.0	74.7	G, X	J-1	Simultaneous Test	None
	Relative Humidity (%)	100.0	100.0	A	J-1	Simultaneous Test	None
	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	CAL-42	Analysis	None
	Radiation	1.7×10^7 RADS	4.0×10^7 RADS	CAL-44	AG	Sequential Test	None
	Aging	40 Years	10.83 Years Note 1	I	CAL-38	Analysis	None
	Submergence	572' - 2"	603' - 0"	B	J-28	N/A	None

Facility: [redacted]s-Besse Unit 1
Docket: 50-346

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 218H-011A
Rev.: 0

Prepared by: W. V. Kellgren Date: 10-2-81
Checked by: Kenneth D. Moody Date: 10/2/81

NOTES

1. This component is scheduled for replacement during the first refueling outage subsequent to component on-site availability. Interim operation will not be affected due to the time margin provided.

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.: 218H-011
Rev.: 2

Prepared by: Y Lewis Date: 9/30/83
Checked by: [illegible] Date: 9/30/83

EQUIPMENT DESCRIPTION

System: Reactor Protection System
Plant ID No. FTRC1B4
Component: Flow Transmitter
Manufacturer: Rosemount
Model Number: 1153
Function: Transmits Flow Signals
Accuracy: Spec: 5.0%
Demon: .42%
Service: Reactor Coolant Loop 1 Hot Leg Flow for RPS Ch. 4 and Indication
Location: Containment El. 4
Flood Level Elev: 572'-2"
Above Flood Level: Yes

Needed for:
Hot Shutdown [X]
Cold Shutdown [X]

ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
Parameter	Specification	Qualification	Specification	Qualification		
Operating Time	1 Year	1.1 Years	Notes 1 and 2	J-36	Simultaneous Test	None
Temperature (°F)	283.0	350.0	H, X	J-36	Simultaneous Test	None
Pressure (PSIA)	52.0	85.0	G, X	J-36	Simultaneous Test	None
Relative Humidity (%)	100.0	100.0	A	J-36	Simultaneous Test	None
Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	CAL-40 J-36 Note 3	Simultaneous Test	None
Radiation	1.7×10^7 RADS	5.0×10^7 RADS	CAL-44	J-36	Sequential Test	None
Aging	40 Years	10 Years Note 4	I	CAL-66 J-36	Sequential Test	None
Submergence	572' - 2"	603' - 0"	B	J-28	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Prepared by: T Lewis Date 9/30/83
Checked by: D McDaniel Date 9/30/83

NOTES

Index No.: 218H-011A
Rev.: 2

1. The Rosemount replaces the Bailey Meter in accordance with FCR 78-525.

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 5.0.

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 218H-012
Rev.: 2

Prepared by: _____ Date: 11/6/80
Checked by: _____ Date: 11/6/80

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Reactor Protection Plant ID No. PSNI-15-1 Component: Pressure Switch Manufacturer: Mercoid Model Number: APW-7041 Function: Reactor Protection Accuracy: Spec: N/A Demon: N/A Service: Ctmt. Pressure RPS Ch. 2 Location: Auxiliary Bldg. Rm. 501 Flood Level Elev: N/A Above Flood Level: N/A Needed for: Hot Shutdown [X] Cold Shutdown [ ]	Operating Time	1 Hour	36.5 Years	L Note 1	Note 2	Analysis	None
	Temperature (°F)	267.0	Exempt	C-501	Note 3	N/A	None
	Pressure (PSIA)	15.61	Exempt	C-501	Note 3	N/A	None
	Relative Humidity (%)	100.0	Exempt	A	Note 3	N/A	None
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
	Radiation	2×10^2 RADS	3.7×10^4 RADS	T	CAL-73 Note 2	Analysis	None
	Aging	40 Years	36.5 Years Note 4	I	CAL-73 Note 2	Analysis	None
	Submergence	N/A	N/A	N/A	N/A	N/A	None

Facility: Davis-Besse Unit 1 SYSTEM COMPONENT EVALUATION WORKSHEET Index No. 18H-012A
Docket: 50-346 Rev.: 2

NOTES

Prepared by: T Lewis Date: 9/30/83
Checked by: [illegible] Date: [illegible]

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1. FSAR RPS Instrument Response Time Table gives N/A for containment pressure. Based on conservative engineering judgement, a specification operating time of 1 hour is being used.

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

3. This component is a pressure switch which senses containment vessel pressure and trips Reactor Protection System Channel 2 when the pressure exceeds 3.175 psig. This provides a backup to the Low Reactor Coolant System Pressure Trip. The pressure switch is located in Room 501, which becomes harsh due to a postulated High Energy Line Break of the Main Steam Line to the Auxiliary Feed Pump Turbine. This component would not be required to operate in order to mitigate this postulated HELB, since this HELB would not cause containment pressure to rise. It is considered that the construction of this component is such as to preclude inadvertant actuation due to the harsh environment resulting from the postulated HELB. In the highly unlikely event of this failure, Reactor Protection System Channel 2 would be tripped. This component monitors containment pressure but is located outside containment. A sensing line allows containment atmospheric pressure to be measured by a sealed sensing element within the switch. This sensing element actuates the switch mechanism. None of the internals of this device will be exposed to the LOCA environment. The sensing line is normally filled with air and, during a LOCA, the air in the sensing line will be compressed by the inside containment steam-air-pressure mixture rise, but there will be no flow in the sensing line and no steam-air-chemical spray mixture will enter the device.

   Based on the above analysis, it is concluded that failure of this component would not adversely impact safety-related functions or mislead the operator. Therefore this component is exempt from qualification from the postulated High Energy Line Break.

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

COMPONENT MATERIALS EVALUATION SHEET

Index No.: 218H-012B
Rev.: 2

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

Plant I.D. No.: PSNI-15-1
Component: Pressure Switch
Manufacturer: Mercoid
Model No.: APW-7041

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Bottom Housing	Aluminum (214)	Not Sensitive		Not Affected	
Top Cover	Steel	Not Sensitive		Not Affected	
Diaphragm	316 Stainless Steel	Not Sensitive		Not Affected	
Diaphragm Coating	Teflon	40 Years @ 160°F	CAL-73	3.7×10^4 RADS	CAL-73
Switch Body	Phenolic general purpose (phenol-formald)	40 Years @ 230°F	CAL-73	3.0×10^6 RADS	CAL-73
Spring	Spring Steel	Not Sensitive		Not Affected	
Adjustment	Steel	Not Sensitive		Not Affected	
Gasket	Neoprene	36.5 Years @ 104°F	CAL-73	7.0×10^6 RADS	CAL-73

Material & Parts List Reference: AA

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 218H-013
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: Reactor Protection Plant ID No. PSNI-15-3 Component: Pressure Switch Manufacturer: Mercoid Model Number: APW-7041 Function: Reactor Protection Accuracy: Spec: N/A Demon: N/A Service: Ctmt. Pressure RPS Ch. 4 Location: Auxiliary Bldg. Rm. 426 Flood Level Elev: N/A Above Flood Level: N/A Needed for: Hot Shutdown [X] Cold Shutdown [ ]	Operating Time	1 Hour	36.5 Years	Note 1	Note 2	Analysis	None
	Temperature (°F)	N/A	N/A	Note 3	N/A	N/A	None
	Pressure (PSIA)	N/A	N/A	Note 3	N/A	N/A	None
	Relative Humidity (%)	N/A	N/A	Note 3	N/A	N/A	None
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
	Radiation	3.6×10^4 RADS	3.7×10^4 RADS	CAL-73	CAL-73 Note 2	Analysis	None
	Aging	40 Years	36.5 Years Note 4	I	CAL-73 Note 2	Analysis	None
	Submergence	N/A	N/A	N/A	N/A	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Prepared by: T Lewis Date: 9/30/83
Checked by: [illegible] Date: [illegible]

NOTES

Index No.: 218H-013A
Rev.: 2

1. FSAR RPS Instrument Response Time Table gives N/A for containment pressure. Based on conservative engineering judgement, a specification operating time of 1 hour is being used.

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

3. The only harsh environment seen is increased radiation due to recirculated fluids. This component monitors containment pressure but is located outside containment. A sensing line allows containment atmospheric pressure to be measured by a sealed sensing element within the switch. This sensing element actuates the switch mechanism. None of the internals of this device will be exposed to the LOCA environment. The sensing line is normally filled with air and, during a LOCA, the air in the sensing line will be compressed by the inside containment steam-air-pressure mixture rise, but there will be no flow in the sensing line and no steam-air-chemical spray mixture will enter the device.

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
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COMPONENT MATERIALS EVALUATION SHEET

Prepared by: R. Levin Date: 11/1/82
Checked by: [illegible] Date: 4/2/83

Index No.: 218H-017a
Rev.: 2

Plant I.D. No.: PSNI-15-3
Manufacturer: Mercoid

Component: Pressure Switch
Model No.: APW-7041

Parts List	Materials List	THERMAL AGING Qualification	Reference	RADIATION Qualification	Reference
Bottom Housing	Aluminum (214)	Not Sensitive		Not Affected	
Top Cover	Steel	Not Sensitive		Not Affected	
Diaphragm	316 Stainless Steel	Not Sensitive		Not Affected	
Diaphragm Coating	Teflon	40 Years @ 160°F	CAL-73	3.7×10^4 RADS	CAL-73
Switch Body	Phenolic general purpose (phenol-formald)	40 Years @ 230° F	CAL-73	3.0×10^6 RADS	CAL-73
Spring	Spring Steel	Not Sensitive		Not Affected	
Adjustment	Steel	Not Sensitive		Not Affected	
Gasket	Neoprene	36.5 Years @ 104°F	CAL-73	7.0×10^6 RADS	CAL-73

Material & Parts List Reference: AA

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Prepared by: N Lewis Date: 11/1/80
Checked by: [signature] Date: 11/2/80

Index No.: 218H-014
Rev.: 2

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Reactor Protection Plant ID No. PSNI-15-4 Component: Pressure Switch Manufacturer: Mercoid Model Number: APW-7041 Function: Reactor Protection Accuracy: Spec: N/A Demon: N/A Service: Ctmt. Pressure RPS Ch. 3 Location: Auxiliary Bldg. Rm. 500 Flood Level Elev: N/A Above Flood Level: N/A Needed for: Hot Shutdown [X] Cold Shutdown [ ]	Operating Time	1 Hour	36.5 Years	L Note 1	Note 2	Analysis	None
	Temperature (°F)	249.0	Exempt	C-500	Note 3	N/A	None
	Pressure (PSIA)	15.61	Exempt	C-500	Note 3	N/A	None
	Relative Humidity (%)	100.0	Exempt	A	Note 3	N/A	None
	Chemical Spray	N/A	N/A	N/A	N/A	N/A	None
	Radiation	2×10^2 RADS	3.7×10^4 RADS	T	CAL-73 Note 2	Analysis	None
	Aging	40 Years	36.5 Years Note 4	I	CAL-73 Note 2	Analysis	None
	Submergence	N/A	N/A	N/A	N/A	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

repared by: J Lewis Date: 9/30/83
hecked by: [illegible] Date: [illegible]

NOTES

Index No.: 218H-014A
Rev.: 2

- FSAR RPS Instrument Response Time Table gives N/A for containment pressure. Based on conservative engineering judgement, a specification operating time of 1 hour is being used.

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

- This component is a pressure switch which senses containment vessel pressure and trips Reactor Protection System Channel 3 when the pressure exceeds 3.175 psig. This provides a backup to the Low Reactor Coolant System Pressure Trip. The pressure switch is located in Room 500, which becomes harsh due to a postulated High Energy Line Break of the Main Steam Line to the Auxiliary Feed Pump Turbine. This component would not be required to operate in order to mitigate this postulated HELB, since this HELB would not cause containment pressure to rise. It is considered that the construction of this component is such as to preclude inadvertant actuation due to the harsh environment resulting from the postulated HELB. In the highly unlikely event of this failure, Reactor Protection System Channel 3 would be tripped. This component monitors containment pressure but is located outside containment. A sensing line allows containment atmospheric pressure to be measured by a sealed sensing element within the switch. This sensing element actuates the switch mechanism. None of the internals of this device will be exposed to the LOCA environment. The sensing line is normally filled with air and, during a LOCA, the air in the sensing line will be compressed by the inside containment steam-air-pressure mixture rise, but there will be no flow in the sensing line and no steam-air-chemical spray mixture will enter the device.

  Based on the above analysis, it is concluded that failure of this component would not adversely impact safety-related functions or mislead the operator. Therefore this component is exempt from qualification from the postulated High Energy Line Break.

- 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
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COMPONENT MATERIALS EVALUATION SHEET

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

Index No.: 218H-014B
Rev.: 2

Plant I.D. No.: PSNI-15-4
Manufacturer: Mercoid

Component: Pressure Switch
Model No.: APW-7041

Parts List	Materials List	THERMAL AGING Qualification	Reference	RADIATION Qualification	Reference
Bottom Housing	Aluminum (214)	Not Sensitive		Not Affected	
Top Cover	Steel	Not Sensitive		Not Affected	
Diaphragm	316 Stainless Steel	Not Sensitive		Not Affected	
Diaphragm Coating	Teflon	40 Years @ 160°F	CAL-73	3.7×10^4 RADS	CAL-73
Switch Body	Phenolic general purpose (phenol-formald)	40 Years @ 230°F	CAL-73	3.0×10^6 RADS	CAL-73
Spring	Spring Steel	Not Sensitive		Not Affected	
Adjustment	Steel	Not Sensitive		Not Affected	
Gasket	Neoprene	36.5 Years @ 104°F	CAL-73	7.0×10^6 RADS	CAL-73

Material & Parts List Reference: AA

Facility: Davis-Besse Unit 1
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SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 218H-015
Rev.: 2

Prepared by: N. Ferris Date: 11/1/87
Checked by: [signature] Date: 11/5/87

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Reactor Protection Plant ID No. PTRC2A1 Component: Pressure Transmitter Manufacturer: Rosemount Model Number: 1152GP9A92T0010PB Function: Transmits Pressure Signals Accuracy: Spec: 2.0% Demon: .5% Service: RC Loop 2 HLG Narrow Range Pressure for RPS Ch. 4 Location: Containment Rm. 410 Flood Level Elev: 572'-2" Above Flood Level: Yes Needed for: Hot Shutdown [X] Cold Shutdown [ ]	Operating Time	26 Hours	50 Hours	F	J-8	Simultaneous Test	None
	Temperature (°F)	283.0	316.0	H, X	J-8	Simultaneous Test	None
	Pressure (PSIA)	52.0	84.7	G, X	J-8	Simultaneous Test	None
	Relative Humidity (%)	100.0	100.0	A	J-8	Simultaneous Test	None
	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	J-7 CAL-40 Note 1	Simultaneous Test, Analysis	None
	Radiation	1.92 x 10^6 RADS	5.0 x 10^6 RADS	CAL-44	J-8	Sequential Test	None
	Aging	40 Years	15.1 Years Note 3	I	CAL-64 Note 2	Analysis	None
	Submergence	572' - 2"	606' - 0"	B	J-11	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 218H-015A
Rev.: 2

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

NOTES

1. CAL-40 qualifies components tested in a high pH boric acid spray to a pH value of 5.

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.

   The 15.1 year qualified life does not include the electronic components. We are unable to assign a qualified life to the electronic assembly. The surveillance and maintenance program will assess the changing status of the transmitter and determine if any aging-related common-mode failures exist. The surveillance frequency will be adjusted as necessary to ensure that functional operability is maintained.

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

COMPONENT MATERIALS EVALUATION SHEET

Index No.: 218H-015B
Rev.: 2

Prepared by: N. Lewis Date: 11/2/83
Checked by: [signature] Date: 11/3/83

Plant I.D. No.: PTRC2A1
Manufacturer: Rosemount
Component: Pressure Transmitter
Model No.: 1152GP9A92T0010PB

Parts List	Materials List	THERMAL AGING		RADIATION	
		Qualification	Reference	Qualification	Reference
Housing and Cover	316 Stainless Steel	Not Affected	CAL-64	N/A	N/A
Process Flange	316 Stainless Steel	Not Affected	CAL-64	N/A	N/A
Blank Flange	316 Stainless Steel	Not Affected	CAL-64	N/A	N/A
Valve Stem and Seat	316 Stainless Steel	Not Affected	CAL-64	N/A	N/A
Adjustment Screw	Steel	Not Affected	CAL-64	N/A	N/A
Retaining Ring	Steel	Not Affected	CAL-64	N/A	N/A
O-Rings	BUNA N	15.1 Years @ 120°F	CAL-64	N/A	N/A
O-Ring (Process Flange)	Ethylene Propylene	40 Years @ 172°F	CAL-64	N/A	N/A
Electronics Assembly	Steel	Not Affected	CAL-64	N/A	N/A
Hardware				N/A	N/A
Bolts	Steel	Not Affected	CAL-64	N/A	N/A
Nuts	Steel	Not Affected	CAL-64	N/A	N/A
Mounting Bracket	Steel	Not Affected	CAL-64	N/A	N/A
Circuit Boards	Electronic Assemblies	Note 3	CAL-64	N/A	N/A
Sensor Module	316 Stainless Steel	Not Affected	CAL-64	N/A	N/A
Sensor Module Oil Fill	Silicone Oil	40 Years	CAL-64	N/A	N/A

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 218H-016
Rev.: 2

'repared by: N. Lewis Date: 11/1/83
'hecked by: [signature] Date: 11/1/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Reactor Protection Plant ID No. PTRC2A2 Component: Pressure Transmitter Manufacturer: Rosemount Model Number: 1152GP9A92T0010PB Function: Transmits Pressure Signals Accuracy: Spec: 2.0% Demon: .5% Service: RC Loop 2 HLG Narrow Range Pressure for RPS Ch. 2 Location: Containment Rm. 410 Flood Level Elev: 572'-2" Above Flood Level: Yes Needed for: Hot Shutdown [X] Cold Shutdown [ ]	Operating Time	26 Hours	50 Hours	F	J-8	Simultaneous Test	None
	Temperature (°F)	283.0	316.0	H, X	J-8	Simultaneous Test	None
	Pressure (PSIA)	52.0	84.7	G, X	J-8	Simultaneous Test	None
	Relative Humidity (%)	100.0	100.0	A	J-8	Simultaneous Test	None
	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	J-7 CAL-40 Note 1	Simultaneous Test, Analysis	None
	Radiation	1.88 x 10^6 RADS	5.0 x 10^6 RADS	CAL-44	J-8	Sequential Test	None
	Aging	40 Years	15.1 Years Note 3	I	CAL-64 Note 2	Analysis	None
	Submergence	572'-2"	606'-0"	B	J-11	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 218H-016A
Rev.: 2

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

NOTES

1. CAL-40 qualifies components tested in a high pH boric acid spray to a pH value of 5.

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.

   The 15.1 year qualified life does not include the electronic components. We are unable to assign a qualified life to the electronic assembly. The surveillance and maintenance program will assess the changing status of the transmitter and determine if any aging-related common-mode failures exist. The surveillance frequency will be adjusted as necessary to ensure that functional operability is maintained.

Facility: Davis-Besse Unit 1 COMPONENT MATERIAL EVALUATION SHEET Index No.: 218H-016B
Docket: 50-346 Rev.: 2

Prepared by: N. Lewis Date: 11/1/83
Checked by: D Markland Date: 11/4/83

Plant I.D. No.: PTRC2A2 Component: Pressure Transmitter
Manufacturer: Rosemount Model No.: 1152GP9A92T0010PB

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Housing and Cover	316 Stainless Steel	Not Affected	CAL-64	N/A	N/A
Process Flange	316 Stainless Steel	Not Affected	CAL-64	N/A	N/A
Blank Flange	316 Stainless Steel	Not Affected	CAL-64	N/A	N/A
Valve Stem and Seat	316 Stainless Steel	Not Affected	CAL-64	N/A	N/A
Adjustment Screw	Steel	Not Affected	CAL-64	N/A	N/A
Retaining Ring	Steel	Not Affected	CAL-64	N/A	N/A
O-Rings	BUNA N	15.1 Years @ 120°F	CAL-64	N/A	N/A
O-Ring (Process Flange)	Ethylene Propylene	40 Years @ 172°F	CAL-64	N/A	N/A
Electronics Assembly	Steel	Not Affected	CAL-64	N/A	N/A
Hardware				N/A	N/A
Bolts	Steel	Not Affected	CAL-64	N/A	N/A
Nuts	Steel	Not Affected	CAL-64	N/A	N/A
Mounting Bracket	Steel	Not Affected	CAL-64	N/A	N/A
Circuit Boards	Electronic Assemblies	Note 3	CAL-64	N/A	N/A
Sensor Module	316 Stainless Steel	Not Affected	CAL-64	N/A	N/A
Sensor Module Oil Fill	Silicone Oil	40 Years	CAL-64	N/A	N/A

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 218H-017
Rev.: 2

Prepared by: N. Fuss Date: 11/1/83
Checked by: E. VanBuskirk Date: 11/3/83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Reactor Protection Plant ID No. PTRC2B1 Component: Pressure Transmitter Manufacturer: Rosemount Model Number: 1152GP9A92T0010PB Function: Transmits Pressure Signals Accuracy: Spec: 2.0% Demon: .5% Service: RC Loop 1 HLG Narrow Range Pressure for RPS Ch. 3 Location: Containment Rm. 407 Flood Level Elev: 572'-2" Above Flood Level: Yes Needed for: Hot Shutdown [X] Cold Shutdown [ ]	Operating Time	26 Hours	50 Hours	F	J-8	Simultaneous Test	None
	Temperature (°F)	283.0	316.0	H, X	J-8	Simultaneous Test	None
	Pressure (PSIA)	52.0	84.7	G, X	J-8	Simultaneous Test	None
	Relative Humidity (%)	100.0	100.0	A	J-8	Simultaneous Test	None
	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	J-7 CAL-40 Note 1	Simultaneous Test, Analysis	None
	Radiation	2.21 x 10^6 RADS	5.0 x 10^6 RADS	CAL-44	J-8	Sequential Test	None
	Aging	40 Years	15.1 Years Note 3	I	CAL-64 Note 2	Analysis	None
	Submergence	572'-2"	606'-0"	B	J-11	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 218H-017A
Rev.: 2

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

NOTES

1. CAL-40 qualifies components tested in a high pH boric acid spray to a pH value of 5.

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.

   The 15.1 year qualified life does not include the electronic components. We are unable to assign a qualified life to the electronic assembly. The surveillance and maintenance program will assess the changing status of the transmitter and determine if any aging-related common-mode failures exist. The surveillance frequency will be adjusted as necessary to ensure that functional operability is maintained.

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

COMPONENT MATERIALS EVALUATION SHEET

Index No.: 218H-017B
Rev.: 2

Prepared by: N. Lewis Date: 11/1/02
Checked by: [signature] Date: 11/2/02

Plant I.D. No.: PTRC2B1
Manufacturer: Rosemount
Component: Pressure Transmitter
Model No.: 1152GP9A92T0010PB

Parts List	Materials List	THERMAL AGING Qualification	THERMAL AGING Reference	RADIATION Qualification	RADIATION Reference
Housing and Cover	316 Stainless Steel	Not Affected	CAL-64	N/A	N/A
Process Flange	316 Stainless Steel	Not Affected	CAL-64	N/A	N/A
Blank Flange	316 Stainless Steel	Not Affected	CAL-64	N/A	N/A
Valve Stem and Seat	316 Stainless Steel	Not Affected	CAL-64	N/A	N/A
Adjustment Screw	Steel	Not Affected	CAL-64	N/A	N/A
Retaining Ring	Steel	Not Affected	CAL-64	N/A	N/A
O-Rings	BUNA N	15.1 Years @ 120°F	CAL-64	N/A	N/A
O-Ring (Process Flange)	Ethylene Propylene	40 Years @ 172°F	CAL-64	N/A	N/A
Electronics Assembly	Steel	Not Affected	CAL-64	N/A	N/A
Hardware				N/A	N/A
Bolts	Steel	Not Affected	CAL-64	N/A	N/A
Nuts	Steel	Not Affected	CAL-64	N/A	N/A
Mounting Bracket	Steel	Not Affected	CAL-64	N/A	N/A
Circuit Boards	Electronic Assemblies	Note 3	CAL-64	N/A	N/A
Sensor Module	316 Stainless Steel	Not Affected	CAL-64	N/A	N/A
Sensor Module Oil Fill	Silicone Oil	40 Years	CAL-64	N/A	N/A

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 218H-018
Rev.: 2

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

EQUIPMENT DESCRIPTION

System: Reactor Protection

Plant ID No. PTRC2B2

Component: Pressure Transmitter

Manufacturer: Rosemount

Model Number: 1152GP9A92T0010PB

Function: Transmits Pressure Signals

Accuracy: Spec: 2.0%
Demon: .5%

Service: RC Loop 1 HLG Narrow Range Pressure for RPS Ch. 1

Location: Containment Rm. 407

Flood Level Elev: 572'-2"

Above Flood Level: Yes

Needed for:
Hot Shutdown [X]
Cold Shutdown [ ]

ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
Parameter	Specification	Qualification	Specification	Qualification		
Operating Time	26 Hours	50 Hours	F	J-8	Simultaneous Test	None
Temperature (°F)	283.0	316.0	H, X	J-8	Simultaneous Test	None
Pressure (PSIA)	52.0	84.7	G, X	J-8	Simultaneous Test	None
Relative Humidity (%)	100.0	100.0	A	J-8	Simultaneous Test	None
Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	J-7 CAL-40 Note 1	Simultaneous Test, Analysis	None
Radiation	2.0×10^6 RADS	5.0×10^6 RADS	CAL-44	J-8	Sequential Test	None
Aging	40 Years	15.1 Years Note 3	I	CAL-64 Note 2	Analysis	None
Submergence	572'-2"	606'-0"	B	J-11	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 218H-018A
Rev.: 2

NOTES

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

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1. CAL-40 qualifies components tested in a high pH boric acid spray to a pH value of 5.

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.

   The 15.1 year qualified life does not include the electronic components. We are unable to assign a qualified life to the electronic assembly. The surveillance and maintenance program will assess the changing status of the transmitter and determine if any aging-related common-mode failures exist. The surveillance frequency will be adjusted as necessary to ensure that functional operability is maintained.

Facility: Davis-Besse Unit 1 COMPONENT MATERIAL EVALUATION SHEET Index No. 218H-018B
Docket: 50-346 Rev.: 2

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

Plant I.D. No.: PTRC2B2 Component: Pressure Transmitter
Manufacturer: Rosemount Model No.: 1152GP9A92T0010PB

		THERMAL AGING		RADIATION	
Parts List	Materials List	Qualification	Reference	Qualification	Reference
Housing and Cover	316 Stainless Steel	Not Affected	CAL-64	N/A	N/A
Process Flange	316 Stainless Steel	Not Affected	CAL-64	N/A	N/A
Blank Flange	316 Stainless Steel	Not Affected	CAL-64	N/A	N/A
Valve Stem and Seat	316 Stainless Steel	Not Affected	CAL-64	N/A	N/A
Adjustment Screw	Steel	Not Affected	CAL-64	N/A	N/A
Retaining Ring	Steel	Not Affected	CAL-64	N/A	N/A
O-Rings	BUNA N	15.1 Years @ 120°F	CAL-64	N/A	N/A
O-Ring (Process Flange)	Ethylene Propylene	40 Years @ 172°F	CAL-64	N/A	N/A
Electronics Assembly	Steel	Not Affected	CAL-64	N/A	N/A
Hardware				N/A	N/A
Bolts	Steel	Not Affected	CAL-64	N/A	N/A
Nuts	Steel	Not Affected	CAL-64	N/A	N/A
Mounting Bracket	Steel	Not Affected	CAL-64	N/A	N/A
Circuit Boards	Electronic Assemblies	Note 3	CAL-64	N/A	N/A
Sensor Module	316 Stainless Steel	Not Affected	CAL-64	N/A	N/A
Sensor Module Oil Fill	Silicone Oil	40 Years	CAL-64	N/A	N/A

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

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 218H-019
Rev.: 2

Prepared by: N. Ferris Date: 11/1/83
Checked by: [illegible] Date: 11-2-83

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Reactor Protection Plant ID No. TERC3A2 Component: Resistance Temperature Detector Manufacturer: Rosemount Model Number: 177HW-2 Function: Senses Temperature Accuracy: Spec: 0.5% Demon: 0.5% Service: Reactor Coolant Loop 2 Hot Leg Narrow Range Temperature for RPS Channel 4 Location: Containment El. 4 Flood Level Elev: 572'-2" Above Flood Level: Yes Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Hour	24 Hours	Note 1	ROC-34A	Simultaneous Test	None
	Temperature (°F)	283.0	325.0	H, X	AG	Simultaneous Test	None
	Pressure (PSIA)	52.0	74.7	G, X	AG	Simultaneous Test	None
	Relative Humidity (%)	100.0	100.0	A	AG	Simultaneous Test	None
	Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	CAL-42	Analysis	None
	Radiation	3.87×10^7 RADS	3.8×10^8 RADS	CAL-44	J-3	Sequential Test	None
	Aging	40 Years	40 Years	I	CAL-89 Note 2	Analysis	None
	Submergence	572' - 2"	635' - 0"	B	J-11	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 218H-019A
Rev.: 2

NOTES

Prepared by: R. Lewis Date: 11/1/83
Checked by: E. MacBratt Date: 11/2/83

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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 thermal aging summarized on attached evaluation.

Facility: Davis-Besse Unit 1
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COMPONENT MATERIALS EVALUATION SHEET

Index No.: 218H-019B
Rev.: 2

Prepared by: M Lee Date: 4/1/93
Checked by: D Mandsorf Date: 4/2/93

Plant I.D. No.: TERC3A2
Component: Resistance Temperature Detector
Manufacturer: Rosemount
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.: 218H-020
Rev.: 2

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

EQUIPMENT DESCRIPTION

System: Reactor Protection

Plant ID No. TERC3A-1

Component: Resistance Temperature Detector

Manufacturer: Rosemount

Model Number: 177HW-2

Function: Senses Temperature

Accuracy: Spec: 0.5%
Demon: 0.5%

Service: Reactor Coolant Loop 2 Hot Leg Narrow Range Temperature for RPS Channel 2

Location: Containment El. 4

Flood Level Elev: 572'-2"

Above Flood Level: Yes

Needed for:
Hot Shutdown [X]
Cold Shutdown [X]

ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
Parameter	Specification	Qualification	Specification	Qualification		
Operating Time	1 Hour	24 Hours	Note 1	ROC-34A	Simultaneous Test	None
Temperature (°F)	283.0	325.0	H, X	AG	Simultaneous Test	None
Pressure (PSIA)	52.0	74.7	G, X	AG	Simultaneous Test	None
Relative Humidity (%)	100.0	100.0	A	AG	Simultaneous Test	None
Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	CAL-42	Analysis	None
Radiation	3.87×10^7 RADS	3.8×10^8 RADS	CAL-44	J-3	Sequential Test	None
Aging	40 Years	40 Years	I	CAL-89 Note 2	Analysis	None
Submergence	572'-2"	635'-0"	B	J-11	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

NOTES

Index No.: 218H-020A
Rev.: 2

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

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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 thermal aging summarized on attached evaluation.

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

COMPONENT MATERIALS EVALUATION SHEET

Index No.: 218H-020B
Rev.: 2

Prepared by: [signature] Date: 11/10/83
Checked by: [signature] Date: 11/21/83

Plant I.D. No.: TERC3A4
Manufacturer: Rosemount

Component: Resistance Temperature Detector
Model No.: 177HW - 2

Parts List	Materials List	THERMAL AGING Qualification	THERMAL AGING Reference	RADIATION Qualification	RADIATION 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.: 218H-021
Rev.: 2

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

EQUIPMENT DESCRIPTION	ENVIRONMENT		DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter / Specification / Qualification		Specification	Qualification		
System: Reactor Protection Plant ID No. TERC3B2 Component: Resistance Temperature Detector Manufacturer: Rosemount Model Number: 177HW-2 Function: Senses Temperature Accuracy: Spec: 0.5% Demon: 0.5% Service: Reactor Coolant Loop 1 Hot Leg Narrow Range Temperature for RPS Channel 1 Location: Containment El. 5 Flood Level Elev: 572'-2" Above Flood Level: Yes Needed for: Hot Shutdown [X] Cold Shutdown [X]	Operating Time	1 Hour / 24 Hours	Note 1	ROC-34A	Simultaneous Test	None
	Temperature (°F)	283.0 / 325.0	H, X	AG	Simultaneous Test	None
	Pressure (PSIA)	52.0 / 74.7	G, X	AG	Simultaneous Test	None
	Relative Humidity (%)	100.0 / 100.0	A	AG	Simultaneous Test	None
	Chemical Spray	Boric Acid 1800 ppm pH 5.0 / Boric Acid 1800 ppm pH 5.0	A	CAL-42	Analysis	None
	Radiation	3.87×10^7 RADS / 3.8×10^8 RADS	CAL-44	J-3	Sequential Test	None
	Aging	40 Years / 40 Years	I	CAL-89 Note 2	Analysis	None
	Submergence	572' - 2" / 635' - 0"	B	J-11	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No.: 218H-021A
Rev.: 2

NOTES

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

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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 thermal aging summarized on attached evaluation.

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

COMPONENT MATERIALS EVALUATION SHEET

Index No.: 218H-021B
Rev.: 2

Prepared by: [signature] Date: 6/1/93
Checked by: [signature] Date: 6/2/93

Plant I.D. No.: TERC3B2 Component: Resistance Temperature Detector

Manufacturer: Rosemount 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

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

Index No.: 218H-022
Rev.: 2

EQUIPMENT DESCRIPTION

System: Reactor Protection

Plant ID No. TERC3B4

Component: Resistance Temperature Detector

Manufacturer: Rosemount

Model Number: 177HW-2

Function: Senses Temperature

Accuracy: Spec: 0.5%
Demon: 0.5%

Service: Reactor Coolant Loop 2 Hot Leg Narrow Range Temperature for RPS Channel 3

Location: Containment El. 5

Flood Level Elev: 572'-2"

Above Flood Level: Yes

Needed for:
Hot Shutdown [X]
Cold Shutdown [X]

ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
Parameter	Specification	Qualification	Specification	Qualification		
Operating Time	1 Hour	24 Hours	Note 1	ROC-34A	Simultaneous Test	None
Temperature (°F)	283.0	325.0	H, X	AG	Simultaneous Test	None
Pressure (PSIA)	52.0	74.7	G, X	AG	Simultaneous Test	None
Relative Humidity (%)	100.0	100.0	A	AG	Simultaneous Test	None
Chemical Spray	Boric Acid 1800 ppm pH 5.0	Boric Acid 1800 ppm pH 5.0	A	CAL-42	Analysis	None
Radiation	3.87×10^7 RADS	3.8×10^8 RADS	CAL-44	J-3	Sequential Test	None
Aging	40 Years	40 Years	I	CAL-89 Note 2	Analysis	None
Submergence	572' - 2"	635' - 0"	B	J-11	N/A	None

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

SYSTEM COMPONENT EVALUATION WORKSHEET

Index No. 218H-022A
Rev.: 2

NOTES

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

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

COMPONENT MATERIALS EVALUATION SHEET

Index No.: 218H-022B
Rev.: 2

Prepared by: [signature] Date: 11/1/82
Checked by: [signature] Date: 11/3/82

Plant I.D. No.: TERC3B4
Component: Resistance Temperature Detector
Manufacturer: Rosemount
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
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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.