

**GPU Nuclear**

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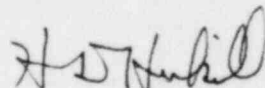
Office of Inspection and Enforcement  
Attn: R. C. Haynes, Regional Administrator  
Region I  
U. S. Nuclear Regulatory Commission  
631 Park Avenue  
King of Prussia, PA 19406

Dear Sir:

Three Mile Island Nuclear Station, Unit 1 (TMI-1)  
Operating License No. DPR-50  
Docket No. 50-289  
Response to IE Bulletin 79-01B, Rev. 6

Enclosed please find revision 6 to our response to IE Bulletin 79-01B dated August 12, 1981 (LIL 225). Attachment 1 indicates the pages to be replaced; Attachment 2 is a summary of the changes and Attachment 3 is replacement pages for your copy of the environmental qualification volumes.

Sincerely,

  
H. D. Hukill  
Director, TMI-1

HDH:CWS:vjf  
Attachments  
cc: R. Jacobs  
C. Crane

8205110272 820503  
PDR ADOCK 05000239  
Q PDR

IE 11  
5  
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ATTACHMENT 1

Revised Pages  
HOT SHUTDOWN (VOL 1/1A)

Master List Table of Contents  
Master List Main Steam Sheet 1 to 3  
Master List Emergency Feedwater Sheet 1 and 3  
Master List Makeup and Purification Sheet 3  
Master List Decay Heat Removal Sheet 2  
Master List D. H. C. L. C. Sheet 1  
Master List RBI Sheet 6  
Master List Reactor Bldg. Spray Sheet 1  
Master List Reactor Bldg. Emerg. Cooling Sheet 1  
Master List R. B. E. C. R. W. Sheet 1  
Master List Core Flood Sheet 2  
Master List N. S. C. L. C. Sheet 2  
Main Steam List of Effective Pages  
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Emergency Feedwater List of Effective Pages  
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Decay Heat List of Effective Pages  
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Reactor Bldg. Iso. List of Effective Pages  
Reactor Bldg. Iso. Sheet 3, 3B, 4, 4B, 5, 5A, 5B, 5C, 6, 6A, 6B, 6C, 9, 9B, 10, 10B, 12, 12B, 20, 20B, 23, 23B, 25, 25A, 26, 26A, 27, 27B, 30, 30B, 33, 33B, 36, 36B, 39, 39B, 41, 41B, 44, 44A, 49, 49A, 55, 56, 56A, 57, 57A, 61, 61A, 64, 64B, 67, 67B  
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Core Flood List of Effective Pages  
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N. S. C. L. C. Sheets 8, 8B, 9, 9B, 10, 11, 11B, 12, 12B, 13, 14, 14B, 15, 15B, 16, 17, 17B, 18, 18B, 19, 20, 20B, 21, 21B, 22, 23, 23B, 24, 24B, 25  
AAME List of Effective Pages  
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Common List of Effective Pages  
Common Sheet, 2, 14, 15, 16  
Display Inst. List of Effective Pages  
Display Inst. Sheets 9, 10, 11, 12, 13, 15, 16, 38, 41



COLD SHUTDOWN (VOL. 6)

Master List Main Steam Sheet 2

Master List Emerg. Feedwater Sheet 1

Main Steam List of Effective Pages

Main Steam Sheet 3, 3A, 3B, 4, 4B, 5, 5A, 5B, 6, 6B, 13, 14

## ATTACHMENT 2

### Summary of Changes

#### HOT SHUTDOWN (VOL. 1/1A)

- Master List 1. Plant modification deleted solenoid valves SV 1, 2, 3, 4/EV-V-30A and B and PS-21/22
2. Added asterisk identifying equipment in no-harsh environment
3. Reidentified SP-V-30A/B to SP-V-5A/B

Main Steam Sheet 1 to 8 - Component materials evaluation sheet indicating that the gasket material was changed to ethylene propylene (service life of 40 years).

Emergency Feedwater Sheet 1 and 2 - added supporting calculation 1101x - 5350 - 020

Emergency Feedwater Sheet 29, 30 - revised Notes 2 and 3, changed Note B, added Note C, added qual. references/method, added electrical component evaluation and component material evaluation sheet. Plant Identification number corrected from SP-V-30A/B to SP-V-5A/B.

Replaced Solenoid Coils in EF Sheets, 15, 16, 17 - MU Sheet 17, 34 - RBI Sheet 3, 4, 9, 10, 12, 20, 23, 27, 30, 33, 36, 39, 41, 44, 49, 61, 64, 67

Install New Solenoids in RBI Sheet 55 - CF sheet 11, 12, 17, 18 - NSCLC sheet 10, 13, 16, 19, 22, 25

E. F. Sheet 18, 19, 20 - added qualification data and component materials evaluation sheet

MU sheet 4 to 9 - updated qualification documentation data and references.

MU sheet 13, 14 - added Note F

MU Sheet 37, 38, 39 - added second plant Identification Number.

DH sheet 6 to 9 RBI sheet 5 and 6 - added brake model to asterisk note and added component material evaluation sheet for brake.

RBI Sheet 25, 26, 56, 57 - CF sheet 7, 8, 9, 10, 13, 14, 15, 16 - NSCLC Sheet 8, 9, 11, 12, 14, 15, 17, 18, 20, 21, 23, 24 - corrected material on component material evaluation sheet and change qualified life to 17.6 years.

RPS Sheet 13 to 16 change neoprone aging service life from 6 years to 17.5 years per GPUN calculation 1101x - 5350 - 014

AAME Sheet 1, 2, 3, 4, 5, 6, 7 - added electrical component evaluation sheet.

AAME Sheet 8 to 15 qualfiied life change to 1.5 years with note on component materials evaluation sheet indicating that the head O-ring will be changed to ethylene propylene (service life of 40 years) prior to plant restart criticality.

Common sheet - updated qualification documentation reference.

Common sheet 14 - revised Note B

Common Sheet 15, 16 - updated qualification environment and qualification documentation references.

Display Inst. Sheet 9, 10, 11, 12 corrected manufacturer/model identification.

Display Inst. Sheet 13, corrected component/manufacturer/model identification.

Display Inst. Sheet, 15, 16, 38, 41 corrected model number.

#### COLD SHUTDOWN (VOL. 6)

MS Master List - Plant Modification deleted PS-21/22

EF Master List - corrected generic name of FI-577/578/579

MS Sheet 3, 5 - revised Notes 2 and 3, changed Note C, add Note D, added qualification references/method, added electrical component evaluation and component materials evaluation sheets.

MS sheet 4, 6 - add Note C, added electrical component evaluation.

MASTER LIST  
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Main Steam System	1, 2, 3
Emergency Feedwater System	1, 2, 3
Make-Up and Purification System	1, 2, 3, 4
Decay Heat Removal System	1, 2
Decay Heat Closed Loop Cooling System	1
Reactor Building Isolation System	1, 2, 3, 4, 5, 6
Reactor Building Spray System	1
Reactor Protection System	1, 2
Engineered Safeguards Actuation System	1, 2
Reactor Building Emergency Cooling System	1
Reactor Building Emergency Cooling River Water System	1
Core Flood System	1, 2
Nuclear Services Closed Loop Cooling System	1, 2, 3
Additional Accident Monitoring Equipment	1, 2
Display Instrumentation	1, 2, 3

# MASTER LIST

Three Mile Island  
Unit 1

Docket No. 50-289

(Class IE Electrical Equipment Required to  
Function Under Postulated Accident  
Conditions)

Rev. 6  
Date 12/31/81  
Sheet 1 of 3

System: Main Steam

COMPONENTS			
Plant Identification Number	Generic Name	Location	
		Inside Primary Containment	Outside Primary Containment
PS-600	Pressure Switch	X	
PS-601	Pressure Switch	X	
PS-602	Pressure Switch	X	
PS-603	Pressure Switch	X	
PS-604	Pressure Switch	X	
PS-605	Pressure Switch	X	
PS-606	Pressure Switch	X	
PS-607	Pressure Switch	X	
SP6A-PT1	Pressure Transmitter	X	
SP6A-PT2	Pressure Transmitter	X	
SP6B-PT1	Pressure Transmitter	X	
SP6B-PT2	Pressure Transmitter	X	
LCA/MSV-6	Limit Switch		X
LSB/MSV-6	Limit Switch		X
33/MSV-13A	Limit Switch		X
SV/MSV-13A	Solenoid Valve		X
SV/MSV-13B	Solenoid Valve		X
LSA/MSV-13B	Limit Switch		X

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Three Mile Island

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(Class IE Electrical Equipment Required to Function Under Postulated Accident Conditions)

Rev. 6  
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Sheet 2 of 3

System: Main Steam

COMPONENTS			
Plant Identification Number	Generic Name	Location	
		Inside Primary Containment	Outside Primary Containment
T-231	Terminal Box		X
Penet 313	Electrical Penetration Assembly	X	
Penet 205	Electrical Penetration Assembly	X	
Penet 315	Electrical Penetration Assembly	X	
Penet 317	Electrical Penetration Assembly	X	
T-434	Terminal Box	X	
T-433	Terminal Box	X	
T-424	Terminal Box	X	
T-423	Terminal Box	X	
LSB/MSV-13 B	Limit Switch		X
T-233	Terminal Box		X
	Cable (Power)	X	X
	Cable (Control)	X	X
	Cable (Instrumentation)	X	X
	Conax Seal Assembly	X	
LSB/MS-V-13A	Limit Switch		X
	Thyrector		X



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### Three Mile Island

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System: Main Stream

\*Work Sheets with "Cold Shutdown" Vol. VI

[illegible]

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(Class IE Electrical Equipment Required to Function Under Postulated Accident Conditions)

Rev.

6

Date

12/31/81

Sheet

1 of 3

System: Emergency Feed Water / Feed Water

COMPONENTS			
Plant Identification Number	Generic Name	Location	
		Inside Primary Containment	Outside Primary Containment
EF-P2A	Pump Motor		X
EF-P-2B	Pump Motor		X
EF-V-1A	Valve Motor Operator		X
EF-V-1B	Valve Motor Operator		X
EF-V-2A	Valve Motor Operator		X
EF-V-2B	Valve Motor Operator		X
SV182/EF-V-30A	Solenoid Valve	(Deleted From System by SECM-303/LM-13)	
SV384/EF-V-30A	Solenoid Valve	" " " "	" " " X
SV182/EF-V-30B	Solenoid Valve	" " " "	" " " X
SV384/EF-V-30B	Solenoid Valve	" " " "	" " " X
T-431	Terminal Box		X
T-432	Terminal Box		X
T-421	Terminal Box		X
T-422	Terminal Box		X
T-419	Terminal Box		X
T-379	Terminal Box		X
	Cable (Power)		X
	Cable (Control)		X

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Sheet

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System: Emergency Feed Water/ Feed Water

COMPONENTS			
Plant Identification Number	Generic Name	Location	
		Inside Primary Containment	Outside Primary Containment
T 620	Terminal Box		X
T 621	Terminal Box		X
T 622	Terminal Box		X
FE-777	Flow Transducer		X (NOTE)
FE-780	Flow Transducer		X (NOTE)
FE-786	Flow Transducer		X (NOTE)
FE-789	Flow Transducer		X (NOTE)
1A-ES-VLV-CC	Valve Control Center		X *
1B-ES-VLV-CC	Valve Control Center		X *
1C-ES-VLV-CC	Valve Control Center		X *
<i>SP-V-SA</i>	E/P Converter		X
<i>SP-V-SB</i>	E/P Converter		X
	Thyrector		X
	Cable "Instrumentation"		X
Note: Component not installed, qualification work sheet to be submitted with lesson learned report.			

\* NON-HARSH ENVIRONMENT

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Unit 1

Docket No. 50-289

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System: Makeup and Purification

COMPONENTS			
Plant Identification Number	Generic Name	Location	
		Inside Primary Containment	Outside Primary Containment
T-376	Terminal Box		X
T-374	Terminal Box		X
T-416	Terminal Box		X
1C ES VLV CC	Valve Control Panel		X *
1A ES VLV CC	Valve Control Panel		X *
1B ES VLV CC	Valve Control Panel		X *
Penet 315	Electrical Penetration Assembly	X	
T-85	Terminal Box		X
T-764	Terminal Box		X
PS480A	Pressure Switch		X
PS480B	Pressure Switch		X
PS480C	Pressure Switch		X

\* NON HAZARDOUS ENVIRONMENT

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Three Mile Island

Unit 1

Docket No. 50-289

(Class IE Electrical Equipment Required to Function Under Postulated Accident Conditions)

Rev.

Date 12/23/84

Sheet 2 of 2

System: Decay Heat Removal[illegible]

\* NOW - HARSH ENVIRONMENT



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Three Mile Island

Unit 1

Docket No. 50-289

(Class IE Electrical Equipment Required to Function Under Postulated Accident Conditions)

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6

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Sheet 1 of 1

System: Decay Heat Closed Loop Cooling

COMPONENTS			
Plant Identification Number	Generic Name	Location	
		Inside Primary Containment	Outside Primary Containment
DC-P1A	Pump Motor		X
DC-P1B	Pump Motor		X
SV/DCV-19A	Solenoid Valve		X
SV/DCV-19B	Solenoid Valve		X
T-23	Terminal Box		X
T-24	Terminal Box		X
T-124	Terminal Box		X
LSA/DCV-19A	Limit Switch		X
LSB/DCV-19A	Limit Switch		X
LSA/DCV-19B	Limit Switch		X
LSB/DCV-19B	Limit Switch		X
	Cable (Power)		X
	Cable (Control)		X
	Cable (Instrumentation)		X
1A ES Valve CC	Valve Control Center		X
1B ES Valve CC	Valve Control Center		X

\* NON-HARSH ENVIRONMENT



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System: Reactor Building Isolation

COMPONENTS			
Plant Identification Number	Generic Name	Location	
		Inside Primary Containment	Outside Primary Containment
J-367	Junction Box	X	
J-372	Junction Box		X
J-371	Junction Box		X
J-216	Junction Box	X	
Penet 315	Electrical Penetration Assembly	X	
Penet 317	Electrical Penetration Assembly	X	
1B ES VLV CC	Valve Control Panel		X *
1A ES VLV CC	Valve Control Panel		X *
1C ES VLV CC	Valve Control Panel		X *
	Cable (Power)	X	X
	Cable (Control)	X	X

NON - HARSH

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System: Reactor Building Spray

COMPONENTS			
Plant Identification Number	Generic Name	Location	
		Inside Primary Containment	Outside Primary Containment
BS-P1A	Pump Motor		X
BS-P1B	Pump Motor		X
BS-V-1A	Valve Motor Operator		X
BS-V-1B	Valve Motor Operator		X
BS-V-2A	Valve Motor Operator		X
BS-V-2B	Valve Motor Operator		X
BS-V-3A	Valve Motor Operator		X
BS-V-3B	Valve Motor Operator		X
T-380	Terminal Box		X
T-420	Terminal Box		X
T-781	Terminal Box		X
	Cable (Power)		X
	Cable (Control)		X
1A ES Valve CC	Valve Control Center		X *
1B ES Valve CC	Valve Control Center		X *

\* NOW - HARSH ENVIRONMENT

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System: Reactor Building Emergency Cooling

COMPONENTS			
Plant Identification Number	Generic Name	Location	
		Inside Primary Containment	Outside Primary Containment
AH-E1A	Fan Motor	X	
AH-E1B	Fan Motor	X	
AH-E1C	Fan Motor	X	
J-71	Junction Box	X	
J-72	Junction Box	X	
J-73	Junction Box	X	
J-74	Junction Box	X	
J-75	Junction Box	X	
J-76	Junction Box	X	
Penet 318	Electrical Penetration Assembly	X	
Penet 316	Electrical Penetration Assembly	X	
Penet 206	Electrical Penetration Assembly	X	
1A ES Valve CC	Valve Control Center		X *
1B ES Valve CC	Valve Control Center		X *
1C ES Valve CC	Valve Control Center		X *
1C ES Valve Tr Switch	Transfer Switch Panel		X
	Cable (Power)	X	
	Cable (Control)	X	

\* Non - HARSH ENVIRONMENT

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System: Reactor Building Emergency Cooling River Water

COMPONENTS			
Plant Identification Number	Generic Name	Location	
		Inside Primary Containment	Outside Primary Containment
RR-V-3A	Valve Motor Operator		X
RR-V-3B	Valve Motor Operator		X
RR-V-3C	Valve Motor Operator		X
1C ES VLV CC	Valve Control Panel		X *
RR-V-4A	Valve Motor Operator		X
RR-V-4B	Valve Motor Operator		X
RR-V-4C	Valve Motor Operator		X
RR-V-4D	Valve Motor Operator		X
	Cable (Power)		X
	Cable (Control)		X
1A ES Valve CC	Valve Control Center		X *
1B ES Valve CC	Valve Control Center		X *

\* Non - HAZSH ENVIRONMENT

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System: Core Flood

COMPONENTS			
Plant Identification Number	Generic Name	Location	
		Inside Primary Containment	Outside Primary Containment
T-162	Terminal Box	X	
T-98	Terminal Box		X
T-99	Terminal Box		X
Penet 220	Electrical Penetration Assembly	X	
Penet 230	Electrical Penetration Assembly	X	
Penet 315	Electrical Penetration Assembly	X	
Penet 316	Electrical Penetration Assembly	X	
Penet 317	Electrical Penetration Assembly	X	
1A ES VLV CC	Valve Control Panel		X *
1C ES VLV CC	Valve Control Panel		X *
1A Rad Waste Dispo. CC	Valve Control Panel		X
1B Rad Waste Dispo. CC	Valve Control Panel		X
J-286	Junction Box	X	
J-288	Junction Box	X	
J-292	Junction Box	X	
J-293	Junction Box	X	
	Cable (Power)	X	X
	Cable (Control)	X	X

\* NOT - HARSH ENVIRONMENT



# MASTER LIST

Three Mile Island  
Unit 1

Docket No. 50-289

(Class IE Electrical Equipment Required to  
Function Under Postulated Accident  
Conditions)

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Sheet 2 of 3

System: Nuclear Services Closed Loop Cooling

COMPONENTS			
Plant Identification Number	Generic Name	Location	
		Inside Primary Containment	Outside Primary Containment
LSA/NSV-53B	Limit Switch		X
LSB/NSV-53B	Limit Switch		X
LSA/NSV-53C	Limit Switch		X
LSB/NSV-53C	Limit Switch		X
SV/NSV-53A	Solenoid Valve		X
SV/NSV-53B	Solenoid Valve		X
SV/NSV-53C	Solenoid Valve		X
T-25	Terminal Box		X
T-26	Terminal Box		X
T-27	Terminal Box		X
T-84	Terminal Box		X
T-717	Terminal Box		X
1A ES VLV CC	Valve Control Panel		X *
1B ES VLV CC	Valve Control Panel		X *
1C ES VLV CC	Valve Control Panel		X *
T-160	Terminal Box		X
Penet 315	Electrical Penetration Assembly	X	
T-163	Terminal Box		X

\* NOL - HARSH ENVIRONMENT



MAIN STEAM SYSTEM  
LIST OF EFFECTIVE PAGES

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1A	0,1,4,5	8C	3,5
1B	0,1,4,5,6	9	0,1,4,5
1C	3,5	10	0,1,4,5
2	0,1,2,3,4,5,6	11	0,1,4,5
2A	0,1,4,5	12	0,1,4,5
2B	0,1,4,5,6	13	0,1,3,4,5
2C	3,5	13A	4,5
3	0,1,2,3,4,5,6	13B	4
3A	0,1,4,5	14	0,1,3,4,5
3B	0,1,4,5,6	14A	4,5
3C	3,5	14B	4
4	0,1,2,3,4,5,6	15	0,1,4,5
4A	0,1,4,5	15A	0,5
4B	0,1,4,5,6	15B	0,1,4,5
4C	3,5	16	0,1,4,5
5	0,1,2,3,4,5,6	16A	0,5
5A	0,1,4,5	16B	0,1,4,5
5B	0,1,4,5,6	17	0,1,4,5
5C	3,5	17A	0,5
6	0,1,2,3,4,5,6	17B	0,1,4
6A	0,1,4,5	18	0,1,4,5
6B	0,1,4,5,6	19A	0,5
6C	3,5	18B	0,1,4
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7B	0,1,4,5,6	19B	0,1,4,5
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Date: 12/31/81  
Sheet: ii of 20

Facility: 1F

Unit: 1

Rev. 6

Docket: 50-289

Date: 12/31/81 SYSTEM COMPONENT EVALUATION WORK SHEET

Sheet 1 of 20

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Main Steam Plant ID No. PS-600 Component: Pressure Switch Manufacture: Static O-Ring Model Number: 9N-05-RR Function: Feed Water Iso. Accuracy: Spec: Demon: Service: Steam Line Rupture Detection (SLRD) Location: Containment	Operating Time	30 sec.	Note G	1	7,8,11,12	Type Test & Engineering Analysis	None
	Temperature (°F)	See Accident Profile 1	342	2	7 & 8	Type Test	None
	Pressure (PSIA)	28 psid	Note F	3	11,12	Engineering Analysis	None
	Relative Humidity (%)	100	Note F	3	11,12	Engineering Analysis	None
	Chemical Spray	Note B	Note C	5	4	-	None
	Radiation	$2 \times 10^6$ R	$1 \times 10^7$ R Note D	6	9 see Attached Evaluation	Comparison Test	None
	Aging	Note A	10 years Note D	-	10	Arrhenius Model	None
Flood Level Elev: 286.66 ft. Above Flood Level: Yes	Submergence	N/A	N/A	-	-	-	None

Documentation References:

1. FSAR Chapter 14, Figure 14-21.
2. FSAR Chapter 14, Figure 14-63A.
3. FSAR Section 14.1.2.9.4.
4. FSAR Chapter 14.
5. Lesson Plan for TMI-1 ESAS.
6. I & E Bulletin 79-G1B, Enclosure 4, Paragraph 4.2.2.
7. Elevated Temperature Test on Microswitch Model MF4R, W.O. 04-4692-081, Performed by GAI Lab Service.
8. Ltr. GAI/TMI-ICS/3495, dated July 31, 1980.

Notes:

- A) Aging was not considered a design base parameter for TMI-1.
- B) Borated water of 2270 ppm Boron with NaOH to raise PH 9.5.
- C) This component is exempt from chemical spray qualification because it is not subjected to RB spray as a result of the postulated accident for which it performs a safety function. (Main Steam Line Break, FSAR 14.1.2.9.4).
- D) Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

Revision: 6  
Date: 12/31/81

Sheet 1B of 20

COMPONENT MATERIALS EVALUATION SHEET

MAIN STEAM SYSTEM

Plant I.D. No.: PS-600

Component: Pressure Switch

Manufacturer: Static-O-Ring

Model No.: 9N-05-RR

THERMAL AGING

RADIATION

PARTS LIST	MATERIALS LIST	QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
Housing	Aluminum	Not Sensitive		Not Affected	
Cover	Aluminum	Not Sensitive		Not Affected	
Gasket, Cover	Ethylene Propylene Note 1	40 years	GFUN. CAL 1101X-5350-033	2 x 10 <sup>7</sup> RADS	EPRI NP-1558
Switch Insulator	Fish Paper	Not Sensitive	I&E Bulletin 79-01B	1 x 10 <sup>8</sup> RADS	Reactor Shielding Design Manual
Mounting Bracket	Aluminum	Not Sensitive		Not Affected	
Adjusting Nut	Aluminum	Not Sensitive		Not Affected	
Body	Aluminum	Not Sensitive		Not Affected	
Washer	Stainless Steel	Not Sensitive		Not Affected	
Spring	Music Wire	Not Sensitive		Not Affected	
Spring Stop	Aluminum	Not Sensitive		Not Affected	
Cylinder Disc	Aluminum	Not Sensitive		Not Affected	
Piston Head	Aluminum	Not Sensitive		Not Affected	
Shaft Assy.	Stainless Steel	Not Sensitive		Not Affected	
Diaphragm	BUNA-N	10 Years	EDS Calculations 0370-025-023 & 028	1 x 10 <sup>7</sup> RADS	ORNL, Oct. 1970
O-Ring	BUNA-N	10 Years	EDS Calculations 0370-025-023 & 028	1 x 10 <sup>7</sup> RADS	ORNL, Oct. 1970
Pressure Port	Carbon Steel	Not Sensitive		Not Affected	
Switch	Stainless Steel	Not Sensitive		Not Affected	
Case	Phenolic	105°C for Con- tinuous use	Modern Plastics Encyclopedia 1978-79	2 x 10 <sup>8</sup> RADS	ORNL, Oct. 1970
Spring	Beryllium Copper	Not Sensitive		Not Affected	
Contacts	Silver	Not Sensitive		Not Affected	
Cover Pin	Brass	Not Sensitive		Not Affected	

Materials & Parts List Reference:  
Static-O-Ring Catalog

CONTINUATION

NOTES:

Note 1 TME-1 TFWR NO B00254 REPLACED NEOPRENE WITH ETHYLENE PROPYLENE

Facility: 1

Unit: 1

Rev. 6

Docket: 50-289

Date: 12/31/81 SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Main Steam Plant ID No. PS-601	Operating Time	30 sec.	Note G	1	7,8,11,12	Type Test & Engineering Analysis	None
Component: Pressure Switch	Temperature (°F)	See Accident Profile 1	342	2	7 & 8	Type Test	None
Manufacture: Static O-Ring	Pressure (PSIA)	28 psid	Note F	3	11,12	Engineering Analysis	None
Model Number: 9N-05-RR	Relative Humidity (%)	100	Note F	3	11,12	Engineering Analysis	None
Function: Feed Water Iso.	Chemical Spray	Note B	Note C	5	4	-	None
Accuracy: Spec: Demon:	Radiation	$2 \times 10^6 R$	$1 \times 10^7 R$ Note D	6	9 See Attached Evaluation	Comparison Test	None
Service: Steam Line Rupture Detection (SLRD)	Aging	Note A	10 years Note D	-	10	Arrhenius Model	None
Location: Containment	Submergence	N/A	N/A	-	-	-	None
Flood Level Elev: 286.66 ft. Above Flood Level: Yes							

Documentation References:

1. FSAR Chapter 14, Figure 14-21.
2. FSAR Chapter 14, Figure 14-63A.
3. FSAR Section 14.1.2.9.4.
4. FSAR Chapter 14.
5. Lesson Plan for TMI-1 ESAS.
6. I & E Bulletin 79-01B, Enclosure 4, Paragraph 4.2.2.
7. Elevated Temperature Test on Microswitch Model MT4R, W.O. 04-4692-081, Performed by GAI Lab Services.
8. Ltr. GAI/TMI-ICS/3495, dated July 31, 1980.

Notes:

- A) Aging was not considered a design base parameter for TMI-1.
- B) Borated water of 2270 ppm Boron with NaOH to raise PH ~9.5.
- C) This component is exempt from chemical spray qualification because it is not subjected to RB spray as a result of the postulated accident for which it performs a safety function (Main Steam Line Break, FSAR 14.1.2.9.4).
- D) Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

Revision: 6  
Date: 12/11/81

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COMPONENT MATERIALS EVALUATION SHEET

MAIN STEAM SYSTEM

Plant I.D. No.: PS-601

Component: Pressure Switch

Manufacturer: Static-O-Ring

Model No.: 9N-05-RR

THERMAL AGING				RADIATION	
PARTS LIST	MATERIALS LIST	QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
Housing	Aluminum	Not Sensitive		Not Affected	
Cover	Aluminum	Not Sensitive		Not Affected	
Gasket, Cover	Ethylene Propylene <i>Note 1</i>	40 years	GFUN CAL 1101X-5350-033	$2 \times 10^7$ RADS	EPRI NP-1558
Switch Insulator	Fish Paper	Not Sensitive	I&E Bulletin 79-01B	$1 \times 10^8$ RADS	Reactor Shielding Design Manual
Mounting Bracket	Aluminum	Not Sensitive		Not Affected	
Adjusting Nut	Aluminum	Not Sensitive		Not Affected	
Body	Aluminum	Not Sensitive		Not Affected	
Washer	Stainless Steel	Not Sensitive		Not Affected	
Spring	Music Wire	Not Sensitive		Not Affected	
Spring Stop	Aluminum	Not Sensitive		Not Affected	
Cylinder Disc	Aluminum	Not Sensitive		Not Affected	
Piston Head	Aluminum	Not Sensitive		Not Affected	
Shaft Assy.	Stainless Steel	Not Sensitive		Not Affected	
Diaphragm	BUNA-N	10 Years	EDS Calculations 0370-025-023 & 028	$1 \times 10^7$ RADS	ORNL, Oct. 1970
O-Ring	BUNA-N	10 Years	EDS Calculations 0370-025-023 & 028	$1 \times 10^7$ RADS	ORNL, Oct. 1970
Pressure Port	Carbon Steel	Not Sensitive		Not Affected	
Switch	Stainless Steel	Not Sensitive		Not Affected	
Case	Phenolic	105°C for Con- tinuous use	Modern Plastics Encyclopedia 1978-79	$2 \times 10^8$ RADS	ORNL, Oct. 1970
Spring	Beryllium Copper	Not Sensitive		Not Affected	
Contacts	Silver	Not Sensitive		Not Affected	
Cover Pin	Brass	Not Sensitive		Not Affected	

Materials & Parts List Reference:  
Static-O-Ring Catalog

CONTINUATION

NOTES:

1. TME-1 TFWR NO B00254 REPLACED NITRILE WITH ETHYLENE PROPYLENE



Facility: 1  
Unit: 1  
Docket: 50-289

Rev. 6

Date: 12/31/81 SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Main Steam Plant ID No. PS-602	Operating Time	30 sec.	Note G	1	7,8,11,12	Type Test & Engineering Analysis	None
Component: Pressure Switch	Temperature (°F)	See Accident Profile 1	342	2	7 & 8	Type Test	None
Manufacture: Static O-Ring	Pressure (PSIA)	28 psid	Note F	3	11,12	Engineering Analysis	None
Model Number: 9N-05-RR	Relative Humidity (%)	100	Note F	3	11,12	Engineering Analysis	None
Function: Feed Water Iso.	Chemical Spray	Note B	Note C	5	4	-	None
Accuracy: Spec: Demon;	Radiation	<sup>6</sup> 2 X 10 R	<sup>7</sup> 1 x 10 <sup>7</sup> R Note D	6	<sup>9</sup> See Attached Evaluation	Comparison Test	None
Service: Steam Line Rupture Detection (SLRD)	Aging	Note A	10 years Note D	-	10	Arrhenius Model	None
Location: Containment	Submergence	N/A	N/A	-	-	-	None
Flood Level Elev: 286.66 ft. Above Flood Level: Yes							

Documentation References:

1. FSAR Chapter 14, Figure 14-21.
2. FSAR Chapter 14, Figure 14-63A.
3. FSAR Section 14.1.2.9.4.
4. FSAR Chapter 14.
5. Lesson Plan for TMI-1 ESAS.
6. I & E Bulletin 79-01B, Enclosure 4, Paragraph 4.2.2.
7. Elevated Temperature Test on Microswitch Model MT4R, W.O. 04-4692-081, Performed by GAI Lab Services.
8. Ltr. GAI/TMI-1CS/3495, dated July 31, 1980.

Notes:

- A) Aging was not considered a design base parameter for TMI-1.
- B) Borated water of 2270 ppm Boron with NaOH to raise pH to 9.5.
- C) This component is exempt from chemical spray qualification because it is not subjected to RB spray as a result of the postulated accident for which it performs a safety function. (Main Steam Line Break FSAR 14.1.2.9.4).
- D) Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.



Revision: C  
Date: 12/31/81

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COMPONENT MATERIALS EVALUATION SHEET

MAIN STEAM SYSTEM

Plant I.D. No.: PS-602

Component: Pressure Switch

Manufacturer: Static-O-Ring

Model No.: 9N-05-RR

THERMAL AGING

RADIATION

PARTS LIST	MATERIALS LIST	QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
Housing	Aluminum	Not Sensitive		Not Affected	
Cover	Aluminum	Not Sensitive		Not Affected	
Gasket, Cover	ETHYLENE PROPYLENE NCT-1	40 years	GPUN CAL. 1101X-5350-033	$7 \times 10^7$ RADS	RPRI NP-1558
Switch Insulator	Fish Paper	Not Sensitive	I&E Bulletin 79-01B	$1 \times 10^8$ RADS	Reactor Shielding Design Manual
Mounting Bracket	Aluminum	Not Sensitive		Not Affected	
Adjusting Nut	Aluminum	Not Sensitive		Not Affected	
Body	Aluminum	Not Sensitive		Not Affected	
Washer	Stainless Steel	Not Sensitive		Not Affected	
Spring	Music Wire	Not Sensitive		Not Affected	
Spring Stop	Aluminum	Not Sensitive		Not Affected	
Cylinder Disc	Aluminum	Not Sensitive		Not Affected	
Piston Head	Aluminum	Not Sensitive		Not Affected	
Shaft Assy.	Stainless Steel	Not Sensitive		Not Affected	
Diaphragm	BUNA-N	10 Years	EDS Calculations 0370-025-023 & 028	$1 \times 10^7$ RADS	ORNL, Oct. 1970
O-Ring	BUNA-N	10 Years	EDS Calculations 0370-025-023 & 028	$1 \times 10^7$ RADS	ORNL, Oct. 1970
Pressure Port	Carbon Steel	Not Sensitive		Not Affected	
Switch	Stainless Steel	Not Sensitive		Not Affected	
Case	Phenolic	105°C for Con- tinuous use	Modern Plastics Encyclopedia 1978-79	$2 \times 10^8$ RADS	ORNL, Oct. 1970
Spring	Beryllium Copper	Not Sensitive		Not Affected	
Contacts	Silver	Not Sensitive		Not Affected	
Cover Pin	Brass	Not Sensitive		Not Affected	

Materials & Parts List Reference:  
Static-O-Ring Catalog

CONTINUATION

NOTES:

1. TMZ-1 TFWR NO 300254 REPLACED NEOPRENE WITH ETHYLENE PROPYLENE

Facility: T  
Unit: 1  
Docket: 50-289

Rev. 6

Date: 12/31/81 SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Main Steam Plant ID No. PS-603 Component: Pressure Switch Manufacture: Static O-Ring Model Number: 9N-05-RR Function: Feed Water Iso. Accuracy: Spec: Demon: Service: Steam Line Rupture Detection (SLRD) Location: Containment Flood Level Elev: 286.66 ft. Above Flood Level: Yes	Operating Time	30 sec.	Note G	1	7,8,11,12	Type Test & Engineering Analysis	None
	Temperature (°F)	See Accident Profile 1	342	2	7 & 8	Type Test	None
	Pressure (PSIA)	28 psid	Note F	3	11,12	Engineering Analysis	None
	Relative Humidity (%)	100	Note F	3	11,12	Engineering Analysis	None
	Chemical Spray	Note B	Note C	5	4	-	None
	Radiation	2 X 10 <sup>6</sup> R	1 x 10 <sup>7</sup> R Note D	6	9 See Attached Evaluation	Comparison Test	None
	Aging	Note A	10 years Note D	-	10	Arrhenius Model	None
	Submergence	N/A	N/A	-	-	-	None

Documentation References:

1. FSAR Chapter 14, Figure 14-21.
2. FSAR Chapter 14, Figure 14-63A.
3. FSAR Section 14.1.2.9.4.
4. FSAR Chapter 14.
5. Lesson Plan for TMI-1 ESAS.
6. I & E Bulletin 79-01B, Enclosure 4, Paragraph 4.2.2.
7. Elevated Temperature Test on Microswitch Model MT4R, W.O. 64-4692-081, Performed by GAI Lab Services.
8. Ltr. GAI/TMI-1CS/3495, dated July 31, 1980.

Notes:

- A) Aging was not considered a design base parameter for TMI-1.
- B) Borated water of 2270 ppm Boron with NaOH to raise PH' 9.5.
- C) This component is exempt from chemical spray qualification because it is not subjected to RB spray as a result of the postulated accident for which it performs a safety function (Main Steam Line Break FSAR 14.1.2.9.4).
- D) MATERIALS evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

Revision: 4  
Date: 12/11/81

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COMPONENT MATERIALS EVALUATION SHEET

MAIN STEAM SYSTEM

Plant I.D. No.: PS-603

Component: Pressure Switch

Manufacturer: Static-O-Ring

Model No.: 9N-05-RR

THERMAL AGING

RADIATION

PARTS LIST	MATERIALS LIST	QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
Housing	Aluminum	Not Sensitive		Not Affected	
Cover	Aluminum	Not Sensitive		Not Affected	
Gasket, Cover	ETHYLENE PROPYLENE Note 1	40 years	GPUN CAL 1101X-5350-033	$7 \times 10^7$ RADS	EPRE NP 1558
Switch Insulator	Fish Paper	Not Sensitive	I&E Bulletin 79-01B	$1 \times 10^8$ RADS	Reactor Shielding Design Manual
Mounting Bracket	Aluminum	Not Sensitive		Not Affected	
Adjusting Nut	Aluminum	Not Sensitive		Not Affected	
Body	Aluminum	Not Sensitive		Not Affected	
Washer	Stainless Steel	Not Sensitive		Not Affected	
Spring	Music Wire	Not Sensitive		Not Affected	
Spring Stop	Aluminum	Not Sensitive		Not Affected	
Cylinder Disc	Aluminum	Not Sensitive		Not Affected	
Piston Head	Aluminum	Not Sensitive		Not Affected	
Shaft Assy.	Stainless Steel	Not Sensitive		Not Affected	
Diaphragm	BUNA-N	10 Years	EDS Calculations 0370-025-023 & 028	$1 \times 10^7$ RADS	ORNL, Oct. 1970
O-Ring	BUNA-N	10 Years	EDS Calculations 0370-025-023 & 028	$1 \times 10^7$ RADS	ORNL, Oct. 1970
Pressure Port	Carbon Steel	Not Sensitive		Not Affected	
Switch	Stainless Steel	Not Sensitive		Not Affected	
Case	Phenolic	105°C for Con- tinuous use	Modern Plastics Encyclopedia 1978-79	$2 \times 10^8$ RADS	ORNL, Oct. 1970
Spring	Beryllium Copper	Not Sensitive		Not Affected	
Contacts	Silver	Not Sensitive		Not Affected	
Cover Pin	Brass	Not Sensitive		Not Affected	

Materials & Parts List Reference:  
Static-O-Ring Catalog

## CONTINUATION

NOTES:

1. TMI-1 TEWR NO B00254 REPLACED NEOPRENE WITH ETHYLENE PROPYLENE

Facility: TM  
Unit: 1  
Docket: 50-289

Rev. 6

Date

12/31/81

SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Main Steam Plant ID No. PS-604 Component: Pressure Switch Manufacture: Static O-Ring  Model Number: 9N-05-RR  Function: Feed Water Iso.  Accuracy: Spec: Demon:  Service: Steam Line Rupture Detection (SLRD)  Location: Containment  Flood Level Elev: 286.66 ft. Above Flood Level: Yes	Operating Time	30 sec.	Note G	1	7,8,11,12	Type Test & Engineering Analysis	None
	Temperature (°F)	See Accident Profile 1	342	2	7 & 8	Type Test	None
	Pressure (PSIA)	28 psid	Note F	3	11,12	Engineering Analysis	None
	Relative Humidity (%)	100	Note F	3	11,12	Engineering Analysis	None
	Chemical Spray	Note B	Note C	5	4	-	None
	Radiation	2 X 10 <sup>6</sup> R	1 x 10 <sup>7</sup> R Note D	6	9 See Attached Evaluation	Comparison Test	None
	Aging	Note A	10 years Note D	-	10	Arrhenius Model	None
	Submergence	N/A	N/A	-	-	-	None

Documentation References:

- FSAR Chapter 14, Figure 14-21.
- FSAR Chapter 14, Figure 14-63A.
- FSAR Section 14.1.2.9.4.
- FSAR Chapter 14.
- Lesson Plan for TMI-1 ESAS.
- I & E Bulletin 79-01R, Enclosure 4, Paragraph 4.2.2.
- Elevated Temperature Test on Microswitch Model MT4R, W.O. 04-4692-081, Performed by GAI Lab Services.
- Ltr. GAI/TMI-ICS/3495, dated July 31, 1980.

Notes:

- A) Aging was not considered a design base parameter for TMI-1.
- B) Borated water of 2270 ppm Boron with NaOH to raise PH 9.5.
- C) This component is exempt from chemical spray qualification because it is not subjected to RB spray as a result of the postulated accident for which it performs a safety function. (Main Steam Line Break FSAR 14.1.2.9.4)
- D) Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

Revision: 6  
Date: 12/31/81

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COMPONENT MATERIALS EVALUATION SHEET

MAIN STEAM SYSTEM

Plant I.D. No.: PS-604

Component: Pressure Switch

Manufacturer: Static-O-Ring

Model No.: 9N-05-RR

THERMAL AGING				RADIATION	
PARTS LIST	MATERIALS LIST	QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
Housing	Aluminum	Not Sensitive		Not Affected	
Cover	Aluminum	Not Sensitive		Not Affected	
Gasket, Cover	ETHYLENE PROPYLENE Note 1	40 years	GPUN CAL 1101X-5350-033	7 x 10 <sup>7</sup> RADS	EPRI NP 1558
Switch Insulator	Fish Paper	Not Sensitive	I&E Bulletin 79-01B	1 x 10 <sup>8</sup> RADS	Reactor Shielding Design Manual
Mounting Bracket	Aluminum	Not Sensitive		Not Affected	
Adjusting Nut	Aluminum	Not Sensitive		Not Affected	
Body	Aluminum	Not Sensitive		Not Affected	
Washer	Stainless Steel	Not Sensitive		Not Affected	
Spring	Music Wire	Not Sensitive		Not Affected	
Spring Stop	Aluminum	Not Sensitive		Not Affected	
Cylinder Disc	Aluminum	Not Sensitive		Not Affected	
Piston Head	Aluminum	Not Sensitive		Not Affected	
Shaft Assy.	Stainless Steel	Not Sensitive		Not Affected	
Diaphragm	BUNA-N	10 Years	EDS Calculations 0370-025-023 & 028	1 x 10 <sup>7</sup> RADS	ORNL, Oct. 1970
O-Ring	BUNA-N	10 Years	EDS Calculations 0370-025-023 & 028	1 x 10 <sup>7</sup> RADS	ORNL, Oct. 1970
Pressure Port	Carbon Steel	Not Sensitive		Not Affected	
Switch	Stainless Steel	Not Sensitive		Not Affected	
Case	Phenolic	105°C for Con- tinuous use	Modern Plastics Encyclopedia 1978-79	2 x 10 <sup>8</sup> RADS	ORNL, Oct. 1970
Spring	Beryllium Copper	Not Sensitive		Not Affected	
Contacts	Silver	Not Sensitive		Not Affected	
Cover Pin	Brass	Not Sensitive		Not Affected	

Materials & Parts List Reference:  
Static-O-Ring Catalog

CONTINUATION

NOTES:

1. TMI-1 TFWR NO B00254 REPLACED NEOPRENE WITH ETHYLENE PROPYLENE



Facility: TM  
Unit: 1  
Docket: 50-259

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Date: 12/31/81 SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Main Steam Plant ID No. PS-605 Component: Pressure Switch Manufacture: Static O-Ring  Model Number: 9N-05-RR  Function: Feed Water Iso.  Accuracy: Spec: Demon:  Service: Steam Line Rupture Detection (SLRD)  Location: Containment  Flood Level Elev: 286.66 ft. Above Flood Level: Yes	Operating Time	30 sec.	Note G	1	7,8,11,12	Type Test & Engineering Analysis	None
	Temperature (°F)	See Accident Profile 1	342	2	7 & 8	Type Test	None
	Pressure (PSIA)	28 psid	Note F	3	11,12	Engineering Analysis	None
	Relative Humidity (%)	100	Note F	3	11,12	Engineering Analysis	None
	Chemical Spray	Note B	Note C	5	4	-	None
	Radiation	2X10 <sup>6</sup> R	1 x 10 <sup>7</sup> R Note D	6	9 See Attached Evaluation	Comparison Test	None
	Aging	Note A	10 years Note B	-	10	Arrhenius Model	None
	Submergence	N/A	N/A	-	-	-	None

Documentation References:

- FSAR Chapter 14, Figure 14-21.
- FSAR Chapter 14, Figure 14-63A.
- FSAR Section 14.1.2.9.4.
- FSAR Chapter 14.
- Lesson Plan for TMI-1 ESAS.
- E&E Bulletin 79-01B, Enclosure 4, Paragraph 4.2.2.
- Elevated Temperature Test on Microswitch Model MT4R, W.O. 04-4692-081, Performed by GAI Lab Services.
- Ltr. GAI/TMI-1CS/3495, dated July 31, 1980.

Notes:

- A) Aging was not considered a design base parameter for TMI-1.
- B) Borated water of 2270 ppm Boron with NaOH to raise PH to 9.5.
- C) This component is exempt from chemical spray qualification because it is not subjected to RB spray as a result of the postulated accident for which it performs a safety function. (Main Steam Line Break FSAR 14.1.2.9.4).
- D) Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.



Revision: 6  
Date: 12/31/81

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COMPONENT MATERIALS EVALUATION SHEET

MAIN STEAM SYSTEM

Plant I.D. No.: PS-605

Component: Pressure Switch

Manufacturer: Static-O-Ring

Model No.: 9N-05-RR

THERMAL AGING

RADIATION

PARTS LIST	MATERIALS LIST	QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
Housing	Aluminum	Not Sensitive		Not Affected	
Cover	Aluminum	Not Sensitive		Not Affected	
Gasket, Cover	ETHYLENE PROPYLENE	40 years	GPVN CAL 1101X-5350-033	$7 \times 10^7$ RADS	EPRI NP 1558
	NOTE 1				
Switch Insulator	Fish Paper	Not Sensitive	I&E Bulletin 79-01B	$1 \times 10^8$ RADS	Reactor Shielding Design Manual
Mounting Bracket	Aluminum	Not Sensitive		Not Affected	
Adjusting Nut	Aluminum	Not Sensitive		Not Affected	
Body	Aluminum	Not Sensitive		Not Affected	
Washer	Stainless Steel	Not Sensitive		Not Affected	
Spring	Music Wire	Not Sensitive		Not Affected	
Spring Stop	Aluminum	Not Sensitive		Not Affected	
Cylinder Disc	Aluminum	Not Sensitive		Not Affected	
Piston Head	Aluminum	Not Sensitive		Not Affected	
Shaft Assy.	Stainless Steel	Not Sensitive		Not Affected	
Diaphragm	BUNA-N	10 Years	EDS Calculations 0370-025-023 & 028	$1 \times 10^7$ RADS	ORNL, Oct. 1970
O-Ring	BUNA-N	10 Years	EDS Calculations 0370-025-023 & 028	$1 \times 10^7$ RADS	ORNL, Oct. 1970
Pressure Port	Carbon Steel	Not Sensitive		Not Affected	
Switch	Stainless Steel	Not Sensitive		Not Affected	
Case	Phenolic	105°C for Continuous use	Modern Plastics Encyclopedia 1978-79	$2 \times 10^8$ RADS	ORNL, Oct. 1970
Spring	Beryllium Copper	Not Sensitive		Not Affected	
Contacts	Silver	Not Sensitive		Not Affected	
Cover Pin	Brass	Not Sensitive		Not Affected	

Materials & Parts List Reference:  
Static-O-Ring Catalog

CONTINUATION

NOTES:

1. TMI-7 TFWR NO B00254 REPLACED NEO PRENE WITH ETHYLENE PROPYLENE

Facility: TMI  
Unit: 1  
Docket: 50-289

Rev. 6

Date: 12/31/81 SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Main Steam Plant ID No. PS-606 Component: Pressure Switch Manufacture: Static O-Ring Model Number: 9N-05-RR Function: Feed Water Iso. Accuracy: Spec: Demon: Service: Steam Line Rupture Detection (SLRD) Location: Containment Flood Level Elev: 286.66 ft. Above Flood Level: Yes	Operating Time	30 sec.	Note G	1	7,8,11,12	Type Test & Engineering Analysis	None
	Temperature (°F)	See Accident Profile 1	342	2	7 & 8	Type Test	None
	Pressure (PSIA)	28 psid	Note F	3	11,12	Engineering Analysis	None
	Relative Humidity (%)	100	Note F	3	,12	Engineering Analysis	None
	Chemical Spray	Note B	Note C	5	4	-	None
	Radiation	2 X 10 <sup>6</sup> R	1 x 10 <sup>7</sup> R Note D	6	9 See Attached Evaluation	Comparison Test	None
	Aging	Note A	10 years Note D	-	10	Arrhenius Model	None
	Submergence	N/A	N/A	-	-	-	None

Documentation References:

- FSAR Chapter 14, Figure 14-21.
- FSAR Chapter 14, Figure 14-63A.
- FSAR Section 14.1.2.9.4.
- FSAR Chapter 14.
- Lesson Plan for TMI-1 ESAS.
- I & E Bulletin 79-01B, Enclosure 4, Paragraph 4.2.2.
- Elevated Temperature Test on Microswitch Model MT4R, W.O. 04-4692-081, Performed by GAI Lab Services
- Ltr. GAI/TMI-ICS/3495, dated July 31, 1980.

Notes:

- A) Aging was not considered a design base parameter for TMI-1.
- B) Borated water of 2270 ppm Boron with NaOH to raise PH 9.5.
- C) This component is exempt from chemical spray qualification because it is not subjected to RS spray as a result of the postulated accident for which it performs a safety function (Main Steam Line Break FSAR 14.1.2.9.4)
- D) Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

Revision: C  
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COMPONENT MATERIALS EVALUATION SHEET

MAIN STEAM SYSTEM

Plant I.D. No.: PS-606

Component: Pressure Switch

Manufacturer: Static-O-Ring

Model No.: 9N-05-RR

THERMAL AGING

RADIATION

PARTS LIST	MATERIALS LIST	QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
Housing	Aluminum	Not Sensitive		Not Affected	
Cover	Aluminum	Not Sensitive		Not Affected	
Gasket, Cover	ETHYLENE PROPYLENE Note 1	40 years	GPUN CAL 1101X-5350-033	$7 \times 10^7$ RADS	EPRI NP 1558
Switch Insulator	Fish Paper	Not Sensitive	I&E Bulletin 79-01B	$1 \times 10^8$ RADS	Reactor Shielding Design Manual
Mounting Bracket	Aluminum	Not Sensitive		Not Affected	
Adjusting Nut	Aluminum	Not Sensitive		Not Affected	
Body	Aluminum	Not Sensitive		Not Affected	
Washer	Stainless Steel	Not Sensitive		Not Affected	
Spring	Music Wire	Not Sensitive		Not Affected	
Spring Stop	Aluminum	Not Sensitive		Not Affected	
Cylinder Disc	Aluminum	Not Sensitive		Not Affected	
Piston Head	Aluminum	Not Sensitive		Not Affected	
Shaft Assy.	Stainless Steel	Not Sensitive		Not Affected	
Diaphragm	BUNA-N	10 Years	EDS Calculations 0370-025-023 & 028	$1 \times 10^7$ RADS	ORNL, Oct. 1970
O-Ring	BUNA-N	10 Years	EDS Calculations 0370-025-023 & 028	$1 \times 10^7$ RADS	ORNL, Oct. 1970
Pressure Port	Carbon Steel	Not Sensitive		Not Affected	
Switch	Stainless Steel	Not Sensitive		Not Affected	
Case	Phenolic	105°C for Con- tinuous use	Modern Plastics Encyclopedia 1978-79	$2 \times 10^8$ RADS	ORNL, Oct. 1970
Spring	Beryllium Copper	Not Sensitive		Not Affected	
Contacts	Silver	Not Sensitive		Not Affected	
Cover Pin	Brass	Not Sensitive		Not Affected	

Materials & Parts List Reference:  
Static-O-Ring Catalog

## CONTINUATION

NOTES:

1. TMT-1 TFWR NO B00254 REPLACED NBRPREEN WITH ETHYLENE PROPYLENE

Facility: T  
Unit: 1  
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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Main Steam Plant ID No. PS-607 Component: Pressure Switch Manufacture: Static O-Ring Model Number: 9N-05-RR Function: Feed Water Iso. Accuracy: Spec: Demon: Service: Steam Line Rupture Detection (SLRD) Location: Containment Flood Level Elev: 236.66 ft. Above Flood Level: Yes	Operating Time	30 sec.	Note G	1	7,8,11,12	Type Test & Engineering Analysis	None
	Temperature (°F)	See Accident Profile 1	342	2	7 & 8	Type Test	None
	Pressure (PSIA)	28 psid	Note F	3	11,12	Engineering Analysis	None
	Relative Humidity (%)	100	Note F	3	11,12	Engineering Analysis	None
	Chemical Spray	Note B	Note C	5	4	-	None
	Radiation	2 X 10 <sup>6</sup> R	1 x 10 <sup>7</sup> R Note D	6	9 See Attached Evaluation	Comparison Test	None
	Aging	Note A	10 years Note D	-	10	Arrhenius Model	None
	Submergence	N/A	N/A	-	-	-	None

Documentation References:

1. FSAR Chapter 14, Figure 14-21.
2. FSAR Chapter 14, Figure 14-63A.
3. FSAR Section 14.1.2.9.4.
4. FSAR Chapter 14.
5. Lesson Plan for TMI-1 ESAS.
6. I & E Bulletin 79-01B, Enclosure 4, Paragraph 4.2.2.
7. Elevated Temperature Test on Microswitch Model MT4R, W.O. 04-4692-081, Performed by GAI Lab Services.
8. Ltr. GAI/TMI-ICS/3495, dated July 31, 1980.

Notes:

- A) Aging was not considered a design base parameter for TMI-1.
- B) Borated water of 2270 ppm Boron with NaOH to raise PH ~ 9.5.
- C) This component is exempt from chemical spray qualification because it is not subjected to RB spray as a result of the postulated accident for which it performs a safety function (Main Steam Line Break FSAR 14.1.2.9.4).
- D) Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

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COMPONENT MATERIALS EVALUATION SHEET

MAIN STEAM SYSTEM

Plant I.D. No.: PS-607

Component: Pressure Switch

Manufacturer: Static-O-Ring

Model No.: 9N-05-RR

THERMAL AGING

RADIATION

PARTS LIST	MATERIALS LIST	QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
Housing	Aluminum	Not Sensitive		Not Affected	
Cover	Aluminum	Not Sensitive		Not Affected	
Gasket, Cover	ETHYLENE PROPYLENE Note 1	40 years	GPUH CAL 1101X-5350-033	7 x 10 <sup>7</sup> RADS	EPRI NP 1558
Switch Insulator	Fish Paper	Not Sensitive	I&E Bulletin 79-01B	1 x 10 <sup>8</sup> RADS	Reactor Shielding Design Manual
Mounting Bracket	Aluminum	Not Sensitive		Not Affected	
Adjusting Nut	Aluminum	Not Sensitive		Not Affected	
Body	Aluminum	Not Sensitive		Not Affected	
Washer	Stainless Steel	Not Sensitive		Not Affected	
Spring	Music Wire	Not Sensitive		Not Affected	
Spring Stop	Aluminum	Not Sensitive		Not Affected	
Cylinder Disc	Aluminum	Not Sensitive		Not Affected	
Piston Head	Aluminum	Not Sensitive		Not Affected	
Shaft Assy.	Stainless Steel	Not Sensitive		Not Affected	
Diaphragm	BUNA-N	10 Years	EDS Calculations 0370-025-023 & 028	1 x 10 <sup>7</sup> RADS	ORNL, Oct. 1970
O-Ring	BUNA-N	10 Years	EDS Calculations 0370-025-023 & 028	1 x 10 <sup>7</sup> RADS	ORNL, Oct. 1970
Pressure Port	Carbon Steel	Not Sensitive		Not Affected	
Switch	Stainless Steel	Not Sensitive		Not Affected	
Case	Phenolic	105°C for Con- tinuous use	Modern Plastics Encyclopedia 1978-79	2 x 10 <sup>8</sup> RADS	ORNL, Oct. 1970
Spring	Beryllium Copper	Not Sensitive		Not Affected	
Contacts	Silver	Not Sensitive		Not Affected	
Cover Pin	Brass	Not Sensitive		Not Affected	

Materials & Parts List Reference:  
Static-O-Ring Catalog

CONTINUATION

NOTES:

1. TMI-1 TFWR NO B00254 REPLACED NBDPRNE WITH ETHYLENE PROPYLENE



EMERGENCY FEEDWATER/FEEDWATER SYSTEM

LIST OF EFFECTIVE PAGES

<u>PAGE</u>	<u>REVISION</u>	<u>PAGE</u>	<u>REVISION</u>
1	0,1,2,3,4,5	16B	4,6
1i	0,3,4,5,6	17	4,5,6
1	0,1,2,4,5,6	17A	4,5
2	0,1,2,4,5,6	17B	4,6
3	0,1,4,5	18	4,5,6
3A	0,1,2,4,5	18A	6
4	0,1,4,5	18B	Deleted
4A	0,1,2,4,5	19	4,5,6
5	0,1,4,5	19A	6
5A	0,1,2,4,5	20	4,5,6
6	0,1,4,5	20A	6
6A	0,1,2,4,5	20B	Deleted
7	0,1,3,4,5, Deleted	21	4,5
7A	5, Deleted	21A	4
8	5, Deleted	21B	Deleted
8A	5, Deleted	22	4,5
8B	5, Deleted	22A	5
9	0,1,3,4,5, Deleted	22B	4
9A	5, Deleted	23	4,5
10	5, Deleted	23A	4
10A	5, Deleted	24	4,5
10B	5, Deleted	24A	4,5
11	0,1,3,4,5	24B	4
11A	4, Deleted	25	4,5
12	0,1,4,5	25A	4
12A	4,5	26	4,5
13	0,1,3,4,5	26A	4 Deleted
13A	4, Deleted	26B	4
14	0,1,4,5	27	4,5
14A	4,5	27A	4
15	4,5,6	28	4,5
15A	4,5	28A	4,5
15B	4,6	28B	4
16	4,5,6	29	5,6
16A	4,5	30	5,6
30A	6	29A	6
30B	6	29B	6

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: EMERGENCY FEEDWATER/ FEEDWATER Plant ID No. --- Component: EF-P2A Motor Manufacture: Westinghouse Model Number: HP450 Frame 588.5H Style 68F21661 Function: S.N. 1S-69 LOFW/MSLB Mitigation Accuracy: Spec: N/A Demon: N/A Service: Emerg. Feed Water Pump 'A' Location: Intermediate Bldg.	Operating Time	Duration of Accident	2 hr.	1	3		NONE
	Temperature (°F)	See Profile 3	285	4	3, 5		NONE
	Pressure (PSIA)	See Profile 5	24.2	4	3		NONE
	Relative Humidity (%)	100	100	4	3		NONE
	Chemical Spray	N/A	N/A	-	-	-	None
	Radiation	NEG.	2 x 10 <sup>8</sup> R	2	3	Separate Test	None
	Aging	Note A	40 years Note B	-	3	Separate Test	None
	Submergence	N/A	N/A	-	-	-	None
Flood Level Elev: N/A							
Above Flood Level: N/A							

Documentation References:
Notes:

- FSAR Section 14.1.2.9.
- LTR GAI/TMI-ICS/4350, Dose Rate Maps, dated 1/16/81.
- Environmental Qualification of Class 1E motors for Nuclear Out-of-Containment Use, Westinghouse Large Motor Division, WACP-8754, Rev. 1. ~~and~~ ORPCA No NA-4016Z
- EDS Nuclear Report No. 02-0370-1058, Rev. 2, dated 6/23/81.
- GPUN Calculation 1101X-5350-020.

- Aging was not considered a design base parameter for TMI-1.
- Thermal aging of 221°F for equivalent 40 years.

Facility: TMI

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## SYSTEM COMPONENT EVALUATION WORK SHEET

Sheet 2 of 30

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
EMERGENCY FEEDWATER/ System: FEEDWATER Plant ID No. Component: EF-P2B Motor Manufacture: Westinghouse Model Number: HP450 Frame 588.5H Style 68F21661 Function: S.N. 2S-69 LOFW/MSLB Mitigation Accuracy: Spec: N/A Demon: N/A Service: Emerg. Feed Water Pump 'B' Location: Intermediate Bldg. Flood Level Elev: N/A Above Flood Level: N/A	Operating Time	Duration of Accident	2 HR	1	3		NONE
	Temperature (°F)	See Profile 3	285	4	3, 5		NONE
	Pressure (PSIA)	See Profile 3	24.2	4	3		NONE
	Relative Humidity (%)	100	100	4	3		None
	Chemical Spray	N/A	N/A	-	-	-	None
	Radiation	NEG.	2 x 10 <sup>8</sup> R	2	3	Separate Test	None
	Aging	Note A	40 years Note B	-	3	Separate Test	None
	Submergence	N/A	N/A	-	-	-	None

Documentation References:

- FSAR Section 14.1.2.9.
- LTR GAI/TMI-ICS/4350, Dose Rate Maps, dated 1/16/81.
- Environmental Qualification of Class 1E Motors for Nuclear Out-of-Containment Use, Westinghouse Large Motor Division, WACP-8754, Rev. 1. and ORDER NO NA-40162
- EDS Nuclear Report No. 02-0370-1058, Rev. 2, dated 6/23/81.
- GPUN Calculation 1101X-5350-020

Notes:

- Aging was not considered a design base parameter for TMI-1.
- Thermal aging of 221°F for equivalent of 40 years

Facility: **1-1**Unit: **1**Rev. **6**Docket: **50-289**Date: **12/31/81**

## SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
<b>System:</b> EMERGENCY FEEDWATER/ FEEDWATER <b>Plant ID No.</b> SV/EF-V-8A <b>Component:</b> Solenoid <b>Manufacturer:</b> ASCO  <b>Model Number:</b> * LB 8314-6 SN 52760T <b>Function:</b> EFW Flow  <b>Accuracy: Spec:</b> N/A <b>Demon:</b> N/A  <b>Service:</b> EFP Minimum Flow Valve  <b>Location:</b> Intermediate Building  <b>Flood Level Elev:</b> N/A <b>Above Flood Level:</b> N/A	Operating Time	Duration of Accident	Continuous	1	3, See Attached Evaluation	SIMILARITY To Valves Tested by ASCO AQS-21678	None
	Temperature (°F)	NOTE 2	346 Accident For 12 minutes	2	3 See Attached Evaluation	"	None
	Pressure (PSIA)	NOTE 2	110 Accident For 12 minutes	2	3, See Attached Evaluation	"	None
	Relative Humidity (%)	NOTE 2	100 Accident	2	3, See Attached Evaluation	"	None
	Chemical Spray (PH)	N/A	10	2	3	"	None
	Radiation	NEG.	8 x 10 <sup>5</sup> R Note B	2	3	ANALYSIS	None
	Aging	NOTE A	40 years Note B	-	3	Arrhenius Model	None
	Submergence	N/A	N/A	2	-		None

**Documentation References:** \* CLASS H Coil P/N 38-793-17D installed 8/21/81  
PER Job Ticket C 5225

**Notes:**

1. FSAR Chapter 10.
2. GPUN TOR 282 AREA 17
3. ASCO Test Report AQS-21678 PER C OF C 1/12/81
- 4.
- 5.
- 6.
- 7.

- A. Aging was not considered a design base parameter for TMI-1.
- B. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

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COMPONENT MATERIALS EVALUATION SHEET

EMERGENCY FEEDWATER/FEEDWATER SYSTEM

Plant I.D. No.: SV/EF-V-8A

Component: Solenoid Valve

Manufacturer: ASCO

Model No.: LB 8314-6

THERMAL AGING				RADIATION	
PARTS LIST	MATERIALS LIST	QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
Disc	BUNA-N	40 Years	EDS Calculations 0370-025-004 & 028	$1 \times 10^7$ RADS	ORNL, Oct. 1970
Gaskets	BUNA-N	40 Years	EDS Calculations 0370-025-004 & 028	$1 \times 10^7$ RADS	ORNL, Oct. 1970
Class 'H' Coil	Nomex/Isomica Silicon Rubber Glass cloth/Silicon Varnish	$\angle 60^\circ\text{C}$ for Con- tinuous use	ASCO E.D. REPORT ADS 21678/TR Rev. A	$2 \times 10^8$ RADS	ASCO E.D. REPORT ADS 21678/TR Rev. A
Core Guide	Acetal (Celcon)	$\angle 90^\circ\text{C}$ for Con- tinuous use	Modern Plastics Encyclopedia 1978-79	$8 \times 10^5$ RADS	ORNL, Oct. 1970
Body	Brass	Not Sensitive		Not Affected	
Core Tube	Stainless Steel	Not Sensitive		Not Affected	
Core & Plug Nut	Stainless Steel	Not Sensitive		Not Affected	
Core Springs	Stainless Steel	Not Sensitive		Not Affected	
Shading Coil	Copper	Not Sensitive		Not Affected	

Materials & Parts List Reference:  
ASCO Catalog

CONTINUATION

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## SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
<b>System:</b> EMERGENCY FEEDWATER/ FEEDWATER <b>Plant ID No.</b> SV/EF-V-8B <b>Component:</b> Solenoid <b>Manufacturer:</b> ASCO  <b>Model Number:</b> * LB 8314-6 SN 52760T <b>Function:</b> EFW Flow  <b>Accuracy: Spec:</b> N/A <b>Demon:</b> N/A  <b>Service:</b> EFP Minimum Flow Valve  <b>Location:</b> Intermediate Building  <b>Flood Level Elev:</b> N/A <b>Above Flood Level:</b> N/A	Operating Time	Duration of Accident	Continuous	1	3 See Attached Evaluation	SIMILARITY TO VALVES TESTED by ASCO AQS-21678	None
	Temperature (°F)	Note 2	346 Accident For 12 minutes	2	3 See Attached Evaluation	"	None
	Pressure (PSIA)	Note 2	110 Accident For 12 minutes	2	3 See Attached Evaluation	"	None
	Relative Humidity (%)	Note 2	100 Accident	2	3 See Attached Evaluation	"	None
	Chemical Spray (PH)	N/A	10	2	3	"	None
	Radiation	NEG.	8 x 10 <sup>5</sup> R Note B	2	3	" ANALYSIS	None
	Aging	Note A	40 years Note B	-	3	Arrhenius Model	None
	Submergence	N/A	N/A	2	-	-	None

Documentation References: \* CLASS H coil P/N 38-793-17D. installed 8/21/81  
Per Job Ticket C 5225

Notes:

1. FSAR Chapter 10.
2. GPUN TDR-282 AREA 17
3. ASCO TEST REPORT AQS-21678 PER C OFC 1/12/81
- 4.
- 5.
- 6.
- 7.

- A. Aging was not considered a design base parameter for IMI-1.
- B. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.



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COMPONENT MATERIALS EVALUATION SHEET

EMERGENCY FEEDWATER/FEEDWATER SYSTEM  
Plant I.D. No.: SV/EF-V-8B  
Manufacturer: ASCO

Component: Solenoid Valve  
Model No.: LB 8314-6

THERMAL AGING				RADIATION	
PARTS LIST	MATERIALS LIST	QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
Disc	BUNA-N	40 Years	EDS Calculations 0370-025-004 & 028	$1 \times 10^7$ RADS	ORNL, Oct. 1970
Gaskets	BUNA-N	40 Years	EDS Calculations 0370-025-004 & 028	$1 \times 10^7$ RADS	ORNL, Oct. 1970
Class 'H' Coil	Nomex/ISOMICA Silicon Rubber Glass Cloth/Silicon Varnish	< 60°C for Con- tinuous use	ASCO E.P. REPORT APS 21678/TR Rev. A	$2 \times 10^8$ RADS	ASCO, E.P. REPORT APS 21678/TR Rev. A
Core Guide	Acetal (Celcon)	< 90°C for Con- tinuous use	Modern Plastics Encyclopedia 1978-79	$8 \times 10^5$ RADS	ORNL, Oct. 1970
Body	Brass	Not Sensitive		Not Affected	
Core Tube	Stainless Steel	Not Sensitive		Not Affected	
Core & Plug Nut	Stainless Steel	Not Sensitive		Not Affected	
Core Springs	Stainless Steel	Not Sensitive		Not Affected	
Shading Coil	Copper	Not Sensitive		Not Affected	

Materials & Parts List Reference:  
ASCO Catalog

CONTINUATION



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## SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
<b>System:</b> EMERGENCY FEEDWATER/ FEEDWATER <b>Plant ID No.</b> SV/EF-V-8C <b>Component:</b> Solenoid <b>Manufacturer:</b> ASCO  <b>Model Number:</b> * LB8314-6 SN 52760T <b>Function:</b> EFW Flow  <b>Accuracy: Spec:</b> N/A <b>Demon:</b> N/A  <b>Service:</b> EFW Minimum Flow Valve  <b>Location:</b> Intermediate Building  <b>Flood Level Elev:</b> N/A <b>Above Flood Level:</b> N/A	Operating Time	Duration of Accident	Continuous	1	3 See Attached Evaluation	SIMILARITY To VALVES Tested by ASCO APS-21678	None
	Temperature (°F)	Note 2	346 Accident For 12 minutes	2	3 See Attached Evaluation	"	None
	Pressure (PSIA)	Note 2	110 Accident For 12 minutes	2	3 See Attached Evaluation	"	None
	Relative Humidity (%)	Note 2	100 Accident	2	3 See Attached Evaluation	"	None
	Chemical Spray (PH)	N/A	10	2	3	"	None
	Radiation	NEG.	8 x 10 <sup>5</sup> R Note B	2	3	" ANALYSIS	None
	Aging	Note A	40 years Note B.	-	3	Arrhenius Model	None
	Submergence	N/A	N/A	2	-	-	None

Documentation References: \* Class H Coil P/N 38-793-17D installed 8/21/81  
Per Job Ticket CS225

Notes:

1. FSAR Chapter 10.
2. GPUN TDR 282 AREA 17
3. ASCO Test Report APS-21678 per C of C 1/12/81
- 4.
- 5.
- 6.
- 7.

- A. Aging was not considered a design base parameter for TMI-1.
- B. Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

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COMPONENT MATERIALS EVALUATION SHEET

EMERGENCY FEEDWATER/FEEDWATER SYSTEM

Plant I.D. No.: SV/EF-V-8C

Component: Solenoid Valve

Manufacturer: ASCO

Model No.: LB 8314-6

THERMAL AGING				RADIATION	
PARTS LIST	MATERIALS LIST	QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
Disc	BUNA-N	40 Years	EDS Calculations 0370-025-004 & 028	$1 \times 10^7$ RADS	ORNL, Oct. 1970
Gaskets	BUNA-N	40 Years	EDS Calculations 0370-025-004 & 028	$1 \times 10^7$ RADS	ORNL, Oct. 1970
Class 'H' Coil	NOMEX/ISOMICA Silicon Rubber Glass Cloth/Silicon Varnish	$\angle 60^\circ\text{C}$ for Continuous use	ASCO EQ Report APs 21678/TR Rev. A	$2 \times 10^8$ RADS	ASCO EQ REPORT APs 21678/TR Rev. A
Core Guide	Acetal (Celcon)	$\angle 90^\circ\text{C}$ for Continuous use	Modern Plastics Encyclopedia 1978-79	$8 \times 10^5$ RADS	ORNL, Oct. 1970
Body	Brass	Not Sensitive		Not Affected	
Core Tube	Stainless Steel	Not Sensitive		Not Affected	
Core & Plug Nut	Stainless Steel	Not Sensitive		Not Affected	
Core Springs	Stainless Steel	Not Sensitive		Not Affected	
Shading Coil	Copper	Not Sensitive		Not Affected	

Materials & Parts List Reference:  
ASCO Catalog

CONTINUATION

Facility:

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## SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
EMERGENCY FEEDWATER/ <b>System:</b> FEEDWATER <b>Plant ID No.</b> FI-S-77 <b>Component:</b> Differential Pressure Transmitter <b>Manufacturer:</b> Barton  <b>Model Number:</b> 277A SN: 277-1789 <b>Function:</b> EFW Flow  <b>Accuracy:</b> Spec: N/A Demon: N/A <b>Service:</b> EF-V-8A Pressure Sensor  <b>Location:</b> Intermediate Building	Operating Time	Duration of Accident	Continuous	1	4	Engineering Analysis	None
	Temperature (°F)	See Accident Profile 3	322	2	4	"	None
	Pressure (PSIA)	See Accident Profile 3	23.6	2	4	"	None
	Relative Humidity (%)	100	100	2	4	"	None
	Chemical Spray	N/A	N/A	-	-	-	None
	Radiation	NEG.	1 x 10 <sup>4</sup> R	3	NOTE B	Comparison Test	None
	Aging	Note A	10 years Note B	-	NOTE B	Arrhenius Model	None
	Submergence	N/A	N/A	-	-	-	None

Documentation References:

1. FSAR Chapter 10.
2. EDS Nuclear Report No. 02-0370-1058, Rev. 2, dated 6/23/81.
3. LTR GAI/TMI-ICS/4350, Dose Rate Maps, dated 1/16/81.
4. Barton Product Instruction Manual L4-277-3
5. Telecon EDS to Barton Dated 4/24/81

Notes:

- A. Aging was not considered a design base parameter for TMI-1.
- B. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

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COMPONENT MATERIALS EVALUATION SHEET

Emergency Feedwater

Plant I.D. No: FI-S-77  
Manufacturer:

Component: AP Transmitter  
Model No: 277A

PARTS LIST	MATERIALS LIST	THERMAL AGING		RADIATION	
		QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
O-Ring	BUNA-N	40 years	EDS Calculation 0370-025-004-028	$1 \times 10^7$ Rads	ORNL, Oct. 1970
Head Gasket	Neopreme	24.2 years	GPUN Calc 1101X-5350-014	$1 \times 10^6$ Rads	EPRI NP 1558
Terminal Block	Paper Base Phenolic	40 years	GPUN Calc. 1101X 5350-013	$1 \times 10^7$ Rads	B&W Doc. No. 77-1127001-00 dated 7/81
Washer, Thrust	Teflon	10 years	B&W Doc. 17-1127001-00	$1 \times 10^4$ Rads	EPRI NP 1558
External wiring	PVC	40 years	GPUN Calc. 1101X-5350-015	$12 \times 10^7$ Rads	B&W Doc. 17-1127001-00 dated July 1981

Materials and Parts List Reference:  
Barton Instruction Manual L4-277-3  
Ltr, EDS to Barton 0370-025-671 dated 4/24/81

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## SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
<b>EMERGENCY FEEDWATER/</b> <b>System: FEEDWATER</b> <b>Plant ID No.</b> FI-S-78 <b>Component: Differential</b> Pressure Transmitter <b>Manufacturer:</b> Barton  <b>Model Number:</b> 277 A SN: 277-1791  <b>Function:</b> EFW Flow  <b>Accuracy: Spec:</b> N/A <b>Demon:</b> N/A  <b>Service:</b> EF-V-8B Pressure Sensor  <b>Location:</b> Intermediate Building	Operating Time	Duration of Accident	Continuous	1	4	Engineering Analysis	None
	Temperature (°F)	See Accident Profile 3	322	2	4	"	None
	Pressure (PSIA)	See Accident Profile 3	23.6	2	4	"	None
	Relative Humidity (%)	100	100	2	4	"	None
	Chemical Spray	N/A	N/A	-	-	-	None
	Radiation	NEG.	1 x 10 <sup>4</sup> R Note B	3	Note B	Comparison Test	None
	Aging	Note A	10 years Note B	-	Note B	Arrhenius Model	None
	Submergence	N/A	N/A	-	-	-	None
<b>Flood Level Elev:</b> N/A <b>Above Flood Level:</b> N/A							

Documentation References:

1. FSAR Chapter 10.
2. EDS Nuclear Report No. 02-0370-1058, Rev. 2, dated 6/23/81
3. LTR GAI/TMI-ICS/4350, Dose Rate Maps, dated 1/16/81.
4. Barton Product Instruction Manual L4-277-3
5. Telecon EDS to Barton Dated 4/24/81

Notes:

- A. Aging was not considered a design base parameter for TMI-1.
- B. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.



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## COMPONENT MATERIALS EVALUATION SHEET

Emergency Feedwater

Plant I.D. No: FI-S-78  
Manufacturer:

Component: AP Transmitter  
Model No: 277A

PARTS LIST	MATERIALS LIST	THERMAL AGING		RADIATION	
		QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
O-Ring	BUNA-N	40 years	EDS Calculation 0370-025-004-028	$1 \times 10^7$ Rads	ORNL, Oct. 1970
Head Gasket	Neoprene	24.2 years	GPUN Calc 1101X-5350-014	$1 \times 10^6$ Rads	EPRI NP 1558
Terminal Block	Paper Base Phenolic	40 years	GPUN Calc. 1101X 5350-013	$1 \times 10^7$ Rads	B&W Doc. No. 77-1127001-00 dated
Washer, Thrust	Teflon	10 years	B&W Doc. 17-1127001-00	$1 \times 10^4$ Rads	EPRI NP 1558
External wiring	PVC	40 years	GPUN Calc. 1101X-5350-015	$12 \times 10^7$ Rads	B&W Doc. 17-1127001 dated July 1981

Materials and Parts List Reference:  
Barton Instruction Manual L4-277-3  
Ltr. EDS to Barton 0370-025-671 dated 4/24/81



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## SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
<b>System:</b> EMERGENCY FEEDWATER/ FEEDWATER <b>Plant ID No.</b> FI-S-79 <b>Component:</b> Differential Pressure Transmitter <b>Manufacturer:</b> Barton <b>Model Number:</b> 277 A SN 277-17 90 <b>Function:</b> EFW Flow <b>Accuracy:</b> Spec: N/A Demon: N/A <b>Service:</b> EF-V-8C Pressure Sensor <b>Location:</b> Intermediate Building	Operating Time	Duration of Accident	Continuous	1	4	Engineering Analysis	None
	Temperature (°F)	See Accident Profile 3	322	2	4	"	None
	Pressure (PSIA)	See Accident Profile 3	23.6	2	4	"	None
	Relative Humidity (%)	100	100	2	4		None
	Chemical Spray	N/A	N/A	-	-	-	None
	Radiation	NEG.	$1 \times 10^4 R$	3	Note B	Comparison Test	None
	Aging	Note A	10 years Note B	-	Note B	Arrhenius Model	None
	Submergence	N/A	N/A	-	-	-	None

Documentation References:

1. FSAR Chapter 10.
2. EDS Nuclear Report No. 02-0370-1058, Rev. 2, dated 6/23/81
3. LTR GAI/TMI-ICS/4350, Dose Rate Maps, dated 1/16/81.
4. Barton Product Instruction Manual L4-277-3
5. Telecon EDS to Barton Dated 4/24/81

Notes:

- A. Aging was not considered a design base parameter for TMI-1.
- B. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

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## COMPONENT MATERIALS EVALUATION SHEET

Emergency Feedwater

Plant I.D. No: FI-S-79  
Manufacturer:

Component: AP Transmitter  
Model No: 277A

PARTS LIST	MATERIALS LIST	THERMAL AGING		RADIATION	
		QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
O-Ring	BUNA-N	40 years	EDS Calculation 0370-025-004-028	$1 \times 10^7$ Rads	ORNL, Oct. 1970
Head Gasket	Neopreme	24.2 years	GPUN Calc 1101X-5350-014	$1 \times 10^6$ Rads	EPRI NP 1558
Terminal Block	Paper Base Phenolic	40 years	GPUN Calc. 1101X 5350-013	$1 \times 10^7$ Rads	B&W Doc. No. 77-1127001-00 dated
Washer, Thrust	Teflon	10 years	B&W Doc. 17-1127001-00	$1 \times 10^4$ Rads	EPRI NP 1558
External wiring	PVC	40 years	GPUN Calc. 1101X-5350-015	$12 \times 10^7$ Rads	B&W Doc. 17-1127001 dated July 1981

## Materials and Parts List Reference:

Barton Instruction Manual L4-277-3

Ltr. EDS to Barton 0370-025-671 dated 4/24/81

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## SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
EMERGENCY FEEDWATER System: FEEDWATER Plant ID No. <b>SP-V-5A</b> Component: E/P Converter Manufacturer: Bailey Model Number: RP-1211C S.N. 667456 Function: LOFW/MSLB Mitigation Accuracy: Spec: N/A Demon: N/A Service: S.G. Flow Control Valve EF-V-30A Location: Intermediate Building Flood Level Elev: N/A Above Flood Level: N/A	Operating Time	Duration of Accident	Note B	1	3	Analysis	none
	Temperature (°F)	Note 2	Note B	2	3	Analysis	none
	Pressure (PSIA)	Note 2	40	2	3	Specification	none
	Relative Humidity (%)	Note 2	Note B	2	3	Analysis	none
	Chemical Spray	N/A	N/A	2	-	N/A	none
	Radiation	NEG.	N/A	2		N/A	none
	Aging	Note A	Note C	-	3	Analysis	none
	Submergence	N/A	N/A	2	-	-	None

## Documentation References:

1. FSAR Chapter 10.
2. GPUN TOR 282 AREA #17
3. BAILLY Motor Product Specification E92-10

## Notes:

- A. Aging was not considered a design base parameter for TMI-1.
- B. SEE Electrical Component Evaluation sheet
- C. SEE COMPONENT MATERIALS EVALUATION SHEET

ELECTRICAL COMPONENT EVALUATION

The RP-1211C E/P converter data does not fully envelope the pressure, temperature or humidity service condition profile for a main steam line break in the intermediate building.

Assessment:

Converter operation (max. ambient of 180°F and 40 psig) will be protected by its aluminum housing. The die-cast aluminum housing is classified as NEMA 3 (dust tight, rain tight and sleet-resistant for outdoor use) will protect it from the 322°F, 24.2 psia, and 100% relative humidity accident environment.

Safety Impact:

None

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COMPONENT MATERIALS EVALUATION SHEET

Emergency Feedwater

Plant I.D. No.: **SP-V-5A**

Manufacturer: Bailey

Component: E/P Converter

Model No.: RP-1211C

PARTS LIST	MATERIALS LIST	THERMAL AGING		RADIATION	
		QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
5311428-2 o-ring	<i>Note 2</i>	<i>Note 1</i>			
5311428-3 o-ring	<i>Note 2</i>	<i>Note 1</i>			
6614221-1 Cover gasket	<i>Note 2</i>	<i>Note 1</i>			

- Notes:
1. Items are included within the preventative maintenance program (1C-66) to be replaced ~ 3 years
  2. Lab analysis will be conducted to determine material identification



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## SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
EMERGENCY FEEDWATER/ System: FEEDWATER Plant ID No. <b>SP-Y-5B</b> Component E/P Converter Manufacture: Bailey Model Number: RP-1211C S.N. 667457 Function: LOFW/MSLB Mitigation Accuracy: Spec: N/A Demon: N/A Service: S.G. Flow Control Valve EF-V-30B Location: Intermediate Bldg. Flood Level Elev: N/A Above Flood Level: N/A	Operating Time	Duration of Accident	Note B	1	3	Analysis	none
	Temperature (°F)	Note 2	Note B	2	3	Analysis	none
	Pressure (PSIA)	Note 2	40	2	3	specification	none
	Relative Humidity (%)	Note 2	Note B	2	3	Analysis	none
	Chemical Spray	N/A	N/A	2	-	N/A	None
	Radiation	NEG.	N/A	2	-	N/A	none
	Aging	Note A	3 years Note C	-	3	Analysis	none
	Submergence	N/A	N/A	2	-	-	None

## Documentation References:

1. FSAR Chapter 10.
2. GPUN TDR 282 AREA\*17
3. Bailey Motor Product Specification E92-10

## Notes:

- A. Aging was not considered a design base parameter for TMI-1.
- B. SEE Electrical evaluation sheet
- C. SEE COMPONENT Material Evaluation Sheet.

ELECTRICAL COMPONENT EVALUATION

The RP-1211C E/P converter data does not fully envelope the pressure, temperature or humidity service condition profile for a main steam line break in the intermediate building.

Assessment:

Converter operation (max. ambient of 180°F and 40 psig) will be protected by its aluminum housing. The die-cast aluminum housing is classified as NEMA 3 (dust tight, rain tight and sleet-resistant for outdoor use) will protect it from the 322°F, 24.2 psia, and 100% relative humidity accident environment.

Safety Impact:

None

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COMPONENT MATERIALS EVALUATION SHEET

Emergency Feedwater

Plant I.D. No.: **SP-V-5B**

Component: E/P Converter

Manufacturer: Bailey

Model No.: RP-1211C

PARTS LIST	MATERIALS LIST	THERMAL AGING		RADIATION	
		QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
5311428-2 o-ring	<i>Note 2</i>	<i>Note 1</i>			
5311428-3 o-ring	<i>Note 2</i>	<i>Note 1</i>			
6614221-1 Cover gasket	<i>Note 2</i>	<i>Note 1</i>			

Note: 1. Items are included within the preventative maintenance program (IC-66) to be replaced ~ 3 years  
2. Lab analysis will be conducted to determine material identification

MAKE-UP AND PURIFICATION SYSTEM

LIST OF EFFECTIVE PAGES

<u>PAGE</u>	<u>REVISION</u>	<u>PAGE</u>	<u>REVISION</u>
i	0,1,2,3,4,5	20	0,1,5
ii	0,3,4,5,6	21	0,1,2,3,5
1	0,1,5	22	0,1,2,3,5
2	0,1,5	23	0,1,2,3,5
3	0,1,5	24	0,1,2,3,5
4	0,1,2,5,6	25	0,1,4,5
4A	0,1,4	25A	0,1,4
5	0,1,2,5,6	26	0,1,4,5
5A	0,1,4	26A	0,1,4
6	0,1,2,5,6	27	0,1,3,4,5
6A	0,1,4	27A	0,1,4
7	0,1,2,5,6	28	0,1,3,5
7A	0,1,4	28A	0,1,4
8	0,1,2,5,6	29	0,1,3,5
8A	0,1,4	29A	0,1,4
9	0,1,2,5,6	30	0,1,3,4,5
9A	0,1,4	30A	0,1,4
10	0,1,5	31	0,1,2,3,5
11	0,1,5	31A	5
12	0,1,5	32	0,1,2,3,4,5
13	0,1,2,5,6	32A	0,1,4
13A	5	33	0,1,2,3,4,5
13B	5	33A	0,1,4,5
14	0,1,2,3,5,6	34	0,1,2,3,4,5,6
14A	5	34A	0,1,4, Deleted
14B	5	34B	0,1,3,4,5,6
15	0,1,2,4	35	0,1,5
15A	0,1,4	36	0,1,5
16	0,1,2,4,5	37	0,1,2,4,5,6
16A	0,1,4	37A	0,1,4,5
17	0,1,3,4,5,6	38	0,1,2,4,5,6
17A	0,1,4 Deleted	38A	0,1,4,5
17B	0,1,3,4,5,6	39	0,1,2,4,5,6
18	0,1,5	39A	0,1,4,5
19	0,1,5		

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## SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Make-Up Plant ID No. MU-P2A Component: Pump Motor Manufacture: General Electric  Model Number: 5K37JG403  Function: hPI  Accuracy: Spec: N/A Demon: N/A  Service: MU-P1A Aux. Oil Pump  Location: Auxiliary Bldg.	Operating Time	Duration of Accident	Continuous	1	6	-	None
	Temperature (°F)	Ambient	122	2	7	-	None
	Pressure (PSIA)	Atmospheric	Atmospheric	2	6	-	None
	Relative Humidity (%)	Ambient	Ambient	2	6	-	None
	Chemical Spray	N/A	N/A	-	-	-	None
	Radiation	$7.6 \times 10^4$ R	$1 \times 10^7$ R	3	4	Separate Test	None
	Aging	Note A	40 Years Note C	-	6,7	-	None
	Submergence	N/A	N/A	-	-	-	None
Flood Level Elev: N/A Above Flood Level: N/A							

Documentation References:

1. TMI-1 Emergency Procedure 1202-6c
2. FSAR Section 6.1.2.12.
3. Ltr. GAI/TMI-1CS/4350, Dose Rate Maps, dated 1/16/81.
4. Ltr. G.E. Fort Wayne to EDS, dated 8/5/80.
5. Ltr. G.E. Fort Wayne to EDS, dated 9/5/80.
6. LTR. G.E. FORT WAYNE TO EDS, dated 9/15/80
7. NUS Analysis Project 1961 dated 7/6/81

Notes:

- A) Aging was not considered a design base parameter for TMI-1.
- B) Deleted.
- C) Attached evaluation indicates no component parts that exhibit significant thermal aging.



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Unit: 1

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## SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Make-Up Plant ID No. Component: MU-P2B Pump Motor Manufacture: General Electric Model Number: 5K37JG403 Function: HPI Accuracy: Spec: N/A Demon: N/A Service: MU-P1B Aux. Oil Pump Location: Auxiliary Bldg. Flood Level Elev: N/A Above Flood Level: N/A	Operating Time	Duration of Accident	Continuous	1	6	-	None
	Temperature (°F)	Ambient	122	2	7	-	None
	Pressure (PSIA)	Atmospheric	Atmospheric	2	6	-	None
	Relative Humidity (%)	Ambient	Ambient	2	6	-	None
	Chemical Spray	N/A	N/A	-	-	-	None
	Radiation	$7.6 \times 10^4$ R	$1 \times 10^7$ R	3	4	Separate Test	None
	Aging	Note A	40 Years Note C	-	6, 7	-	None
	Submergence	N/A	N/A	-	-	-	None

Documentation References:

1. TMI-1 Emergency Procedure 1202-6 c
2. FSAR Section 6.1.2.12
3. Ltr. GAI/TMI-1CS/4350, Dose Rate Maps, dated 1/16/81.
4. Ltr. G.E. Fort Wayne to EDS, dated 8/5/80.
5. Ltr. G.E. Fort Wayne to EDS, dated 9/5/80.
6. Ltr. G.E. Fort Wayne to EDS, dated 9/15/80
7. NUS Analysis Project 1961 dated 7/6/81

Notes:

- A) Aging was not considered a design base parameter for TMI-1.
- B) Deleted.
- C) Attached evaluation indicates no component parts that exhibit significant thermal aging.

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## SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Make-Up Plant ID No. Component: MU-P2C Pump Motor Manufacture: General Electric Model Number: 5K37JG403 Function: HPI Accuracy: Spec: N/A Demon: N/A Service: MU-P1C Aux. Oil Pump Location: Auxiliary Bldg. Flood Level Elev: N/A Above Flood Level: N/A	Operating Time	Duration of Accident	Continuous	1	6	-	None
	Temperature (°F)	Ambient	122	2	7	-	None
	Pressure (PSIA)	Atmospheric	Atmospheric	2	6	-	None
	Relative Humidity (%)	Ambient	Ambient	2	6	-	None
	Chemical Spray	N/A	N/A	-	-	-	None
	Radiation	$7.6 \times 10^4$ R	$1 \times 10^7$ R	3	4	Separate Test	None
	Aging	Note A	40 Years Note C	-	6,7	-	None
	Submergence	N/A	N/A	-	-	-	None

Documentation References:

1. TMI-1 Emergency Procedure 1202-6c
2. FSAR Section 6.1.2.12.
3. Ltr. GAI/TMI-1CS/4350, Dose Rate Maps, dated 1/16/81
4. Ltr. G.E. Fort Wayne to EDS, dated 8/5/80.
5. Ltr. G.E. Fort Wayne to EDS, dated 9/5/80.
6. Ltr. G.E. Fort Wayne to EDS, dated 9/15/80
7. NUS ANALYSIS Project 1761 dated 7/6/81

Notes:

- A) Aging was not considered a design base parameter for TMI-1.
- B) Deleted.
- C) Attached evaluation indicates no component parts that exhibit significant thermal aging.

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## SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Make-Up Plant ID No. Component: MU-P3A Pump Motor Manufacture: General Electric Model Number: 5K37JG403 Function: HPI Accuracy: Spec: N/A Demon: N/A Service: MU-P1A Main Oil Pump Location: Auxiliary Bldg. Flood Level Elev: N/A Above Flood Level: N/A	Operating Time	Duration of Accident	Continuous	1	6	-	None
	Temperature (°F)	Ambient	122	2	7	-	None
	Pressure (PSIA)	Atmospheric	Atmospheric	2	6	-	None
	Relative Humidity (%)	Ambient	Ambient	2	6	-	None
	Chemical Spray	N/A	N/A	-	-	-	None
	Radiation	$7.6 \times 10^4$ R	$1 \times 10^7$ R	3	4	Separate Test	None
	Aging	Note A	40 Years Note C	-	6,7	-	None
	Submergence	N/A	N/A	-	-	-	None

Documentation References:

1. TMI-1 Emergency Procedure 1202-6 C
2. FSAR Section 6.1.2.12.
3. Ltr. GAI/TMI-1CS/4350, Dose Rate Maps, dated 1/16/81
4. Ltr. G.E. Fort Wayne to EDS, dated 8/5/80.
5. Ltr. G.E. Fort Wayne to EDS, dated 9/5/80.
6. Ltr. G.E. Fort Wayne to EDS, dated 9/15/80
7. NUS ANALYSIS PROJECT 1961 dated 7/6/81

Notes:

- A) Aging was not considered a design base parameter for TMI-1.
- B) Deleted.
- C) Attached evaluation indicates no component parts that exhibit significant thermal aging.

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## SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Make-Up Plant ID No. MU-P3B Component: Pump Motor Manufacture: General Electric Model Number: 5K37JG403 Function: HPI Accuracy: Spec: N/A Demon: N/A Service: MU-P1B Main Oil Pump Location: Auxiliary Bldg. Flood Level Elev: N/A Above Flood Level: N/A	Operating Time	Duration of Accident	Continuous	1	6	-	None
	Temperature (°F)	Ambient	122	2	7	-	None
	Pressure (PSIA)	Atmospheric	Atmospheric	2	6	-	None
	Relative Humidity (%)	Ambient	Ambient	2	6	-	None
	Chemical Spray	N/A	N/A	-	-	-	None
	Radiation	$7.6 \times 10^4$ R.	$1 \times 10^7$ R	3	4	Separate Test	None
	Aging	Note A	40 Years Note C	-	6,7	4,5,6	None
	Submergence	N/A	N/A	-	-	-	None

Documentation References:

1. TMI-1 Emergency Procedure 1202-6 C
2. FSAR Section 6.1.2.12.
3. Ltr. GAI/TMI-1CS/4350, Dose Rate Maps, dated 1/16/81
4. Ltr. G.E. Fort Wayne to EDS, dated 8/5/80.
5. Ltr. G.E. Fort Wayne to EDS, dated 9/5/80.
6. Ltr. G.E. Fort Wayne to EDS, dated 9/15/80
7. NUS ANALYSIS PROJECT 1961 dated 7/6/81

Notes:

- A) Aging was not considered a design base parameter for TMI-1.
- B) Deleted.
- C) Attached evaluation indicates no component parts that exhibit significant thermal aging.

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## SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Make-Up Plant ID No. Component: MU-P3C Pump Motor Manufacture: General Electric Model Number: 5K37JG403 Function: HPI Accuracy: Spec: N/A Demon: N/A Service: MU-P1C Main Oil Pump Location: Auxiliary Bldg. Flood Level Elev: N/A Above Flood Level: N/A	Operating Time	Duration of Accident	Continuous	1	6	-	None
	Temperature (°F)	Ambient	122	2	7	-	None
	Pressure (PSIA)	Atmospheric	Atmospheric	2	6	-	None
	Relative Humidity (%)	Ambient	Ambient	2	6	-	None
	Chemical Spray	N/A	N/A	-	-	-	None
	Radiation	$7.6 \times 10^4$ R	$1 \times 10^7$ R	3	4	Separate Test	None
	Aging	Note A	40 Years Note C	-	6, 7	-	None
	Submergence	N/A	N/A	-	-	-	None

Documentation References:

1. TMI-1 Emergency Procedure 1202-6 C
2. FSAR Section 6.1.2.12.
3. Ltr. GAI/TMI-1CS/4350 Dose Rate Maps, dated 1/16/81
4. Ltr. G.E. Fort Wayne to EDS, dated 8/5/80.
5. Ltr. G.E. Fort Wayne to EDS, dated 9/5/80.
6. Ltr. G.E. Fort Wayne to EDS, dated 9/15/80
7. NUS ANALYSIS PROJECT 1961 dated 7/6/81

Notes:

- A) Aging was not considered a design base parameter for TMI-1.
- B) Deleted.
- C) Attached evaluation indicates no component parts that exhibit significant thermal aging.



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## SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Make-Up Plant ID No. MU-V-2A Component: Motor Operator Manufacture: Limitorque Model Number: SMB-00 O.N. 337635C S.N. 100038 Function: Containment Iso. Accuracy: Spec: N/A Demon: N/A Service: Letdown Cooler Outlet Valve Location: Containment Flood Level Elev: 286.66 ft. Above Flood Level: No	Operating Time	Note D Note E	7 days	1	6	Simultaneous Test	None
	Temperature (°F)	See Accident Profile 1	328	2	6	Simultaneous Test	None
	Pressure (PSIA)	See Accident Profile 2	105	3	6	Simultaneous Test	None
	Relative Humidity (%)	100	100	1	6	Simultaneous Test	None
	Chemical Spray	Note B	Note F	4	6, 9	Simultaneous Test	None
	Radiation	$2.0 \times 10^7 R$	$2.04 \times 10^8 R$	5	7	Sequential Test	None
	Aging	Note A	40 Years Note C	-	7, 8	Sequential Test	None
	Submergence	Note E	Note E	-	-	-	None

Documentation References:

1. FSAR Chapter 14.
2. FSAR Chapter 14, Figure 14-63A.
3. FSAR Chapter 14, Figure 14-66.
4. Lesson Plan for TMI-1 ESAS.
5. I & E Bulletin 79-01B, Enclosure 4, Paragraph 4.1.
6. Limitorque Qualification Test Report No. 600198, F-C2232-01, dated Jan. 2, 1969.
7. Limitorque Qualification Test Report No. 600367A, Reissued 5/13/76.
8. Limitorque Report No. B0058, Limitorque Test Labs, dated 1/11/80.
9. Oak Ridge National Lab Report ORNL-TM-2412, dated 5/71

F) SEE ATTACHED EVALUATION.

Notes:

- A) Aging was not considered a design base parameter for TMI-1.
- B) Borated water of 2270 ppm Boron with NaOH to raise PH  $\approx$  9.5.
- C) Motor stator thermally aged for 100 hours at 356°F, mechanically cycled 500 times.
- D) Valve operates in 1.5 min. maximum. Valve position indication is required until operator verification or about one hour.
- E) Valve performs its function prior to becoming submerged.

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## SYSTEM COMPONENT EVALUATION WORK SHEET

Sheet 14 of 39

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Make-Up Plant ID No. MU-V-2B Component: Motor Operator Manufacture: Limitorque Model Number: SMB-00 O.N. 337635C S.N. 100039 Function: Containment Iso. Accuracy: Spec: N/A Demon: N/A Service: Letdown Cooler Outlet Valve Location: Containment Flood Level Elev: 286.66 ft. Above Flood Level: No	Operating Time	Note D Note E	7 days	1	7	Simultaneous Test	None
	Temperature (°F)	See Accident Profile 1	328	2	7	Simultaneous Test	None
	Pressure (PSIA)	See Accident Profile 2	105	3	7	Simultaneous Test	None
	Relative Humidity (%)	100	100	4	7	Simultaneous Test	None
	Chemical Spray	Note B	Note F	5	7, 10	Simultaneous Test	None
	Radiation	$2 \times 10^7 R$	$2.04 \times 10^8 R$	6	8	Sequential Test	None
	Aging	Note A	40 Years Note C	-	8, 9	Sequential Test	None
	Submergence	Note E	Note E	-	-	-	None

## Documentation References:

1. FSAR Chapter 5, Table 5-4.
2. FSAR Chapter 14, Figure 14-63A. F) SEE ATTACHED EVALUATION
3. FSAR Chapter 14, Figure 14-66.
4. FSAR Chapter 14.
5. Lesson Plan for TMI-1 ESAS.
6. I & E Bulletin 79-01B, Enclosure 4, Paragraph 4.1.
7. Limitorque Qualification Test Report No. 600198, F-C2232-01, dated Jan. 2, 1969.
8. Limitorque Qualification Test Report No. 600367A, Reissued 5/13/76.
9. Limitorque Report No. B0058, Limitorque Test Labs, dated 1/11/80.
10. Oak Ridge National Lab, Report ORNL-TM-2412, dated 5/71

## Notes:

- A) Aging was not considered a design base parameter for TMI-1.
- B) Borated water of 2270 ppm Boron with NaOH to raise PH  $\approx$  9.5.
- C) Motor stator thermally aged for 100 hours at 356°F mechanically cycled 500 times.
- D) Valve operates in 1.5 min. maximum. Valve position indication is required until operator verification or about one hour.
- E) Valve performs its function prior to becoming submerged.

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## SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Make-Up Plant ID No. SV/MUV-3 Component: Solenoid Valve Manufacture: ASCO  Model Number: * HT 8321-A8  Function: Containment Iso.  Accuracy: Spec: N/A Demon: N/A  Service: Letdown Coolers Out-let Valve MU-V-3  Location: Auxiliary Bldg.	Operating Time	1.5 min.	Continuous	1	3	SIMILAR TO Valve Tested by ASCO - AQS 21678	None
	Temperature (°F)	Note Z	346 Accident For 12 minutes	2	3	"	None
	Pressure (PSIA)	Atmospheric	110 Accident For 12 minutes	2	3	"	None
	Relative Humidity (%)	Ambient	100 Accident	2	3	"	None
	Chemical Spray (PH)	N/A	10	2	3	"	None
	Radiation	$6.6 \times 10^5 R$	$8 \times 10^5 R$ Note B	2	3	ANALYSIS	None
	Aging	Note A	40 years Note B	-	3	Arrhenius Model	None
	Flood Level Elev: N/A Above Flood Level: N/A						
	Submergence	N/A	N/A	2	-		None

## Documentation References:

\* CLASS H Coil P/H 103-834-20 installed 12/24/81  
 Per Job Ticket C5224

## Notes:

1. FSAR Chapter 14.
2. GPVN TDR 282 AREA #7
3. ASCO TEST REPORT AQS-21678 per CORC 1/12/81
- 4.
- 5.
- 6.
- 7.

A) Aging was not considered a design base parameter for TMI-1.

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

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COMPONENT MATERIALS EVALUATION SHEET

MAKE UP SYSTEM

Plant I.D. No.: SV/MU-V-3

Component: Solenoid Valve

Manufacturer: ASCO

Model No.: HT 8321-AB

THERMAL AGING				RADIATION	
PARTS LIST	MATERIALS LIST	QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
Body	Brass	Not Sensitive		Not Affected	
Seals & Disc	BUNA-N	40 Years	EDS Calculations 0370-025-004 & 028	$1 \times 10^7$ RADS	ORNL, Oct. 1970
Core Tube	Stainless Steel	Not Sensitive		Not Affected	
Core & Plug Nut	Stainless Steel	Not Sensitive		Not Affected	
Springs	Stainless Steel	Not Sensitive		Not Affected	
Shading Coil	Copper	Not Sensitive		Not Affected	
Seal Insert	Acetal (Celcon)	$< 90^\circ\text{C}$ for Continuous use	Modern Plastics Encyclopedia 1978-79	$8 \times 10^5$ RADS	ORNL, Oct. 1970
Disc Holder	Acetal (Celcon)	$< 90^\circ\text{C}$ for Continuous use	Modern Plastics Encyclopedia 1978-79	$8 \times 10^5$ RADS	ORNL, Oct. 1970
Cage	Glass-filled Nylon	$< 65^\circ\text{C}$ for Continuous use	Modern Plastics Encyclopedia 1978-79	$4 \times 10^6$ RADS	ORNL, Oct. 1970
Piston	Glass-filled Nylon	$< 65^\circ\text{C}$ for Continuous use	Modern Plastics Encyclopedia 1978-79	$4 \times 10^6$ RADS	ORNL, Oct. 1970
Class H Coil	Isomica/Nomex Silicon Rubber Glass cloth/Silicon Varnish	$< 60^\circ\text{C}$ For Continuous use	ASCO REPORT AQS 21678/TR Rev. A	$2 \times 10^8$ RADS	ASCO, Report AQS 21678/TR Rev. A

Materials & Parts List Reference:  
ASCO Catalog

Notes

CONTINUATION

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## SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Make-Up Plant ID No. SV/MUV-26 Component: Solenoid Valve Manufacture: ASCO Model Number: HT 8321-A8 Function: Containment Iso. Accuracy: Spec: N/A Demon: N/A Service: R.C. Pump Letdown Cooler Iso. Valve MU-V-26 Location: Auxiliary Bldg. Flood Level Elev: N/A Above Flood Level: N/A	Operating Time	Duration of Accident	Continuous	1	3	Similarity To Valve Tested by ASCO - AQS-21678	None
	Temperature (°F)	Note 2	346 Accident for 12 minutes	2	3	"	None
	Pressure (PSIA)	Atmospheric	110 Accident for 12 minutes	2	3	"	None
	Relative Humidity (%)	Ambient	100 Accident	2	3	"	None
	Chemical Spray (PH)	N/A	10	2	3	"	None
	Radiation	$3.2 \times 10^5 R$	$8 \times 10^5 R$ Note B	2	3	" ANALYSIS	None
	Aging	Note A	40 years Note B	-	3	Arrhenius Model	None
	Submergence	N/A	N/A	2	-	-	None

Documentation References: \* Class H Coil P/N 103-824-20 installed 12/24/81  
per Job Ticket CS224

## Notes:

1. RESPONSE TO QUESTIONS 24 & 25 Supplement 1, PART 1, TMI-1 Restart Report
2. GPHN TOR 282 AREA 13
3. ASCO TEST REPORT AQS-21678 per COFC 1/12/81

A) Aging was not considered a design base parameter for TMI-1.

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



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COMPONENT MATERIALS EVALUATION SHEET

MAKE UP SYSTEM

Plant I.D. No.: SV/MU-V-26

Component: Solenoid Valve

Manufacturer: ASCO

Model No.: HT 8321-AB

THERMAL AGING				RADIATION	
PARTS LIST	MATERIALS LIST	QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
Body	Brass	Not Sensitive		Not Affected	
Seals & Disc	BUNA-N	40 Years	EDS Calculations 0370-025-004 & 028	$1 \times 10^7$ RADS	ORNL, Oct. 1970
Core Tube	Stainless Steel	Not Sensitive		Not Affected	
Core & Plug Nut	Stainless Steel	Not Sensitive		Not Affected	
Springs	Stainless Steel	Not Sensitive		Not Affected	
Shading Coil	Copper	Not Sensitive		Not Affected	
Seal Insert	Acetal (Celcon)	$< 90^\circ\text{C}$ for Continuous use	Modern Plastics Encyclopedia 1978-79	$8 \times 10^5$ RADS	ORNL, Oct. 1970
Disc Holder	Acetal (Celcon)	$< 90^\circ\text{C}$ for Continuous use	Modern Plastics Encyclopedia 1978-79	$8 \times 10^5$ RADS	ORNL, Oct. 1970
Cage	Glass-filled Nylon	$< 65^\circ\text{C}$ for Continuous use	Modern Plastics Encyclopedia 1978-79	$4 \times 10^6$ RADS	ORNL, Oct. 1970
Piston	Glass-filled Nylon	$< 65^\circ\text{C}$ for Continuous use	Modern Plastics Encyclopedia 1978-79	$4 \times 10^6$ RADS	ORNL, Oct. 1970
Class H Coil	Isomica/NOMIK Silicon Rubber Glass Cloth/Silicon Varnish	$< 60^\circ\text{C}$ for Continuous use	ASCO REPORT APS 21678/TR Rev A	$2 \times 10^8$ RADS	ASCO REPORT APS 21679/TR Rev A.

Materials & Parts List Reference:  
ASCO Catalog

Notes

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## SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Make-Up Plant ID No. P.S. 480A (P5-745A) Component: Pressure Switch Manufacture: Square D Model Number: Type 9013-AMG5 Function: HPI Accuracy: Spec: — Demon: — Service: Lube Oil Pressure Detection Make-Up Pump MU-P-1A Location: Auxiliary Building	Operating Time	Duration of Accident	Continuous	1	4	Simultaneous Test	None
	Temperature (°F)	Ambient	180	2	4	Simultaneous Test	None
	Pressure (PSIA)	Atmospheric	315	2	4	Simultaneous Test	None
	Relative Humidity (%)	Ambient	Ambient	2	4	Simultaneous Test	None
	Chemical Spray	N/A	N/A	-	-	-	None
	Radiation	$7.6 \times 10^4$ R	$7 \times 10^7$ R Note B	3	4,5	Comparison Test	None
	Aging	Note A	8 years Note B	-	4,6	Arrhenius Model	None
	Submergence	N/A	N/A	-	-	-	None
Flood Level Elev: N/A							
Above Flood Level: N/A							

Documentation References:

1. TMI-1 Emergency Procedure 1202-6 C
2. FSAR Section 6.1.2.12.
3. Ltr. GAI/TMI-1CS/4350 Dose Rate Maps, dated 1/16/81.
4. Ltr. Square D Company to EDS, dated 9/23/80.
5. "Engineering & Design 17" (1971) 247-280, North Holland Publishing Co.
6. EDS Nuclear Calculation 0370-025-046, Rev. 0, dated 6/3/81.

Notes:

- A) Aging was not considered a design base parameter for TMI-1.
- B) Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

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SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Make-Up Plant ID No. P.S. 480B (PS-745 B) Component: Pressure Switch Manufacture: Square D Model Number: Type 9013-AMG5 Function: HPI Accuracy: Spec: _____ Demon: _____ Service: Lube Oil Pressure Detection Make Up Pump MU-P-1B Location: Auxiliary Building Flood Level Elev: N/A Above Flood Level: N/A	Operating Time	Duration of Accident	Continuous	1	4	Simultaneous Test	None
	Temperature (°F)	Ambient	180	2	4	Simultaneous Test	None
	Pressure (PSIA)	Atmospheric	315	2	4	Simultaneous Test	None
	Relative Humidity (%)	Ambient	Ambient	2	4	Simultaneous Test	None
	Chemical Spray	N/A	N/A	-	-	-	None
	Radiation	$7.6 \times 10^4$ R	$7 \times 10^7$ R Note B	3	4,5	Comparison Test	None
	Aging	Note A	8 years Note B	-	4,6	Arrhenius Model	None
	Submergence	N/A	N/A	-	-	-	None

Documentation References:

1. TMI-1 Emergency Procedure 1202-6 C
2. FSAR Section 6.1.2.12.
3. Ltr. GAI/TMI-1CS/4350 Dose Rate Maps, dated 1/16/81.
4. Ltr. Square D Company to EDS, dated 9/23/80.
5. "Engineering & Design 17" (1971) 247-280, North Holland Publishing Co.
6. EDS Nuclear Calculation 0370-025-046, Rev. 0, dated 6/3/81.

Notes:

- A) Aging was not considered a design base parameter for TMI-1.
- B) Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

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# SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Make-Up Plant ID No. P.S. 480C (PS-745C) Component: Pressure Switch Manufacture: Square D Model Number: Type 9013-AMGS Function: HPI Accuracy: Spec: _____ Demon: _____ Service: Lube Oil Pressure Detection Make Up Pump MU-P-1C Location: Auxiliary Building Flood Level Elev: N/A Above Flood Level: N/A	Operating Time	Duration of Accident	Continuous	1	4	Simultaneous Test	None
	Temperature (°F)	Ambient	180	2	4	Simultaneous Test	None
	Pressure (PSIA)	Atmospheric	315	2	4	Simultaneous Test	None
	Relative Humidity (%)	Ambient	Ambient	2	4	Simultaneous Test	None
	Chemical Spray	N/A	N/A	-	-	-	None
	Radiation	$7.6 \times 10^4$ R	$7 \times 10^7$ R Note B	3	4,5	Comparison Test	None
	Aging	Note A	8 years Note E	-	4,6	Arrhenius Model	None
	Submergence	N/A	N/A	-	-	-	None

## Documentation References:

1. TMI-1 Emergency Procedure 1202-6 C
2. FSAR Section 6.1.2.12.
3. Ltr. GAI/IMI-1CS/4350 Dose Rate Maps, dated 1/16/81.
4. Ltr. Square D Company to EDS, dated 9/23/80.
5. "Engineering & Design 17" (1971) 247-280, North Holland Publishing Co.
6. EDS Nuclear Calculation 0370-025-046, Rev. 0, dated 6/3/81.

## Notes:

- A) Aging was not considered a design base parameter for TMI-1.
- B) Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

DECAY HEAT REMOVAL SYSTEM

LIST OF EFFECTIVE PAGES

<u>PAGE</u>	<u>REVISION</u>	<u>PAGE</u>	<u>REVISION</u>
1	0,1,2,3,4,5	6	0,1,2,3,5,6
11	0,3,4,5,6	7	0,1,2,3,5,6
1	0,1,5	8	0,1,3,5,6
2	0,1,5	9	0,1,3,5,6
3	0,1,2,5	10	0,1,2,5
3A	5	11	0,1,2,5
4	0,1,2,5	12	0,1,5
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5	0,1,5	6A	6
		7A	6
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## SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Decay Heat Removal Plant ID No. DH-V-4A Component: Motor Operator Manufacture: Limitorque Model Number: SMB-3* O.N. 336584C S.N. 103510 Function: LPI Accuracy: Spec: N/A Demon: N/A Service: Decay Heat Removal Pump 'A' Disch. Valve Location: Auxiliary Bldg.	Operating Time	Duration of Accident	7 days	1	4,5,7	Simultaneous Test	None
	Temperature (°F)	Ambient	328	2	4,5,7	Simultaneous Test	None
	Pressure (PSIA)	Atmospheric	105	2	4,5,7	Simultaneous Test	None
	Relative Humidity (%)	Ambient	100	2	4,5,7	Simultaneous Test	None
	Chemical Spray	N/A	N/A	-	-	-	None
	Radiation	$8.2 \times 10^5 R$	$2 \times 10^7 R$	3	7 Note B	Sequential Test & Engr. Analysis	None
	Aging	Note A	40 years	-	4,5,6,7 Note B	Sequential Test	None
Flood Level Elev: N/A Above Flood Level: N/A	Submergence	N/A	N/A	-	-	-	None

## Documentation References:

\*Motor Serial No. Y224270 A1  
BRAKE MODEL SMB-3 R72025-7 with K70285-1 Magnet Assy.

## Notes:

1. TMI-1 Emergency Procedure 1202-6 C
2. FSAR Section 6.1.2.12.
3. Ltr. GAI/TMI-1CS/4350, Dose Rate Maps, 1/16/81.
4. Limitorque Qualification Test Report No. 600198, dated 1/2/69.
5. Limitorque Corp. Ltr. to EDS, dated 8/12/80.
6. Limitorque Report No. B0058, Limitorque Test Lab, dated 1/11/80.
7. Limitorque Qualification Sheet NOD 11/1/79 & REPORT B0058

- A) Aging was not considered a design base parameter for TMI-1.
- B) See attached evaluation sheet on motor operator brake. Magnet Assy being purchased per PO 200331

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## COMPONENT MATERIALS EVALUATION SHEET

Decay Heat Removal

Item - Magnet Assy. No. K 70285-1  
Manufacturer - Dings Company  
Major Component - Limitorque Motor Operation  
Plant I.D. No. DH-V-4A

PARTS LIST	MATERIALS LIST	THERMAL AGING		RADIATION	
		QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
Brake Magnet Assy. P/N K 70285-1	a) Magnet wire - copper, w/pyre ML insulation	>40 years	GPUN Calc. 1101K-5350-012	1 x 10 <sup>8</sup> RADS	EPRI NP 1558 page
	b) Pyre ML coated glass fabric crossover barrier	>40 years	"	4 x 10 <sup>6</sup> RADS	B&W 77-1127001- Appendix B
	c) Lead wire - Tinned copper, w/ nomex glass braided belden 30718 insulation	>40 years	"	1 x 10 <sup>9</sup> RADS	EPRI NP 1558 page
	d) Core liner - same as b	>40 years	"	"	"
	e) Outer wrap - .007 thick glass tape	>40 years	"	"	"
	f) Final coat-impregnated w/Dow Corning 997 varnish	>40 years	"	1 x 10 <sup>9</sup> RADS	" page 7
	g) Raybestos-Phenolic, asbestos filled	>40 years	"	"	" page
Brake Disc Brake					

Materials and parts list reference:

Ltr. Dings Co., to Phil Elec. dated 2/9/81

Telecon GPUN to Phil Elec. dated 7/29/81

Telecon GPUN to Ding Brake Co. dated 7/8/81

\* Protected by coil outer wrap and Brake metal Housing to > 2x10<sup>7</sup>R

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## SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Decay Heat Removal Plant ID No.	Operating Time	Duration of Accident	7 days	1	4,5	Simultaneous Test	None
Component: DH-V-4B Motor Operator	Temperature (°F)	Ambient	328	2	4,5	Simultaneous Test	None
Manufacture: Limitorque	Pressure (PSIA)	Atmospheric	105	2	4,5	Simultaneous Test	None
Model Number: SMB-3 * O.N. 336584C S.N. 103509	Relative Humidity (%)	Ambient	100	2	4,5	Simultaneous Test	None
Function: LPI	Chemical Spray	N/A	N/A	-	-	-	None
Accuracy: Spec: N/A Demon: N/A	Radiation	$6.6 \times 10^5 R$	$2 \times 10^7 R$	3	7 Note B	Sequential Test & Engr. Analysis	None
Service: Decay Heat Removal Pump 'B' Disch. Valve	Aging	Note A	40 years	-	4,5,6,7 Note B	Sequential Test	None
Location: Auxiliary Bldg.	Submergence	N/A	N/A	-	-	-	None
Flood Level Elev: N/A Above Flood Level: N/A							

## Documentation References:

BRAKE MODEL SMB-3 R72025-7 with K70285-1 Magnet Assy. Notes:  
\*Motor Serial No. Y224270A2

1. TMI-1 Emergency Procedure 1202-6C
2. FSAR Section 6.1.2.12.
3. Ltr. GAI/TMI-1CS/4350 Dose Rate Maps, 1/16/81.
4. Limitorque Qualification Test Report No. 600198, dated 1/2/69.
5. Limitorque Corp. Ltr. to EDS, dated 8/12/80.
6. Limitorque Report No. B0058, Limitorque Test Lab, dated 1/11/80.
7. Limitorque Qualification Sheet NODS 11/1/79. § REPORT B0058

- A) Aging was not considered a design base parameter for TMI-1.
- B) See attached evaluation sheet on motor operator brake. Magnet Assy being provided per PO 200331

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COMPONENT MATERIALS EVALUATION SHEET

Decay Heat Removal

Item - Magnet Assy. No. K 70285-1  
Manufacturer - Dings Company  
Major Component - Limitorque Motor Operation  
Plant I.D. No. DH-V-4B

PARTS LIST	MATERIALS LIST	THERMAL AGING		RADIATION	
		QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
Brake Magnet Assy. PIN K70285-1	a) Magnet wire - copper, w/pyre ML insulation	>40 years	GPUN Calc. 11011-5350-018	1 x 10 <sup>8</sup> RADS	EPRI NP 1558 page
	b) Pyre ML coated glass fabric crossover barrier	>40 years	"	* 4 x 10 <sup>6</sup> RADS	B&W 77-1127001- Appendix B
	c) Lead wire - Tinned copper, w/ nomex glass braided belden 30718 insulation	>40 years	"	1 x 10 <sup>9</sup> RADS	EPRI NP 1558 page
	d) Core liner - same as b	>40 years	"	"	"
	e) Outer wrap - .007 thick glass tape	>40 years	"	"	"
	f) Final coat-impregnated w/Dow Corning 997 varnish	>40 years	"	1 x 10 <sup>9</sup> RADS	" page 7
	g) Raybestos-Phenolic, asbestos filled	>40 years	"	"	" page
Brake Disc Brake					

Materials and parts list reference:

Ltr. Dings Co., to Phil Elec. dated 2/9/81

Telecon GPUN to Phil Elec. dated 7/29/81

Telecon GPUN to Ding Brake Co. dated 7/8/81

\* Protected by Coil Outer wrap and Brake metal Housing To > 2x10<sup>7</sup>R

Facility: 'I

Unit: 1

Rev. 6

Docket: 50-289

Date: 12/31/81

## SYSTEM COMPONENT EVALUATION WORK SHEET

Sheet 8 of 13

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Decay Heat Removal Plant ID No. DH-V-5A Component: Motor Operator Manufacture: Limitorque Model Number: SMB-2* O.N. 341174D S.N. 105902 Function: LPI Accuracy: Spec: N/A Demon: N/A Service: Decay Heat Removal Pump 'A' Suct. from BWST Location: Auxiliary Bldg.	Operating Time	Duration of Accident	12 hrs.	1	4,5	Simultaneous Test	None
	Temperature (°F)	Ambient	212	2	4,5	Simultaneous Test	None
	Pressure (PSIA)	Atmospheric	7 in H <sub>2</sub> O	2	4,5	Simultaneous Test	None
	Relative Humidity (%)	Ambient	100	2	4,5	Simultaneous Test	None
	Chemical Spray	N/A	N/A	-	-	-	None
	Radiation	$8 \times 10^5 R$	$2 \times 10^7 R$	3	6 Note B	Sequential Test & Engr. Analysis	None
	Aging	Note A	40 years	-	6 Note B	Sequential Test	None
Flood Level Elev: N/A Above Flood Level: N/A	Submergence	N/A	N/A	-	-	-	None

## Documentation References:

\*Motor Serial No. Y233207A1  
BRAKE MODEL SMB-2 6-7/010-29 with K70240-1 Coils

## Notes:

1. TMI-1 Emergency Procedure 1202-6 C
2. FSAR Section 6.1.2.12.
3. Ltr. GAI/TMI-1CS/4350, Dose Rate Maps, 1/16/81.
4. Limitorque Corp. Ltr. to EDS, dated 8/12/80.
5. Franklin Institute Test Report No. F-C3271, dated February, 1972.
6. Limitorque Qualification Sheet NODS 11/1/79 (REMARK F-C3271)

- A) Aging was not considered a design base parameter for TMI-1.
- B) See attached evaluation sheet on Motor Operator Brake. Magnet assy being purchased per PO 200,331.



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## COMPONENT MATERIALS EVALUATION SHEET

Decay Heat Removal

Item - Magnet Assy. No. K 70285-1  
Manufacturer - Dings Company  
Major Component - Limitorque Motor Operation  
Plant I.D. No. DH-V-5A

PARTS LIST	MATERIALS LIST	THERMAL AGING		RADIATION	
		QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
Brake Magnet Assy. with P/N K 70240-1 coils	a) Magnet wire - copper, w/pyre ML insulation	>40 years	GPUN Calc. 11611-5150-018	1 x 10 <sup>8</sup> RADS	EPRI NP 1558 page
	b) Pyre ML coated glass fabric crossover barrier	>40 years	"	4 x 10 <sup>6</sup> RADS	B&W 77-1127001- Appendix B
	c) Lead wire - Tinned copper, w/ nomex glass braided belden 30718 insulation	>40 years	"	1 x 10 <sup>9</sup> RADS	EPRI NP 1558 page
	d) Core liner - same as b	>40 years	"	"	"
	e) Outer wrap - .007 thick glass tape	>40 years	"	"	"
	f) Final coat-impregnated w/Dow Corni. 997 varnish	>40 years	"	1 x 10 <sup>9</sup> RADS	" page 7
	g) Raybestos-Phenolic, asbestos filled	>40 years	"	"	" page
Brake Disc					
Brake					

Materials and parts list reference:

Ltr. Dings Co., to Phil Elec. dated 2/9/81

Telecon GPUN to Phil Elec. dated 7/29/81

Telecon GPUN to Ding Brake Co. dated 7/8/81

\* Protected by coil outer wrap and Brake metal Housing to 72x10<sup>7</sup>R

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Unit:  
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Date: 12/31/81 SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Decay Heat Removal Plant ID No. Component: DM-V-5B Motor Operator Manufacture: Limitorque Model Number: SMB-2 * O.N. 341174D S.N. 105903 Function: LPI Accuracy: Spec: N/A Demon: N/A Service: Decay Heat Removal Pump 'B' Suct. from BWST Location: Auxiliary Bldg. Flood Level Elev: N/A Above Flood Level: N/A	Operating Time	Duration of Accident	12 hours	1	4,5	Simultaneous Test	None
	Temperature (°F)	Ambient	212	2	4,5	Simultaneous Test	None
	Pressure (PSIA)	Atmospheric	7 in H <sub>2</sub> O	2	4,5	Simultaneous Test	None
	Relative Humidity (%)	Ambient	100	2	4,5	Simultaneous Test	None
	Chemical Spray	N/A	N/A	-	-	-	None
	Radiation	8 x 10 <sup>5</sup> R	2 x 10 <sup>7</sup> R	3	6 Note B	Sequential Test & Engr. Analysis	None
	Aging	Note A	40 years	-	6	Sequential Test	None
	Submergence	N/A	N/A	-	-	-	None

Documentation References:

\*Motor Serial No. Y233207A2-KU  
BRAKE MODEL SMB-2 6-71010-29 with K70240-1 Coils

Notes:

1. TMI-1 Emergency Procedure 1202-6 c
2. FSAR Section 6.1.2.12.
3. Ltr. GAI/TMI-1CS/4350 Dose Rate Maps, dated 1/16/81.
4. Limitorque Corp. Ltr. to EDS, dated 8/12/80.
5. Franklin Institute Test Report No. F-C3271, dated February, 1972.
6. Limitorque Qualification Sheet NODS 11/1/79 AND REPORT F-C3271

- A) Aging was not considered a design base parameter for TMI-1.
- B) See attached evaluation sheet on motor operator brake. Magne/ assy being purchased Per PO 200331

Revision: 6  
Date: 12/31/81

## COMPONENT MATERIALS EVALUATION SHEET

Decay Heat Removal

Item - Magnet Assy. No. K 70285-1  
Manufacturer - Dings Company  
Major Component - Limitorque Motor Operation  
Plant I.D. No. DH-V-5B

PARTS LIST	MATERIALS LIST	THERMAL AGING		RADIATION	
		QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
Brake Magnet Assy. <i>with P/N K70290-1 Coils</i>	a) Magnet wire - copper, w/pyre ML insulation	>40 years	GPUN Calc. <i>1101X-5550-QB</i>	1 x 10 <sup>8</sup> RADS	EPRI NP 1558 page
	b) Pyre ML coated glass fabric crossover barrier	>40 years	"	4 x 10 <sup>6</sup> RADS	B&W 77-1127001- Appendix B
	c) Lead wire - Tinned copper, w/ nomex glass braided belden 30/18 insulation	>40 years	"	1 x 10 <sup>9</sup> RADS	EPRI NP 1558 page
	d) Core liner - same as b	>40 years	"	"	"
	e) Outer wrap - .007 thick glass tape	>40 years	"	"	"
	f) Final coat-impregnated w/Dow Corning 997 varnish	>40 years	"	1 x 10 <sup>9</sup> RADS	" page 7
	g) Raybestos-Phenolic, asbestos filled	>40 years	"	"	" page
Brake Disc					
Brake					

## Materials and parts list reference:

Ltr. Dings Co., to Phil Elec. dated 2/9/81

Telecoa GPUN to Phil Elec. dated 7/29/81

Telecon GPUN to Ding Brake Co. dated 7/8/81

\* Protected by coil outer, wrap and Brake metal Housing To  $> 2 \times 10^7 R$

REACTOR BUILDING ISOLATION SYSTEM

LIST OF EFFECTIVE PAGES

<u>PAGE</u>	<u>REVISION</u>	<u>PAGE</u>	<u>REVISION</u>
1	0,1,2,3,4,5	16A	5
1i	0,3,4,5,6	17	01,2,5
1ii	3,4,5,6	17A	5
1	0,1,2,4,5	18	0,4,5
1A	0,1,4	18A	0,Deleted
2	0,1,4,5	18B	0,1,4
2A	0,1,4	19	0,1,5
3	0,1,4,5,6	19A	0,Deleted
3A	0,1,4 Deleted	19B	0,1,4
3B	0,1,4,5,6	20	0,1,3,4,5,6
4	0,1,4,5,6	20A	0,Deleted
4A	0,1,4 Deleted	20B	0,1,3,4,5,6
4B	0,1,4,5,6	21	0,1,5
5	0,1,3,5,6	21A	0,Deleted
5A	0,1,5,6	21B	0,1,4
5B	5,6	22	0,1,5
6	0,1,2,3,5,6	22A	0,Deleted
6A	0,1,5,6	22B	0,1,4
6B	5,6	23	0,1,3,4,5,6
7	0,1,4,5	23A	0,Deleted
7A	0	23B	0,1,3,4,5,6
7B	0,1,4,5	24	0,1,3,5
8	0,1,4,5	24A	5
8A	0	24B	5
8B	0,1,4,5	25	0,1,2,4,5,6
9	0,1,4,5,6	25A	0,1,4,6
9A	0	26	0,1,2,4,5,6
9B	0,1,4,5,6	26A	0,1,4,6
10	0,1,4,5,6	27	0,1,3,4,5,6
10A	0	27A	0,1,4 Deleted
10B	0,1,4,5,6	27B	0,1,3,4,5,6
11	0,1,2,5	28	0,1,4,5
11A	5	28A	0
12	0,1,3,4,5,6	28B	0,1,4
12A	0,1,4 Deleted	29	0,1,4,5
12B	0,1,3,4,5,6	29A	0
13	0,1,5	29B	0,1,4
13A	0,1,4	30	0,1,3,4,5,6
14	0,1,5	30A	0
14A	0,1,4	30B	0,1,3,4,5,6
15	0,1,2,5	31	0,1,4,5
15A	5	31A	0
16	0,1,2,5		
6C	6		
5C	6		

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REACTOR BUILDING ISOLATION SYSTEM (Cont.)

LIST OF EFFECTIVE PAGES

<u>PAGE</u>	<u>REVISION</u>	<u>PAGE</u>	<u>REVISION</u>
31B	0,1,4	47	0,1,4,5
32	0,1,4,5	47A	0,1,4
32A	0	48	0,1,4,5
32B	0,1,4	48A	0,1,4
33	0,1,3,4,5,6	49	0,1,3,4,5
33A	0	49A	0,1,3,4,5
33B	0,1,3,4,5,6	50	0,1,5
34	0,1,4,5	50A	0,1
34A	0	51	0,1,3,4,5
34B	0,1,4	51A	5
35	0,1,4,5	52	0,1,3,4, Deleted
35A	0	53	0,1,3,4, Deleted
35B	0,1,4	54	0,1,3,4,5
36	0,1,3,4,5,6	54A	5, Deleted
36A	0	55	0,1,4,5,6
36B	0,1,3,4,5,6	55A	0,1,4,5, Deleted
37	0,1,4,5	56	0,1,2,4,5,6
37A	0	56A	0,1,4,6
37B	0,1,4	57	0,1,2,4,5,6
38	0,1,4,5	57A	0,1,4,6
38A	0	58	0,1,3,5
38B	0,1,4	58A	5
39	0,1,3,4,5,6	59	0,1,4,5
39A	0	59A	0,1,4
39B	0,1,3,4,5,6	60	0,1,4,5
40	0,1,2,4,5	60A	0,1,4
40A	5	61	0,1,3,4,5,6
40B	5	61A	0,1,3,4,5,6
41	0,1,3,4,5,6	62	0,1,4,5
41A	0,1,4,5	62A	0,1,4
41B	0,1,4,5,6	63	0,1,4,5
42	0,1,4,5	63A	0,1,4
42A	0,1,4	64	0,1,3,4,5,6
42B	Deleted	64A	0,1,4 Deleted
43	0,1,3,4,5	64B	0,1,3,4,5,6
43A	0,1,4	65	0,1,4,5
44	0,1,3,4,5,6	65A	0,1,4
44A	0,1,3,4,5,6	66	0,1,4,5
45	0,1,4,5	66A	0,1,4
45A	0,1,4	67	0,1,3,4,5,6
46	0,1,4,5	67A	0,1,4 Deleted
46A	0,1,4	67B	0,1,3,4,5,6

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Facility: TMI

Unit:

Rev. 6

Docket: 50-239

Date: 12/31/81

## SYSTEM COMPONENT EVALUATION WORK SHEET

Sheet 3 of 67

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: R.B. Iso. Plant ID No. SV/AIV-1A1 Component: Solenoid Valve Manufacture: ASCO Model Number: * LB 8316-C35M0 Type NC Function: Containment Iso. Accuracy: Spec: N/A Demon: N/A Service: R.B. Purge Iso. Valve AII-V-1A Location: Auxiliary Bldg. Flood Level Elev: N/A Above Flood Level: N/A	Operating Time	1.5 min.	Continuous	1	3	SIMILARITY TO Valve Tested by ASCO AQS-21678	None
	Temperature (°F)	Note 2	346 Accident For 12 minutes	2	3	"	None
	Pressure (PSIA)	Atmospheric	110 Accident For 12 minutes	2	3	"	None
	Relative Humidity (%)	Ambient	100 Accident	2	3	"	None
	Chemical Spray (FH)	N/A	10	2	3	"	None
	Radiation	$3.2 \times 10^5 R$	$8 \times 10^5 R$ Ne $\beta$	2	3	" ANALYSIS	None
	Aging	Note A	40 years Note B	-	3	Arrhenius Model	None
	Submergence	N/A	N/A	2	-	-	None

## Documentation References:

\* CLASS H COIL P/W 103-834-20 inst-1140 12/24/81  
 PER J013 TICKET C 5227

## Notes:

1. FSAR Chapter 14.
2. GPMH TDR 292 ARRA #13
3. ASCO TEST REPORT AQS-21678 PER COFC 1/12/81
- 4.
- 5.
- 6.
- 7.
- 8.
- 9.

A) Aging was not considered a design base parameter for TMI-1.

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

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COMPONENT MATERIALS EVALUATION SHEET

REACTOR BUILDING ISOLATION SYSTEM

Plant I.D. No.: SV/AH-V-1A1

Component: Solenoid Valve

Manufacturer: ASCO

Model No.: 1B 8316-C35MO

THERMAL ACING				RADIATION	
PARTS LIST	MATERIALS LIST	QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
Class H Coil	Isomica / NOMAX Silicon Rubber Glass Cloth / Silicon Varnish	<60°C for Con- tinuous use	ASCO REPORT AQS 21678/TR Rev. A	2 x 10 <sup>8</sup> RADS	ASCO REPORT AQS 21678/TR Rev. A
Disc & O-Ring	BUNA-N	40 Years	EDS Calculations 0370-025-004 & 028	1 x 10 <sup>7</sup> RADS	ORNL, Oct. 1970
Disc Holder	Celcon	<90°C for Con- tinuous use	Modern Plastics Encyclopedia 1978-79	8 x 10 <sup>5</sup> RADS	ORNL, Oct. 1970
Bottom Plug	Delrin	<50°C for Con- tinuous use	Modern Plastics Encyclopedia 1978-79	8 x 10 <sup>5</sup> RADS	ORNL, Oct. 1970
Body	Brass	Not Sensitive		Not Affected	
Diaphragm Assy.	BUNA-N	40 Years	EDS Calculations 0370-025-004 & 028	1 x 10 <sup>7</sup> RADS	ORNL, Oct. 1970
Core Tube	Stainless Steel	Not Sensitive		Not Affected	
Core & Plug Nut	Stainless Steel	Not Sensitive		Not Affected	
Springs	Stainless Steel	Not Sensitive		Not Affected	
Shading Coil	Copper	Not Sensitive		Not Affected	

Materials & Parts List Reference:  
Asco Catalog

Notes

CONTINUATION

Facility: TMI

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## SYSTEM COMPONENT EVALUATION WORK SHEET

Sheet 4 of 67

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: R.B. Iso. Plant ID No. SV/AHV-1A2 Component: Solenoid Valve Manufacture: ASCO Model Number: * LB 8316-C35M0 Type NC Function: Containment Iso. Accuracy: Spec: N/A Demon: N/A Service: R.B. Purge Iso. Valve AH-V-1 Location: Auxiliary Bldg. Flood Level Elev: N/A Above Flood Level: N/A	Operating Time	1.5 min.	Continuous	1	3	SIMILARITY TO VALVE TESTED BY ASCO AQS-21678	None
	Temperature (°F)	Note 2	346 Accident For 12 minutes	2	3	"	None
	Pressure (PSIA)	Atmospheric	110 Accident For 12 minutes	2	3	"	None
	Relative Humidity (%)	Ambient	100 Accident	2	3	"	None
	Chemical Spray (PH)	N/A	10	2	3	"	None
	Radiation	$3.2 \times 10^5 R$	$8 \times 10^5 R$ Note B	2	3	" ANALYSIS	None
	Aging	Note A	40 years Note C	-	3	Arrhenius Model	None
	Submergence	N/A	N/A	2	-	-	None

Documentation References: \* CLASS H COIL P/N 103-834-20 installed 12/24/81  
 PER JOB TICKET CS227

## Notes:

1. FSAR Chapter 14.
2. GPMN TDR 282 AREA #13
3. ASCO TEST REPORT AQS-21678 PER C OF C 1/12/81
- 4.
- 5.
- 6.
- 7.
- 8.
- 9.

A) Aging was not considered a design base parameter for TMI-1.

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

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COMPONENT MATERIALS EVALUATION SHEET

REACTOR BUILDING ISOLATION SYSTEM

Plant I.D. No.: SV/AH-V-1A2

Component: Solenoid Valve

Manufacturer: ASCO

Model No.: LB 8316-C35MO

THERMAL AGING				RADIATION	
PARTS LIST	MATERIALS LIST	QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
Class H Coil	Isomica / NOMEX SILICON RUBBER GLASS CLOTH / SILICON VARNISH	<60°C for Con- tinuous use	ASCO REPORT APS 21678/TR Rev A	2 x 10 <sup>8</sup> RADS	ASCO REPORT APS 21678/TR Rev A
Disc & O-Ring	BUNA-N	40 Years	EDS Calculations 0370-025-004 & 028	1 x 10 <sup>7</sup> RADS	ORNL, Oct. 1970
Disc Holder	Celcon	290°C for Con- tinuous use	Modern Plastics Encyclopedia 1978-79	8 x 10 <sup>5</sup> RADS	ORNL, Oct. 1970
Bottom Plug	Delrin	250°C for Con- tinuous use	Modern Plastics Encyclopedia 1978-79	8 x 10 <sup>5</sup> RADS	ORNL, Oct. 1970
Body	Brass	Not Sensitive		Not Affected	
Diaphragm Assy.	BUNA-N	40 Years	EDS Calculations 0370-025-004 & 028	1 x 10 <sup>7</sup> RADS	ORNL, Oct. 1970
Core Tube	Stainless Steel	Not Sensitive		Not Affected	
Core & Plug Nut	Stainless Steel	Not Sensitive		Not Affected	
Springs	Stainless Steel	Not Sensitive		Not Affected	
Shading Coil	Copper	Not Sensitive		Not Affected	

Materials & Parts List Reference:  
Asco Catalog

Notes

CONTINUATION

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## SYSTEM COMPONENT EVALUATION WORK SHEET

Sheet 5 of 67

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: R.B. Iso. Plant ID No.	Operating Time	Note C	7 days	1 & 4	7,8	Simultaneous Test	None
Component: All-V-1B Motor Operator	Temperature (°F)	See Profile 1	328	2	7,8	Simultaneous Test	None
Manufacture: Limitorque	Pressure (PSIA)	See Profile 2	105	3	7,8	Simultaneous Test	None
Model Number: SMB-2* O.N. 339470-A S.N. 109015	Relative Humidity (%)	100	100	4	7,8	Simultaneous Test	None
Function: Containment Iso.	Chemical Spray	Note B	Note E	5	7,8,10	Simultaneous Test	None
Accuracy: Spec: N/A Demon: N/A	Radiation	2 x 10 <sup>7</sup> R	2.04x10 <sup>8</sup> R	6	9 Note D		None
Service: R.B. Purge Iso. Valve	Aging	Note A	40 years	-	7,8 Note D	Sequential Test	None
Location: Containment							
Flood Level Elev: 286.66 ft. Above Flood Level: Yes	Submergence	N/A	N/A	-	-	-	None

## Documentation References:

\*Motor Serial No. Y229766A2

BRAKE MODEL SMB-2 6-71010-6 with P/N K70285-1 MAGNET ASY.

## Notes:

1. FSAR Chapter 5, Paragraph 5.3.3.2.
2. FSAR Chapter 14, Figure 14-63A.
3. FSAR Chapter 14, Figure 14-66.
4. FSAR Chapter 14.
5. Lesson Plan for TMI-1 ESAS.
6. I & E Bulletin 79-01B, Enclosure 4, Paragraph 4.1.
7. Limitorque Corp. Ltr. to EDS, dated 8/12/80.
8. Limitorque Corp. Qualification Test Report No. 600198, dated 1/2/69, plus Addendum 1, dated 4/29/69.
9. Limitorque Report No. B0058, Limitorque Test Labs, dated 1/11/80.
10. Oak Ridge National Lab Report ORNL-TM-2412, dated 5/71.
11. Limitorque Qualification Sheet NOD 11/1/79. AND REPORT B0058

- A) Aging was not considered a design base parameter for TMI-1.
- B) Borated water at 2270 ppm Boron, and NaOH to raise PH ≈ 9.5.
- C) Valve closes in 65 sec. maximum. Valve position indication required until operator verification or about one hour.
- D) See attached evaluation sheet on motor operator brake



Sheet 5A of 67

E) Borated water of 2620 ppm Boron with NaOH to raise pH to 7.67. See attached evaluation.

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COMPONENT MATERIALS EVALUATION SHEET

R.B. ISO.

Item - Magnet Assy. No. K 70285-1  
Manufacturer - Dings Company  
Major Component - Limitorque Motor Operation  
Plant I.D. No. AH - V18

PARTS LIST	MATERIALS LIST	THERMAL AGING		RADIATION	
		QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
Brake Magnet Assy. P/N K 70285-1	a) Magnet wire - copper, w/pyre ML insulation	>40 years	GPUN Calc. 11074-5350-018	1 x 10 <sup>8</sup> RADS	EPRI NP 1558 page
	b) Pyre ML coated glass fabric crossover barrier	>40 years	"	4 x 10 <sup>6</sup> RADS	BSW 77-1127001- Appendix B
	c) Lead wire - Tinned copper, w/ nomex glass braided belden 30718 insulation	>40 years	"	1 x 10 <sup>9</sup> RADS	EPRI NP 1558 page
	d) Core liner - same as b	>40 years	"	"	"
	e) Outer wrap - .007 thick glass tape	>40 years	"	"	"
	f) Final coat-impregnated w/haw Corning 997 varnish	>40 years	"	1 x 10 <sup>9</sup> RADS	"
	g) Raybestos-Phenolic, asbestos filled	>40 years	"	"	"
	Brake Disc				
Brake					

Materials and parts list reference:

Ltr. Dings Co., to Phil Elec. dated 2/9/81

Telecon GPUN to Phil Elec. dated 7/29/81

Telecon GPUN to Ding Brake Co. dated 7/8/81

\* Protected by coil outer wrap and Brake metal Housing To 22XDR

ELECTRICAL COMPONENT EVALUATION.

The Component chemical spray qualification data does not fully envelope the specified accident environment.

Assessment:

- The Limitorque qualification test was performed with a boric acid solution. NaOH was added to raise the pH to 7.67. Oak Ridge National Laboratory researched and tested various alloys to determine the corrosion behaviour in chemical spray solutions. According to the report "Design considerations of Reactor Containment Spray Systems" (ORNL-TM-2412), the effect of corrosion due to chemical spray solutions decreases as pH increases for ferrous alloys. In the study it was also determined that ferrous alloys exhibited negligible corrosion due to chemical spray solutions. The test environment is, therefore, more severe than the specified accident environment (9.5pH).

Safety Impact:

- None

Facility: 1  
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# SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: R.B. Iso. Plant ID No. All-V-1C Component: Motor Operator Manufacture: Limitorque  Model Number: SMB-2* O.N. 339470A  Function: Containment Iso. Accuracy: Spec: N/A Demon: N/A  Service: R.B. Purge Iso. Valve  Location: Containment  Flood Level Elev: 286.66 ft. Above Flood Level: Yes	Operating Time	Note C	7 days	1 & 4	7,8	Simultaneous Test	None
	Temperature (°F)	See Profile 1	328	2	7,8	Simultaneous Test	None
	Pressure (PSIA)	See Profile 2	105	3	7,8	Simultaneous Test	None
	Relative Humidity (%)	100	100	4	7,8	Simultaneous Test	None
	Chemical Spray	Note B	Note F	5	7.8, 10	Simultaneous Test	None
	Radiation	2 x 10 <sup>7</sup> R	2 x 10 <sup>7</sup> R	6	9 Note D		None
	Aging	Note A	40 years	-	9, 11 Note D	Sequential Test	None
	Submergence	N/A	N/A	-	-	-	None

## Documentation References:

- FSAR Section 5.3.3.2.
- FSAR Chapter 14, Figure 14-63A.
- FSAR Chapter 14, Figure 14-66.
- FSAR Chapter 14.
- Lesson Plan for TMI-1 ESAS.
- 1 & E Bulletin 79-01B, Enclosure 4, Paragraph 4.1.
- Limitorque Corp. Ltr. to EDS, dated 8/12/80.
- Limitorque Corp. Qualification Test Report No. 600198, dated 1/2/69, plus Addendum 1, dated 4/29/69.
- Limitorque Report No. B0058, Limitorque Test Labs, dated 1/11/80.
- Oak Ridge National Lab. Report, ORNL-TM-2412, dated 5/71
- Limitorque qualification sheet NOD 11/1/79 & REPORT B0058

\*Motor Serial No. Y229766A1  
BRAKE DINGS Co. Model 6-71010-6 with  
PIN K70285-1 Magnet Assy.

## Notes:

- Aging was not considered a design base parameter for TMI-1.
- Borated water at 2270 ppm Boron, and NaOH to raise PH ≈ 9.5.
- Valve closes in 65 sec. maximum. Valve position indication required until operator verification or about one hour.
- See attached evaluation sheet on Motor Operator Brake

Facility:

Unit: 1

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## SYSTEM COMPONENT EVALUATION WORK SHEET

Sheet 6A of 67

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: R.B. Iso. Plant ID No. AI-V-1C Component: Motor Operator Manufacture: limitorque  Model Number: SMB-2* O.N. 339470A  Function: Containment Iso. Accuracy: Spec: N/A Demon: N/A Service: R.B. Purge Iso. Valve  Location: Containment  Flood Level Elev: Above Flood Level:	Operating Time						
	Temperature (°F)						
	Pressure (PSIA)						
	Relative Humidity (%)						
	Chemical Spray						
	Radiation						
	Aging						
	Submergence						

Documentation References:

\*Motor Serial No. Y229766A1

Notes:

F) Borated water of 2620 ppm boron with NaOH to raise pH to 7.67. See attached evaluation.

# CONTINUATION



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COMPONENT MATERIALS EVALUATION SHEET

R.B. ISO.

Item - Magnet Assy. No. K 70285-1  
Manufacturer - Dings Company  
Major Component - Limitorque Motor Operation  
Plant I.D. No. AH-V-1C

PARTS LIST	MATERIALS LIST	THERMAL AGING		RADIATION	
		QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
Brake Magnet Assy. a)	Magnet wire - copper,	>40 years	GPUN Calc. 11012-3350-018	1 x 10 <sup>8</sup> RADS	EPRI NP 1558 page
P/N K 70285-1	w/pyre ML insulation	>40 years	"	4 x 10 <sup>6</sup> RADS	B&W 77-1127001-Appendix B
b)	Pyre ML coated glass fabric crossover barrier	>40 years	"	1 x 10 <sup>9</sup> RADS	EPRI NP 1558 page
c)	Lead wire - Tinned copper, w/ nomex glass braided belden 30718 insulation	>40 years	"	"	"
d)	Core liner - same as b	>40 years	"	"	"
e)	Outer wrap - .007 thick glass tape	>40 years	"	1 x 10 <sup>9</sup> RADS	"
f)	Final coat-impregnated w/Dow Corning 997 varnish	>40 years	"	"	"
Brake Disc	g) Raybestos-Phenolic, asbestos filled	>40 years	"	"	"
Brake					

Materials and parts list reference:

- L.R. Dings Co., to Phil Elec. dated 2/9/81
- Telecon GPUN to Phil Elec. dated 7/29/81
- Telecon GPUN to Dings Brake Co. dated 7/2/81
- \* Protected by coil extra wrap and Backe metal Housing 72x107x

ELECTRICAL COMPONENT EVALUATION.

The Component chemical spray qualification data does not fully envelope the specified accident environment.

Assessment:

- The Limitorque qualification test was performed with a boric acid solution. NaOH was added to raise the pH to 7.67. Oak Ridge National Laboratory researched and tested various alloys to determine the corrosion behaviour in chemical spray solutions. According to the report "Design considerations of Reactor Containment Spray Systems" (ORNL-TM-2412), the effect of corrosion due to chemical spray solutions decreases as pH increases for ferrous alloys. In the study it was also determined that ferrous alloys exhibited negligible corrosion due to chemical spray solutions. The test environment is, therefore, more severe than the specified accident environment (9.5pH).

Safety Impact:

- None

Facility: 'I

Unit:

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## SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: R.B. Iso. Plant ID No. Component: SV/AHV-1D1 Solenoid Valve Manufacture: ASCO Model Number: S/N 10195T1 * TLB 8316-C35M0 Type NC Function: S.N. 10195 T1 Containment Iso. Accuracy: Spec: N/A Demon: N/A Service: R.B. Purge Iso. Valve AH-V-1D Location: Intermediate Bldg.	Operating Time	1.5 min.	Continuous	1	3 See Attached Evaluation	SIMILARITY TO VALVE TESTED by ASCO AQS-21678	None
	Temperature (°F)	Note 2	346 Accident for 12 minutes	2	3 See Attached Evaluation	"	None
	Pressure (PSIA)	Note 2	110 Accident for 12 minutes	2	3 See Attached Evaluation	"	None
	Relative Humidity (%)	Note 2	100 Accident	2	See Attached Evaluation	"	None
	Chemical Spray (PH)	N/A	10	2	3	"	None
	Radiation	NEG.	$8 \times 10^5$ R Note B	2	3	" Analysis	None
	Aging	Note A	40 years Note B	-	3	Arrhenius Model	None
Flood Level Elev: N/A Above Flood Level: N/A	Submergence	N/A	N/A	2	-	-	None

Documentation References: \* CLASS H COIL P/N 103-834-20 installed 12/24/81 Notes:

PGR JOB TICKET C5227

1. FSAR Chapter 14.
2. GFWN TDR 282 AREA 20
3. ASCO TEST REPORT AQS-21678 PGR C OR C 1/12/81
- 4.
- 5.
- 6.
- 7.
- 8.
- 9.

A) Aging was not considered a design base parameter for TMI-1.

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

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COMPONENT MATERIALS EVALUATION SHEET

REACTOR BUILDING ISOLATION SYSTEM

Plant I.D. No.: SV/AH-V-1D1

Component: Solenoid Valve

Manufacturer: ASCO

Model No.: TLB 8316-C35M0

THERMAL AGING				RADIATION	
PARTS LIST	MATERIALS LIST	QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
Class H Coil	Isomica/ <del>NOMAX</del> Silicon Rubber Glass Cloth/Silicon Varnish	<60°C For Con- tinuous use	ASCO REPORT AQS 21678/TR Rev A	2 x 10 <sup>8</sup> RADS	ASCO REPORT AQS 21678/TR Rev A
Disc & O-Ring	BUNA-N	40 Years	EDS Calculations 0370-025-004 & 028	1 x 10 <sup>7</sup> RADS	ORNL, Oct. 1970
Disc Holder	Celcon	<90°C for Con- tinuous use	Modern Plastics Encyclopedia 1978-79	8 x 10 <sup>5</sup> RADS	ORNL, Oct. 1970
Bottom Plug	Delrin	<50°C for Con- tinuous use	Modern Plastics Encyclopedia 1978-79	8 x 10 <sup>5</sup> RADS	ORNL, Oct. 1970
Body	Brass	Not Sensitive		Not Affected	
Diaphragm Assy.	BUNA-N	40 Years	EDS Calculations 0370-025-004 & 028	1 x 10 <sup>7</sup> RADS	ORNL, Oct. 1970
Core Tube	Stainless Steel	Not Sensitive		Not Affected	
Core & Plug Nut	Stainless Steel	Not Sensitive		Not Affected	
Springs	Stainless Steel	Not Sensitive		Not Affected	
Shading Coil	Copper	Not Sensitive		Not Affected	

Materials & Parts List Reference:  
Asco Catalog

Notes

CONTINUATION

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## SYSTEM COMPONENT EVALUATION WORK SHEET

Sheet 10 of 67

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: R.B. Iso. Plant ID No. SV/AHV-1D2 Component: Solenoid Valve Manufacture: ASCO Model Number: TLB 8316-C35M0 Type NC Function: S.N. 31394T Containment Iso. Accuracy: Spec: N/A Demon: N/A Service: R.B. Purge Iso. Valve AH-V-1D Location: Intermediate Bldg. Flood Level Elev: N/A Above Flood Level: N/A	Operating Time	1.5 min.	Continuous	1	3 See Attached Evaluation	SIMILARITY TO VALVE TESTED by ASCO AOS-21678	None
	Temperature (°F)	Note 2	346 Accident For 12 Minutes	2	3 See Attached Evaluation	"	None
	Pressure (PSIA)	Note 2	110 Accident For 12 minutes	2	3 See Attached Evaluation	"	None
	Relative Humidity (%)	Note 2	100 Accident	2	3 See Attached Evaluation	"	None
	Chemical Spray (PH)	N/A	10	2	3	"	None
	Radiation	NEG.	$8 \times 10^5$ R Note B	2	3	" ANALYSIS	None
	Aging	Note A	40 years Note B	-	3	Arrhenius Model	None
	Submergence	N/A	N/A	2	-	-	None

Documentation References: \* CLASS H COIL P/H 103-834-20 installed 12/24/81  
PER JOB TICKET C5227

## Notes:

1. PSAR Chapter 14.
2. GPM TDR 282 AREA #20
3. ASCO TEST REPORT AOS-21678 PER C OF C 1/12/81
- 4.
- 5.
- 6.
- 7.
- 8.
- 9.

A) Aging was not considered a design base parameter for TMI-1.

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



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COMPONENT MATERIALS EVALUATION SHEET

REACTOR BUILDING ISOLATION SYSTEM

Plant I.D. No.: SV/AH-V-1D2

Component: Solenoid Valve

Manufacturer: ASCO

Model No.: T1B 8316-C35MO

THERMAL AGING				RADIATION	
PARTS LIST	MATERIALS LIST	QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
Class II Coil	Isomica/NUMEX SILICON RUBBER GLASS CLOTH/SILICON VARNISH	<60°C for Con- tinuous use	ASCO REPORT APS 21678/TR Rev A	2 x 10 <sup>8</sup> RADS	ASCO REPORT APS 21678/TR Rev A
Disc & O-Ring	BUNA-N	40 Years	EDS Calculations 0370-025-004 & 028	1 x 10 <sup>7</sup> RADS	ORNL, Oct. 1970
Disc Holder	Celcon	490°C for Con- tinuous use	Modern Plastics Encyclopedia 1978-79	8 x 10 <sup>5</sup> RADS	ORNL, Oct. 1970
Bottom Plug	Delrin	450°C for Con- tinuous use	Modern Plastics Encyclopedia 1978-79	8 x 10 <sup>5</sup> RADS	ORNL, Oct. 1970
Body	Brass	Not Sensitive		Not Affected	
Diaphragm Assy.	BUNA-N	40 Years	EDS Calculations 0370-025-004 & 028	1 x 10 <sup>7</sup> RADS	ORNL, Oct. 1970
Core Tube	Stainless Steel	Not Sensitive		Not Affected	
Core & Plug Nut	Stainless Steel	Not Sensitive		Not Affected	
Springs	Stainless Steel	Not Sensitive		Not Affected	
Shading Coil	Copper	Not Sensitive		Not Affected	

Materials & Parts List Reference:  
Asco Catalog

Notes

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## SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: R.B. Iso. Plant ID No. SV/CAV-2 Component: Solenoid Valve Manufacture: ASCO Model Number: *LB 8321-A5 S.N. 11775A Function: Containment Iso. Accuracy: Spec: N/A Demon: N/A Service: R.C.S. Sample Iso. Valve CA-V-2 Location: Auxiliary Bldg. Flood Level Elev: N/A Above Flood Level: N/A	Operating Time	1.5 min.	Continuous	1	3	SIMILARITY TO VALVE TESTED by ASCO AQS-21678	None
	Temperature (°F)	Note 2	346 Accident For 12 minutes	2	3	"	None
	Pressure (PSIA)	Atmospheric	110 Accident For 12 minutes	2	3	"	None
	Relative Humidity (%)	Ambient	100 Accident	2	3	"	None
	Chemical Spray (PH)	N/A	10	2	3	"	None
	Radiation	$3.2 \times 10^5 R$	$8 \times 10^5 R$ Note B	2	3	" Analysis	None
	Aging	Note A	40 years Note B	-	3	Arrhenius Model	None
	Submergence	N/A	N/A	2	-	-	None

## Documentation References:

\* CLASS H COIL PIN 103-834-20 inst-11-4 12/24/81  
 PER JOB TICKET C5220

## Notes:

- FSAR CHAPTER 14
- SPVH TDR 282 AREA 13
- ASCO TEST REPORT AQS-21678 PER C GFC 1/12/81
- 
- 
- 
- 
- 

- Aging was not considered a design base parameter for TMI-1.
- Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

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COMPONENT MATERIALS EVALUATION SHEET

REACTOR BUILDING ISOLATION SYSTEM

Plant I.D. No.: SV/CA-V-2

Component: Solenoid Valve

Manufacturer: ASCO

Model No.: LB 8321-A5

THERMAL AGING				RADIATION	
PARTS LIST	MATERIALS LIST	QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
Class H Coil	Isomica/NOMRA Silicon Rubber Glass Cloth/Silicon Varnish	<60°C for Con- tinuous use	ASCO REPORT AQS 21678/TR Rev A	2 x 10 <sup>8</sup> RADS	ASCO REPORT AQS 21678/TR Rev A
Disc & O-Ring	BUNA-N	40 Years	EDS Calculations 0370-025-004 & 028	1 x 10 <sup>7</sup> RADS	ORNL, Oct. 1970
Disc Holder	Celcon	<90°C for Con- tinuous use	Modern Plastics Encyclopedia 1978-79	8 x 10 <sup>5</sup> RADS	ORNL, Oct. 1970
Seals	BUNA-N	40 Years	EDS Calculations 0370-025-004 & 028	1 x 10 <sup>7</sup> RADS	ORNL, Oct. 1970
Core Tube	Stainless Steel	Not Sensitive		Not Affected	
Core & Plug Nut	Stainless Steel	Not Sensitive		Not Affected	
Springs	Stainless Steel	Not Sensitive		Not Affected	
Shading Coil	Copper	Not Sensitive		Not Affected	
Cage & Piston	Glass-filled Nylon	<65°C for Con- tinuous use	Modern Plastics Encyclopedia 1978-79	4 x 10 <sup>6</sup> RADS	ORNL, Oct. 1970

Materials & Parts List Reference:  
Asco Catalog

Notes

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## SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT NOTE C			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: R.B. Iso. Plant ID No. SV/CAV-5A Component: Solenoid Valve Manufacture: ASCO  Model Number: *FT 8321-A7 S.N. 32585B Function: Containment Iso. Accuracy: Spec: N/A Demon: N/A Service: Steam Gen. 'A' Feed Water Iso. Valve CA-V-5A Location: Turbine Building  Flood Level Elev: N/A Above Flood Level: N/A	Operating Time	1.5 min.	Continuous	1	3	SIMILARITY TO VALVE TESTED BY 45CO AFS-21678	None
	Temperature (°F)	Note Z	346 Accident For 12 minutes	2	3	"	None
	Pressure (PSIA)	Atmospheric	110 Accident For 12 minutes	2	3	"	None
	Relative Humidity (%)	Ambient	100 Accident	2	3	"	None
	Chemical Spray (PH)	N/A	10	2	3	"	None
	Radiation	NEG. 1	8 x 10 <sup>5</sup> R Note B	2	3	" ANALYSIS	None
	Aging	Note A	40 years Note B	-	3	Arrhenius Model	None
	Submergence	N/A	N/A	2	-	-	None

Documentation References: \* CLASS H CO.1 P/N 103-834-20. Installed 12/24/81

PER Job Ticket C5220

1. FSAR Chapter 14.
2. GPUN TDR 282 TURBINE BLDG
3. ASCO TEST REPORT AFS 21678 PER C OF C 1/12/81
- 4.
- 5.
- 6.
- 7.
- 8.

A) Aging was not considered a design base parameter for TMT-1.

- B) Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.
- C) Component is located in Turbine Building which is a non-harsh environment.

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COMPONENT MATERIALS EVALUATION SHEET

REACTOR BUILDING ISOLATION SYSTEM

Plant I.D. No.: SV/CA-V-5A

Component: Solenoid Valve

Manufacturer: ASCO

Model No.: FT 8321 A7

THERMAL AGING				RADIATION	
PARTS LIST	MATERIALS LIST	QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
Class H Coil	Isomica/IRONITE SILICON RUBBER GLASS CLOTH/SILICON VARNISH	<60°C for Con- tinuous use	ASCO REPORT APS 21678/TR Rev. A	2 x 10 <sup>8</sup> RADS	ASCO ASCO REPORT APS 21678/TR Rev. A
Disc & O-Ring	BUNA-N	40 Years	EDS Calculations 0370-025-004 & 028	1 x 10 <sup>7</sup> RADS	ORNL, Oct. 1970
Disc Holder	Celcon	<90°C for Con- tinuous use	Modern Plastics Encyclopedia 1978-79	8 x 10 <sup>5</sup> RADS	ORNL, Oct. 1970
Seals	BUNA-N	40 Years	EDS Calculations 0370-025-004 & 028	1 x 10 <sup>7</sup> RADS	ORNL, Oct. 1970
Core Tube	Stainless Steel	Not Sensitive		Not Affected	
Core & Plug Nut	Stainless Steel	Not Sensitive		Not Affected	
Springs	Stainless Steel	Not Sensitive		Not Affected	
Shading Coil	Copper	Not Sensitive		Not Affected	
Cage & Piston	Glass-filled Nylon	<65°C for Con- tinuous use	Modern Plastics Encyclopedia 1978-79	4 x 10 <sup>6</sup> RADS	ORNL, Oct. 1970

Materials & Parts List Reference:  
Asco Catalog

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EQUIPMENT DESCRIPTION	ENVIRONMENT <i>Note C</i>			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: R.B. Iso. Plant ID No. SV/CAV-5B Component: Solenoid Valve Manufacture: ASCO Model Number: * FT 8321-A7 S.N. 32585B Function: Containment Iso. Accuracy: Spec: N/A Demon: N/A Service: Steam Gen. 'B' Feed Water Iso. Valve CA-V-5B Location: Turbine Building Flood Level Elev: N/A Above Flood Level: N/A	Operating Time	1.5 min.	Continuous	1	3	SIMILARITY TO VALVE TESTED BY ASCO AQS-21678	None
	Temperature (°F)	<i>Note 2</i>	346 Accident For 12 minutes	2	3	"	None
	Pressure (PSIA)	Atmospheric	110 Accident For 12 minutes	2	3	"	None
	Relative Humidity (%)	Ambient	100 Accident	2	3	"	None
	Chemical Spray (PH)	N/A	10	2	3	"	None
	Radiation	NEG	8 x 10 <sup>5</sup> R <i>Note B</i>	2	3	" ANALYSIS	None
	Aging	<i>Note A</i>	40 years <i>Note B</i>	-	3	Arrhenius Model	None
	Submergence	N/A	N/A	2	-	-	None

Documentation References:

\* Class H Coil PIN 103-834-20 installed 12/24/81  
 PGR JOB Ticket C5220

Notes:

1. FSAR Chapter 14
2. GPOH TDR 282 TURBINE BLDG
3. ASCO TEST REPORT AQS 21678/TR Rev. A PRC OF C 1/12/81
- 4.
- 5.
- 6.
- 7.
- 8.

A) Aging was not considered a design base parameter for TMI-1.

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

C) Component is located in Turbine Building which is a non-harsh environment.

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COMPONENT MATERIALS EVALUATION SHEET

REACTOR BUILDING ISOLATION SYSTEM

Plant I.D. No.: SV/CA-V-5B

Component: Solenoid Valve

Manufacturer: ASCO

Model No.: FT 8321-A7

THERMAL AGING				RADIATION	
PARTS LIST	MATERIALS LIST	QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
Class H Coil	Isomica/ <del>NOMEX</del> 3.1. con Rubber Glass cloth/Silicon Varnish	<60°C for Con- tinuous use	ASCO REPORT AQS 21678/TR Rev. A	2 x 10 <sup>8</sup> RADS	ASCO REPORT AQS 21678/TR Rev A
Disc & O-Ring	BUNA-N	40 Years	EDS Calculations 0370-025-004 & 028	1 x 10 <sup>7</sup> RADS	ORNL, Oct. 1970
Disc Holder	Celcon	<90°C for Con- tinuous use	Modern Plastics Encyclopedia 1978-79	8 x 10 <sup>5</sup> RADS	ORNL, Oct. 1970
Seals	BUNA-N	40 Years	EDS Calculations 0370-025-004 & 028	1 x 10 <sup>7</sup> RADS	ORNL, Oct. 1970
Core Tube	Stainless Steel	Not Sensitive		Not Affected	
Core & Plug Nut	Stainless Steel	Not Sensitive		Not Affected	
Springs	Stainless Steel	Not Sensitive		Not Affected	
Shading Coil	Copper	Not Sensitive		Not Affected	
Cage & Piston	Glass-filled Nylon	<65°C for Con- tinuous use	Modern Plastics Encyclopedia 1978-79	4 x 10 <sup>6</sup> RADS	ORNL, Oct. 1970

Materials & Parts List Reference:  
Asco Catalog

Notes

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## SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: R.B. Iso. Plant ID No. ISA/CAV-189 Component: Limit Switch Manufacture: Micro Switch Model Number: BZE6-2RN Issue F-48 Function: Containment Iso. Accuracy: Spec: N/A Demon: N/A Service: Demin. Water Iso. Valve CA-V-189 Location: Auxiliary Bldg.	Operating Time	Note B	Continuous	1	4	-	None
	Temperature (°F)	Ambient	160	3	4	-	None
	Pressure (PSIA)	Atmospheric	Atmospheric	3	4	-	None
	Relative Humidity (%)	Ambient	Ambient	3	4	-	None
	Chemical Spray	N/A	N/A	-	-	-	None
	Radiation	$6.6 \times 10^5$	$1 \times 10^6$ <sup>R</sup> Note C	2	4,5	Comparison Test	None
	Aging	Note A	17.6 years Note C	-	4,6	Arrhenius Model	None
	Submergence	N/A	N/A	-	-	-	None
Flood Level Elev: N/A Above Flood Level: N/A							

## Documentation References:

1. FSAR Section 5.3.3.2.
2. Ltr. GAI/TMI-ICS/4350, Dose Rate Maps, dated 1/16/81.
3. FSAR Section 6.1.2.12.
4. Micro Switch Catalog No. 40, Limit and Enclosed Switches.
5. I&E Bulletin 79-01B, Appendix C, Table C-1.
6. EDS Calculation 0370-025-004 Rev. 0, dated 12/23/80.

## Notes:

- A) Aging was not considered a design base parameter for TMI-1.
- B) Valve closes in 1.5 min. maximum. Valve position indication required until operator verification or about one hour.
- C) Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

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COMPONENT MATERIALS EVALUATION SHEET

REACTOR BUILDING ISOLATION SYSTEM

Plant I.D. No.: LSA/CA-V-189

Component: Limit Switch

Manufacturer: Micro Switch

Model No.: BZE6-2RN

THERMAL AGING				RADIATION	
PARTS LIST	MATERIALS LIST	QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
Housing	Aluminum	Not Sensitive		Not Affected	
Plunger	Cadmium Plated Steel	Not Sensitive		Not Affected	
BATH TUB SEAL	Neoprene	17.6 Years	GPUN 1101X-5350-014	$1 \times 10^6$ RADS	EPRI NP 1558
SEAL BOOT	BUNA N	40 YRS.	EDS 0370-025-004	$1 \times 10^6$ RADS	" " "
Screws	Brass	Not Sensitive		Not Affected	
Washer	Lead	Not Sensitive		Not Affected	
Spring	Steel	Not Sensitive		Not Affected	
Contact Block	ARC Resistant	$\angle 105^\circ\text{C}$ for Continuous use	Modern Plastics Encyclopedia 1978-79	$2 \times 10^8$ RADS	ORNL, Oct. 1970
Operating Head	General Purpose	$\angle 105^\circ\text{C}$ for Continuous use	Modern Plastics Encyclopedia 1978-79	$2 \times 10^8$ RADS	ORNL, Oct. 1970
Insulation	Phenolic	$\angle 105^\circ\text{C}$ for Continuous use	Modern Plastics Encyclopedia 1978-79	$1 \times 10^8$ RADS	ORNL, Oct. 1970
	Mylar	$\angle 105^\circ\text{C}$ for Continuous use	Modern Plastics Encyclopedia 1978-79		
Contact Plate	Beryllium Copper	Not Sensitive		Not Affected	
Contact Strip	Fine Silver	Not Sensitive		Not Affected	
Wire	Music Wire	Not Sensitive		Not Affected	

Materials & Parts List Reference:

Micro Switch Letter dated 10/21/81

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: R.B. Iso. Plant ID No. LSB/CAV-189 Component: Limit Switch Manufacture: Micro Switch  Model Number: DTE6-2RN Issue II-47 Function: Containment Iso.  Accuracy: Spec: N/A Demon: N/A  Service: Demin. Water Iso. Valve CA-V-189  Location: Auxiliary Bldg.  Flood Level Elev: N/A Above Flood Level: N/A	Operating Time	Note B	Continuous	1 & 4	5	-	None
	Temperature (°F)	Ambient	160	3	5	-	None
	Pressure (PSIA)	Atmospheric	Atmospheric	3	5	-	None
	Relative Humidity (%)	Ambient	Ambient	3	5	-	None
	Chemical Spray	N/A	N/A	-	-	-	None
	Radiation	$6.6 \times 10^5$	$1 \times 10^6$ R Note C	2	5,6	Comparison Test	None
	Aging	Note A	17.6 years Note C	-	5,7	Arrhenius Model	None
	Submergence	N/A	N/A	-	-	-	None

Documentation References:

1. FSAR Section 5.3.3.2.
2. Ltr. GAI/TMI-1CS/4350, Dose Rate Maps, dated 1/16/81.
3. FSAR Section 6.1.2.12.
4. FSAR Chapter 14.
5. Micro Switch Catalog 40, Limit and Enclosed Switches.
6. I&E Bulletin 79-01B, Appendix C, Table C-1.
7. EDS Calculation 0370-025-004 Rev. 0, dated 12/23/80.

Notes:

- A) Aging was not considered a design base parameter for TMI-1.
- B) Valve closes in 1.5 min. maximum. Valve position indication required until operator verification or about one hour.
- C) Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.



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COMPONENT MATERIALS EVALUATION SHEET

REACTOR BUILDING ISOLATION SYSTEM

Plant I.D. No.: LSB/CA-V-189

Component: Limit Switch

Manufacturer: Micro Switch

Model No.: DTE6-2RN

THERMAL AGING				RADIATION	
PARTS LIST	MATERIALS LIST	QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
Housing	Aluminum	Not Sensitive		Not Affected	
Plunger	Cadmium Plated Steel	Not Sensitive		Not Affected	
BATH TUB SEAL	Neoprene	17.6 Years	GPUR 1101X-5150-014	$1 \times 10^6$ RADS	EPRI NP1558
SEAL BOOT	BUNA N	40 YEARS	0370-025-004	$1 \times 10^6$ RADS	" "
Screws	Brass	Not Sensitive		Not Affected	
Washer	Lead	Not Sensitive		Not Affected	
Spring	Steel	Not Sensitive		Not Affected	
Contact Block	ARC Resistant	$\angle 105^\circ\text{C}$ for Con-	Modern Plastics	$2 \times 10^8$ RADS	ORNL, Oct. 1970
	Phenolic	tinuous use	Encyclopedia 1978-79		
Operating Head	General Purpose	$\angle 105^\circ\text{C}$ for Con-	Modern Plastics	$2 \times 10^8$ RADS	ORNL, Oct. 1970
	Phenolic	tinuous use	Encyclopedia 1978-79		
Insulation	Mylar	$\angle 105^\circ\text{C}$ for Con-	Modern Plastics	$1 \times 10^8$ RADS	ORNL, Oct. 1970
		tinuous use	Encyclopedia 1978-79		
Contact Plate	Beryllium Copper	Not Sensitive		Not Affected	
Contact Strip	Fine Silver	Not Sensitive		Not Affected	
Wire	Music Wire	Not Sensitive		Not Affected	

Materials & Parts List Reference:

Micro Switch Letter dated 10/21/81

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## SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: R.B. Iso. Plant ID No. SV/CAV-189 Component: Selenoid Valve Manufacture: ASCO Model Number: IIT 8321-A5 * S.N. 37591B1 Function: Containment Iso. Accuracy: Spec: N/A Demon: N/A Service: Demin. Water Iso. Valve CA-V-189 Location: Auxiliary Bldg.	Operating Time	1.5 min.	Continuous	1	3	SIMILARITY TO VALVE TESTED BY ASCO APS-21678	None
	Temperature (°F)	Note 2	346 Accident for 12 minutes	2	3	"	None
	Pressure (PSIA)	Atmospheric	110 Accident for 12 minutes	2	3	"	None
	Relative Humidity (%)	Ambient	100 Accident	2	3	"	None
	Chemical Spray (PH)	N/A	10	2	3	"	None
	Radiation	6.6 x 10 <sup>5</sup> R	8 x 10 <sup>5</sup> R Note B	2	3	" ANALYSIS	None
	Aging	Note A	40 years Note B	-	3	Arrhenius Model	None
Flood Level Elev: N/A Above Flood Level: N/A	Submergence	N/A	N/A	2	-	-	None

## Documentation References:

\* Class N Coil P/N 103-838-20 installed 12/24/81  
PER JOB TICKET CS220

## Notes:

1. FSAR Chapter 14.
2. GPMH TDR 282 AREA #7
3. ASCO REPORT APS 21678/TR REV. A PER C OF C 1/12/81

A) Aging was not considered a design base parameter for TMI-1.

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

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COMPONENT MATERIALS EVALUATION SHEET

REACTOR BUILDING ISOLATION SYSTEM

Plant I.D. No.: SV/CA-V-189

Component: Solenoid Valve

Manufacturer: ASCO

Model No.: HT 8321-A5

THERMAL AGING				RADIATION	
PARTS LIST	MATERIALS LIST	QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
Class II Coil	Isomica/NOMEX Silicon Rubber Glass Cloth/Silicon Varnish	<60°C For Con- tinuous use	ASCO REPORT AQS 21678/TR Rev. A	2 x 10 <sup>8</sup> RADS	ASCO REPORT AQS 21678/TR Rev. A.
Disc & O-Ring	BUNA-N	40 Years	EDS Calculations 0370-025-004 & 028	1 x 10 <sup>7</sup> RADS	ORNL, Oct. 1970
Disc Holder	Celcon	<90°C for Con- tinuous use	Modern Plastics Encyclopedia 1978-79	8 x 10 <sup>5</sup> RADS	ORNL, Oct. 1970
Seals	BUNA-N	40 Years	EDS Calculations 0370-025-004 & 028	1 x 10 <sup>7</sup> RADS	ORNL, Oct. 1970
Core Tube	Stainless Steel	Not Sensitive		Not Affected	
Core & Plug Nut	Stainless Steel	Not Sensitive		Not Affected	
Springs	Stainless Steel	Not Sensitive		Not Affected	
Shading Coil	Copper	Not Sensitive		Not Affected	
Cage & Piston	Glass-filled Nylon	<65°C for Con- tinuous use	Modern Plastics Encyclopedia 1978-79	4 x 10 <sup>6</sup> RADS	ORNL, Oct. 1970

Materials & Parts List Reference:  
Asco Catalog

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: R.B. Iso. Plant ID No. SV/CMV-1 Component: Solenoid Valve Manufacture: ASCO Model Number: * LB 8321-A6 Function: Containment Iso. Accuracy: Spec: N/A Demon: N/A Service: Containment Monitoring Iso. Valve CM-V-1 Location: Intermediate Bldg.	Operating Time	1.5 min.	Continuous	1	3	SIMILARITY TO VALVE TESTED BY ASCO AQS-21678	None
	Temperature (°F)	Note 2	346 Accident for 12 minutes	2	3, See Attached Evaluation	"	None
	Pressure (PSIA)	Note 2	110 Accident for 12 minutes	2	3	"	None
	Relative Humidity (%)	Note 2	100 Accident	2	3	"	None
	Chemical Spray (PH)	N/A	10	2	3	"	None
	Radiation	NEG.	$8 \times 10^5$ R Note B	2	3	" ANALYSIS	None
	Aging	Note A	40 years Note B	-	3	Arrhenius Model	None
Flood Level Elev: N/A Above Flood Level: N/A	Submergence	N/A	N/A	2	-	-	None

Documentation References: \* CLASS H Coil PIN 103-934-20 installed 12/29/81  
PER JOB TICKET C5223

Notes:

1. FSAR Chapter 14.
2. GPUN TDR 282 ARKA\*17
3. ASCO REPORT AQS 21678/TR REV.A PER C OF C 1/12/81
- 4.
- 5.
- 6.
- 7.

A) Aging was not considered a design base parameter for TMI-1.

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

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REACTOR BUILDING ISOLATION SYSTEM

Plant I.D. No.: SV/CM-V-1

Component: Solenoid Valve

Manufacturer: ASCO

Model No.: LB 8321-A6

THERMAL AGING

RADIATION

PARTS LIST	MATERIALS LIST	QUALIFICATION	RE	NCE	QUALIFICATION	REFERENCE
Class H Coil	Isomica/NOMEX Silicon Rubber Glass Cloth/Silicon VARNISH	<60°C for Con- tinuous use	ASCO REPORT AQS 21678/TR Rev. A		2 x 10 <sup>8</sup> RADS	ASCO REPORT AQS 21678/TR Rev. A
Disc & O-Ring	BUNA-N	40 Years	EDS Calculations 0370-025-004 & 028		1 x 10 <sup>7</sup> RADS	ORNL, Oct. 1970
Disc Holder	Celcon	<90°C for Con- tinuous use	Modern Plastics Encyclopedia 1978-79		8 x 10 <sup>5</sup> RADS	ORNL, Oct. 1970
Seals	BUNA-N	40 Years	EDS Calculations 0370-025-004 & 028		1 x 10 <sup>7</sup> RADS	ORNL, Oct. 1970
Core Tube	Stainless Steel	Not Sensitive			Not Affected	
Core & Plug Nut	Stainless Steel	Not Sensitive			Not Affected	
Springs	Stainless Steel	Not Sensitive			Not Affected	
Shading Coil	Copper	Not Sensitive			Not Affected	
Cage & Piston	Glass-filled Nylon	<65°C for Con- tinuous use	Modern Plastics Encyclopedia 1978-79		4 x 10 <sup>6</sup> RADS	ORNL, Oct. 1970

Materials & Parts List Reference:  
Asco Catalog

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: R.B. Iso. Plant ID No. SV/CMV- 2 Component: Solenoid Valve Manufacture: ASCO Model Number: * LB 8321-A6 Function: Containment Iso. Accuracy: Spec: N/A Demon: N/A Service: Containment Monitoring Iso. Valve CM-V- 2 Location: Intermediate Bldg. Flood Level Elev: N/A Above Flood Level: N/A	Operating Time	1.5 min.	Continuous	1	3	SIMILARITY TO VALVE TESTED BY ASCO AQS-21678	None
	Temperature (°F)	Note 2	346 Accident for 12 minutes	2	3 See Attached Evaluation	"	None
	Pressure (PSIA)	Note 2	110 Accident for 12 minutes	2	3	"	None
	Relative Humidity (%)	Note 2	100 Accident	2	3	"	None
	Chemical Spray (PH)	N/A	10	2	3	"	None
	Radiation	NEG.	8 x 10 <sup>5</sup> R Note B	2	3	ANALYSIS	None
	Aging	Note A	40 years Note B	-	3	Arrhenius Model	None
	Submergence	N/A	N/A	2	-	-	None

Documentation References: \* CLASS H COIL P/N 103-834-20 installed 12/24/81  
P/R Job Ticket C5223

Notes:

1. FSAR Chapter 14.
2. GPUN TDR 282 AREA#17
3. ASCO REPORT AQS 21678/TR REV.A PER C & C 1/12/81
- 4.
- 5.
- 6.
- 7.

A) Aging was not considered a design base parameter for TMI-1.

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

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REACTOR BUILDING ISOLATION SYSTEM

Plant I.D. No.: SV/CM-V-2

Component: Solenoid Valve

Manufacturer: ASCO

Model No.: LB 8321-A6

THERMAL AGING				RADIATION	
PARTS LIST	MATERIALS LIST	QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
Class H Coil	Isomica/NOMEX Silicon Rubber Glass Cloth/Silicon Varnish	<60°C for con- tinuous use	ASCO REPORT APS 21678/TR Rev. A	2 x 10 <sup>8</sup> RADS	ASCO REPORT APS 21678/TR Rev. A
Disc & O-Ring	BUNA-N	40 Years	EDS Calculations 0370-025-004 & 028	1 x 10 <sup>7</sup> RADS	ORNL, Oct. 1970
Disc Holder	Celcon	<90°C for Con- tinuous use	Modern Plastics Encyclopedia 1978-79	8 x 10 <sup>5</sup> RADS	ORNL, Oct. 1970
Seals	BUNA-N	40 Years	EDS Calculations 0370-025-004 & 028	1 x 10 <sup>7</sup> RADS	ORNL, Oct. 1970
Core Tube	Stainless Steel	Not Sensitive		Not Affected	
Core & Plug Nut	Stainless Steel	Not Sensitive		Not Affected	
Springs	Stainless Steel	Not Sensitive		Not Affected	
Shading Coil	Copper	Not Sensitive		Not Affected	
Cage & Piston	Glass-filled Nylon	<65°C for Con- tinuous use	Modern Plastics Encyclopedia 1978-79	4 x 10 <sup>6</sup> RADS	ORNL, Oct. 1970

Materials & Parts List Reference:  
Asco Catalog

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: R.B. Iso. Plant ID No. SV/CMV-3 Component: Solenoid Valve Manufacture: ASCO  Model Number: * LB 8321-A6  Function: Containment Iso.  Accuracy: Spec: N/A Demon: N/A  Service: Containment Monitoring Iso. Valve CM-V-3  Location: Intermediate Bldg.  Flood Level Elev: N/A Above Flood Level: N/A	Operating Time	1.5 min.	Continuous	1	3	SIMILARITY TO VALVE TESTED BY ASCO AQS 21678	None
	Temperature (°F)	Note 2	346 Accident for 12 minutes	2	3 See Attached Evaluation	"	None
	Pressure (PSIA)	Note 2	110 Accident for 12 minutes	2	3	"	None
	Relative Humidity (%)	Note 2	100 Accident	2	3	"	None
	Chemical Spray (PH)	N/A	10	2	3	"	None
	Radiation	NEG.	8 x 10 <sup>5</sup> R Note B	2	3	" ANALYSIS	None
	Aging	Note A	40 years Note B	-	3	Arrhenius Model	None
	Submergence	N/A	N/A	2	-	-	None

Documentation References: \* Class H Coil P/N 103-834-20 installed 12/29/81  
PER JOB TICKET C5223

Notes:

1. FSAR Chapter 14.
2. GPUN TOR 282 AREA #17
3. ASCO REPORT AQS 21678/TR Rev. A PER C of C 1/12/81
- 4.
- 5.
- 6.
- 7.
- 8.

- A) Aging was not considered a design base parameter for TMI-1.
- B) Deleted.
- C) Model has an explosion proof and water tight enclosure.
- D) Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

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COMPONENT MATERIALS EVALUATION SHEET

REACTOR BUILDING ISOLATION SYSTEM

Plant I.D. No.: SV/CM-V-3

Component: Solenoid Valve

Manufacturer: ASCO

Model No.: LB 8321-A6

THERMAL AGING				RADIATION	
PARTS LIST	MATERIALS LIST	QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
Class H Coil	Isomica/NOMEX Silicon Rubber Glass Cloth/Silicon Varnish	<60°C for con- tinuous use	ASCO REPORT APS 21678/TX Rev. A	2 x 10 <sup>8</sup> RADS	ASCO REPORT APS 21678/TX Rev. A.
Disc & O-Ring	BUNA-N	40 Years	EDS Calculations 0370-025-004 & 028	1 x 10 <sup>7</sup> RADS	ORNL, Oct. 1970
Disc Holder	Celcon	<90°C for Con- tinuous use	Modern Plastics Encyclopedia 1978-79	8 x 10 <sup>5</sup> RADS	ORNL, Oct. 1970
Seals	BUNA-N	40 Years	EDS Calculations 0370-025-004 & 028	1 x 10 <sup>7</sup> RADS	ORNL, Oct. 1970
Core Tube	Stainless Steel	Not Sensitive		Not Affected	
Core & Plug Nut	Stainless Steel	Not Sensitive		Not Affected	
Springs	Stainless Steel	Not Sensitive		Not Affected	
Shading Coil	Copper	Not Sensitive		Not Affected	
Cage & Piston	Glass-filled Nylon	<65°C for Con- tinuous use	Modern Plastics Encyclopedia 1978-79	4 x 10 <sup>6</sup> RADS	ORNL, Oct. 1970

Materials & Parts List Reference:  
Asco Catalog

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: R.B. Iso. Plant ID No. SV/CNV- 4 Component: Solenoid Valve Manufacture: ASCO Model Number: * LB 8321-A6 Function: Containment Iso. Accuracy: Spec: N/A Demon: N/A Service: Containment Monitoring Iso. Valve CM-V- 4 Location: Intermediate Bldg. Flood Level Elev: N/A Above Flood Level: N/A	Operating Time	1.5 min.	Continuous	1	3	SIMILARITY TO VALVE TESTED BY ASCO APS 21678	None
	Temperature (°F)	Note 2	346 Accident for 12 minutes	2	3 See Attached Evaluation	"	None
	Pressure (PSIA)	Note 2	110 Accident for 12 minutes	2	3	"	None
	Relative Humidity (PH)	Note 2	100 Accident	2	3	"	None
	Chemical Spray (PH)	N/A	10	2	3	"	None
	Radiation	NEG.	$8 \times 10^5$ R Note B	2	3	" Analysis	None
	Aging	Note A	40 years Note B	-	3	Arrhenius Model	None
	Submergence	N/A	N/A	2	-	-	None

Documentation References: \* Class H Coil P/N 103-834-20 installed 12/24/81  
PRR JOB TICKET C5223

Notes:

1. FSAR Chapter 14.
2. GPUN TDR 282 AREA#17
3. ASCO REPORT APS 21678/TR REV. A PRR C of C 1/12/81
- 4.
- 5.
- 6.
- 7.
- 8.

A) Aging was not considered a design base parameter for TMI-1.

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



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COMPONENT MATERIALS EVALUATION SHEET

REACTOR BUILDING ISOLATION SYSTEM

Plant I.D. No.: SV/CM-V-4

Component: Solenoid Valve

Manufacturer: ASCO

Model No.: LB 8321-A6

THERMAL AGING				RADIATION	
PARTS LIST	MATERIALS LIST	QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
Class H Coil	Isomica/NOAMKX Silicon Rubber Glass Cloth/Silicon Varnish	< 60°C For Con- tinuous Use	ASCO REPORT APS 21678/TR Rev A	2 x 10 <sup>8</sup> RADS	ASCO REPORT APS 21678/TR Rev A
Disc & O-Ring	BUNA-N	40 Years	EDS Calculations 0370-025-004 & 028	1 x 10 <sup>7</sup> RADS	ORNL, Oct. 1970
Disc Holder	Celcon	< 90°C for Con- tinuous use	Modern Plastics Encyclopedia 1978-79	8 x 10 <sup>5</sup> RADS	ORNL, Oct. 1970
Seals	BUNA-N	40 Years	EDS Calculations 0370-025-004 & 028	1 x 10 <sup>7</sup> RADS	ORNL, Oct. 1970
Core Tube	Stainless Steel	Not Sensitive		Not Affected	
Core & Plug Nut	Stainless Steel	Not Sensitive		Not Affected	
Springs	Stainless Steel	Not Sensitive		Not Affected	
Shading Coil	Copper	Not Sensitive		Not Affected	
Cage & Piston	Glass-filled Nylon	< 65°C for Con- tinuous use	Modern Plastics Encyclopedia 1978-79	4 x 10 <sup>6</sup> RADS	ORNL, Oct. 1970

Materials & Parts List Reference:  
Asco Catalog

Notes

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: R.B. Iso. Plant ID No. SV/ICV-3 Component: Solenoid Valve Manufacture: ASCO Model Number: * LB 8320-A35 Function: Containment Iso. Accuracy: Spec: N/A Demon: N/A Service: I.C. Return Iso. Valve IC-V-3 Location: Auxiliary Bldg. Flood Level Elev: N/A Above Flood Level: N/A	Operating Time	1.5 min.	Continuous	1	3	SIMILARITY TO VALVE TESTED BY ASCO AFS 21678	None
	Temperature (°F)	Note 2	346 Accident For 20 minutes	2	3	"	None
	Pressure (PSIA)	Ambient	110 Accident For 20 minutes	2	3	"	None
	Relative Humidity (%)	Ambient	100 Accident	2	3	"	None
	Chemical Spray (PH)	N/A	10	2	3	"	None
	Radiation	$8.2 \times 10^5$	$8.2 \times 10^5$ R Note B	2	3 See Attached Evaluation	" Analysis	None
	Aging	Note A	40 years Note B	-	3	Arrhenius Model	None
	Submergence	N/A	N/A	2	-	-	None

Documentation References: \* Class H Coil P/N 98-824-16 installed 12/24/81  
PER JOB TICKET C5226

Notes:

1. FSAR Chapter 14.
2. GPVN TDR 282 ARKA#9
3. ASCO REPORT AFS 21678/TR Rev. A per C of C 1/12/81
- 4.
- 5.
- 6.
- 7.
- 8.

A) Aging was not considered a design base parameter for TMI-1.

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

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COMPONENT MATERIALS EVALUATION SHEET

REACTOR BUILDING ISOLATION SYSTEM

Plant I.D. No.: SY/IC-V-3

Component: Solenoid Valve

Manufacturer: ASCO

Model No.: LB 8320-A35

		THERMAL AGING		RADIATION	
PARTS LIST	MATERIALS LIST	QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
Disc & O-Ring	BUNA-N	40 YEARS	EDS Calculations 0370-025-004 & 028	$1 \times 10^7$ RADS	ORNL, Oct. 1970
Disc. Holder	Delrin	$< 50^\circ\text{C}$ for Continuous use	Modern Plastics Encyclopedia 1978-79	$8.2 \times 10^5$ RADS	ORNL, Oct. 1970
Class H Coil	Isomica/ <del>NOMEX</del> Silicon Rubber Glass Cloth/Silicon Varnish	$< 60^\circ\text{C}$ for Continuous use	ASCO REPORT APS 21678/TR Rev.A	$2 \times 10^8$ RADS	ASCO REPORT APS 21678/TR Rev.A
Body	Metallic	Not Sensitive		Not Affected	
Seals	BUNA-N	40 Years	EDS Calculations 0370-025-004 & 028	$1 \times 10^7$ RADS	ORNL, Oct. 1970
Core Tube	Stainless Steel	Not Sensitive		Not Affected	
Core & Plug Nut	Stainless Steel	Not Sensitive		Not Affected	
Materials & Parts List Reference: Asco Catalog					
Notes					

CONTINUATION

Unit: 1

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## SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	** ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: R.B. Iso. Plant ID No. SV/ICV-4 Component: Solenoid Valve Manufacture: ASCO Model Number: *8320-A35 Function: Containment Iso. Accuracy: Spec: N/A Demon: N/A Service: I.C. Supply Iso. Valve IC-V-4 Location: Auxiliary Bldg. Flood Level Elev: N/A Above Flood Level: N/A	Operating Time	1.5 min.	Continuous	1	3	SIMILARITY TO VALVE TESTED By ASCO Aps 21678	None
	Temperature (°F)	Note 2	396 Accident for 20 minutes	2	3	"	None
	Pressure (PSIA)	ATMOSPHERIC	110 Accident for 20 minutes	2	3	"	None
	Relative Humidity (%)	Ambient	100 Accident	2	3	"	None
	Chemical Spray (PH)	N/A	10	2	3	"	None
	Radiation	Negligible	$8.2 \times 10^5$ R Note B	2	3	" Analysis	None
	Aging	Note A	40 years Note B	-	3	Arrhenius Model	No.
	Submergence	N/A	N/A	2	-	-	None

Documentation References: \* CLASS H Coil PIN 98-824-16 installed 12/24/91  
 PER JOB TICKET C5226  
 \*\* No HARSH

Notes:

1. FSAR Chapter 14.
2. GPUN TDR 282 GEN. ARER K6C
3. ASCO REPORT Aps 21678/TR Rev. A Per C of C 1/21/91
- 4.
- 5.
- 6.
- 7.
- 8.

A) Aging was not considered a design base parameter for TMI-1.

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

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COMPONENT MATERIALS EVALUATION SHEET

REACTOR BUILDING ISOLATION SYSTEM

Plant I.D. No.: Sv/IC-V-4

Component: Solenoid Valve

Manufacturer: ASCO

Model No.: 8320-A35

THERMAL AGING				RADIATION	
PARTS LIST	MATERIALS LIST	QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
Disc & O-Ring	BUNA-N	40 Years	EDS Calculations 0370-025-004 & 028	$1 \times 10^7$ RADS	ORNL, Oct. 1970
Disc. Holder	Delrin	$< 50^\circ\text{C}$ for Continuous use	Modern Plastics Encyclopedia 1978-79	$9.2 \times 10^5$ RADS	ORNL, Oct. 1970
Class H Coil	Isomica/NOMEX Silicon Rubber Glass Cloth/Silica Varnish	$< 60^\circ\text{C}$ For Continuous use	ASCO REPORT AQS 21678/TR Rev. A	$2 \times 10^8$ RADS	ASCO REPORT AQS 21678/TR Rev. A
Body	Metallic	Not Sensitive		Not Affected	
Seals	BUNA-N	40 Years	EDS Calculations 0370-025-004 & 028	$1 \times 10^7$ RADS	ORNL, Oct. 1970
Core Tube	Stainless Steel	Not Sensitive		Not Affected	
Core & Plug Nut	Stainless Steel	Not Sensitive		Not Affected	

Materials & Parts List Reference:  
Asco Catalog

Notes

CONTINUATION



Facility: TMI

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## SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	** ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: R.B. Iso. Plant ID No. SV/ICV-6 Component: Solenoid Valve Manufacture: ASCO  Model Number: * HT 8321-A8  Function: Containment Iso. Accuracy: Spec: N/A Demon: N/A Service: CRD Cooling Iso. Valve IC-V-6  Location: Auxiliary Bldg.	Operating Time	1.5 min.	Continuous	1	3	SIMILARITY TO VALVE TESTED BY ASCO AQS-21678	None
	Temperature (°F)	Note 2	346 Accident For 20 minutes	2	3	"	None
	Pressure (PSIA)	Atmospheric	110 Accident For 20 minutes	2	3	"	None
	Relative Humidity (%)	Ambient	100 Accident	2	3	"	None
	Chemical Spray (PH)	N/A	10	2	3	"	None
	Radiation	Negligible	8.2x 10 <sup>5</sup> R Note B	2	3	" Analysis	None
	Aging	Note A	40 years Note B	-	3	Arrhenius Model	None
Flood Level Elev: N/A Above Flood Level: N/A	Submergence	N/A	N/A	2	-	-	None

Documentation References: \* C/SS H Coil P/N 103-834-20 installed 12/29/81

PER JOB TICKET C5222

\*\* Non-HARSH

Notes:

1. FSAR Chapter 14.
2. GPUN TDR 282 GEN. AREA K6C
3. ASCO REPORT AQS-21678/TR Rev A Per C of C 8/12/81
- 4.
- 5.
- 6.
- 7.
- 8.

A) Aging was not considered a design base parameter  
: for TMI-1.

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

Revision: 6  
Date: 12/31/81

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COMPONENT MATERIALS EVALUATION SHEET

REACTOR BUILDING ISOLATION SYSTEM

Plant I.D. No.: SV/IC-V-6

Component: Solenoid Valve

Manufacturer: ASCO

Model No.: HT 8321-A8

THERMAL AGING				RADIATION	
PARTS LIST	MATERIALS LIST	QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
Class H Coil	Isomica/ <del>NOMEX</del> Silicon Rubber Glass Cloth/Silicon Varnish	< 60°C for Con- tinuous Use	ASCO REPORT AQS 21678/TR Rev A	2 x 10 <sup>8</sup> RADS	ASCO REPORT AQS 21678/TR Rev A
Disc & O-Ring	BUNA-N	40 Years	EDS Calculations 0370-025-004 & 028	1 x 10 <sup>7</sup> RADS	ORNL, Oct. 1970
Disc Holder	Celcon	< 90°C for Con- tinuous use	Modern Plastics Encyclopedia 1978-79	2.2 x 10 <sup>5</sup> RADS	ORNL, Oct. 1970
Seals	BUNA-N	40 Years	EDS Calculations 0370-025-004 & 028	1 x 10 <sup>7</sup> RADS	ORNL, Oct. 1970
Core Tube	Stainless Steel	Not Sensitive		Not Affected	
Core & Plug Nut	Stainless Steel	Not Sensitive		Not Affected	
Springs	Stainless Steel	Not Sensitive		Not Affected	
Shading Coil	Copper	Not Sensitive		Not Affected	
Cage & Piston	Glass-filled Nylon	< 65°C for Con- tinuous use	Modern Plastics Encyclopedia 1978-79	4 x 10 <sup>6</sup> RADS	ORNL, Oct. 1970

Materials & Parts List Reference:  
Asco Catalog

Notes

CONTINUATION

Facility: TMI

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## SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: R.B. Iso. Plant ID No. SV/WDG-V4 Component: Solenoid Valve Manufacture: ASCO Model Number: 206-3815 RVF Function: Containment Iso. Containment Iso. Accuracy: Spec: N/A Demon: N/A Service: R.B. Vent Header Iso Valve WDG V 4 Location: Auxiliary Bldg. Flood Level Elev: N/A Above Flood Level: N/A	Operating Time	Note B	Continuous		3	-	None
	Temperature (°F)	Note 1	346° For 12 minutes	1	3	Test	None
	Pressure (PSIA)	Atmospheric	110 For 12 minutes	1	3	Test	None
	Relative Humidity (%)	Ambient	100 Accident	1	3	Test	None
	Chemical Spray (PH)	N/A	10	1	3	Test	None
	Radiation	1x10 <sup>6</sup>	2x10 <sup>8</sup> R	1	3	Test	None
	Aging	Note A	40 years	1	2,3	Test & Arrhenius Model	None
	Submergence	N/A	N/A	1	-	-	None

Documentation References:

1. GPUN TDR 282 AREA #13
2. GPUN Calc. 1101X-5350-033
3. ASCO Test Report AQS-21678/TR Rev. A

Notes:

- A) Aging was not considered a design base parameter for TMI-1.
- B. Valve required duration of accident for Cold Shutdown

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# SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: R.B. Iso. Plant ID No. Component: ISA/WDG-V4 Limit Switch Manufacture: Micro Switch  Model Number: BZE6-2RN Issue F-48 Function: Containment Iso.  Accuracy: Spec: N/A Demon: N/A Service: R.B. Vent Header Iso. Valve WDG-V-4 Location: Auxiliary Bldg.	Operating Time	Note B Note D	Continuous	1	4	-	None
	Temperature (°F)	Ambient	160	3	4	-	None
	Pressure (PSIA)	Atmospheric	Atmospheric	3	4	-	None
	Relative Humidity (%)	Ambient	Ambient	3	4	-	None
	Chemical Spray	N/A	N/A	-	-	-	None
	Radiation	$3.2 \times 10^5$	$1 \times 10^6$ R Note C	2	4,5	Comparison Test	None
	Aging	Note A	17.6 years Note C	-	4,6	Arrhenius Model	None
	Submergence	N/A	N/A	-	-	-	None

## Documentation References:

1. FSAR Chapter 14.
2. Ltr. GAI/TMI-1CS/ 4350, Dose Rate Maps, dated 1/16/81.
3. FSAR Section 6.1.2.12.
4. Micro Switch Catalog No. 40, Limit and Enclosed Switches.
5. IGE Bulletin 79-01B, Appendix C, Table C-1.
6. EDS Nuclear Calculation 0370-025-004 Rev. 0, dated 12/23/80.

## Notes:

- A) Aging was not considered a design base parameter for TMI-1.
- B) Valve closes in 1.5 min. maximum. Valve position indication required until operator verification or about one hour.
- C) Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.
- D) Valve required duration of accident for Cold Shutdown.

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COMPONENT MATERIALS EVALUATION SHEET

REACTOR BUILDING ISOLATION SYSTEM

Plant I.D. No.: LSA/WDG-V-4

Component: Limit Switch

Manufacturer: Micro Switch

Model No.: BZE6-2RM

THERMAL AGING				RADIATION	
PARTS LIST	MATERIALS LIST	QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
Housing	Aluminum	Not Sensitive		Not Affected	
Plunger	Cadmium Plated Steel	Not Sensitive		Not Affected	
BATH TUB SEAL	Neoprene	17.6 Years	GPUN 1101X-5350-014	1 x 10 <sup>6</sup> RADS	EPRI NP 1558
SEAL BOOT	BUNA-N	40 YEARS	EDS 0370-025-004	1 x 10 <sup>6</sup> RADS	" "
Screws	Brass	Not Sensitive		Not Affected	
Washer	Lead	Not Sensitive		Not Affected	
Spring	Steel	Not Sensitive		Not Affected	
Contact Block	ARC Resistant	<105°C for Con-	Modern Plastics	2 x 10 <sup>8</sup> RADS	ORNL, Oct. 1970
	Phenolic	tinuous use	Encyclopedia 1978-79		
Operating Head	General Purpose	<105°C for Con-	Modern Plastics	2 x 10 <sup>8</sup> RADS	ORNL, Oct. 1970
	Phenolic	tinuous use	Encyclopedia 1978-79		
Insulation	Mylar	<105°C for Con-	Modern Plastics	1 x 10 <sup>8</sup> RADS	ORNL, Oct. 1970
		tinuous use	Encyclopedia 1978-79		
Contact Plate	Beryllium Copper	Not Sensitive		Not Affected	
Contact Strip	Fine Silver	Not Sensitive		Not Affected	
Wire	Music Wire	Not Sensitive		Not Affected	

Materials & Parts List Reference:

Micro Switch Letter dated 10/21/81

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## SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: R.B. Iso. Plant ID No. Component: LSB/WDG-V4 Limit Switch Manufacture: Micro Switch  Model Number: BZE6-2RN Issue H-10 Function: Containment Iso.  Accuracy: Spec: N/A Demon: N/A Service: R.B. Vent Header Iso. Valve WDG-V-4  Location: Auxiliary Bldg.	Operating Time	Note B Note D	Continuous	1	4	-	None
	Temperature (°F)	Ambient	160	3	4	-	None
	Pressure (PSIA)	Atmospheric	Atmospheric	3	4	-	None
	Relative Humidity (%)	Ambient	Ambient	3	4	-	None
	Chemical Spray	N/A	N/A	-	-	-	None
	Radiation	3.2 x 10 <sup>5</sup>	1 x 10 <sup>6</sup> R Note C	2	4,5	Comparison Test	None
	Aging	Note A	17.6 years Note C	-	4,6	Arrhenius Model	None
	Submergence	N/A	N/A	-	-	-	None
Flood Level Elev: N/A Above Flood Level: N/A							

Documentation References:

1. FSAR Chapter 14.
2. Ltr. GAI/IMI-ICS/ 4350, Dose Rate Maps, dated 1/16/81.
3. FSAR Section 6.1.2.12.
4. Micro Switch Catalog No. 40, Limit and Enclosed Switches.
5. I&E Bulletin 79-01B, Appendix C, Table C-1.
6. EDS Nuclear Calculation 0370-025-004 Rev. 0, dated 12/23/80.

Notes:

- A) Aging was not considered a design base parameter for TMI-1.
- B) Valve closes in 1.5 min. maximum. Valve position indication required until operator verification or about one hour.
- C) Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.
- D) Valve required duration of accident for Cold Shutdown.

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REACTOR BUILDING ISOLATION SYSTEM

Plant I.D. No.: LSB/WDG-V-4

Component: Limit Switch

Manufacturer: Micro Switch

Model No.: BZE6-2RN

THERMAL AGING				RADIATION	
PARTS LIST	MATERIALS LIST	QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
Housing	Aluminum	Not Sensitive		Not Affected	
Plunger	Cadmium Plated Steel	Not Sensitive		Not Affected	
BATH TUB SEAL	Neoprene	17.6 Years	CPUN 1101X-5350-014	1 x 10 <sup>6</sup> RADS	EPRI NP1558
SEAL BOOT	BUNA N	40 years	EDS 0370-025-004	1 x 10 <sup>6</sup> RADS	" "
Screws	Brass	Not Sensitive		Not Affected	
Washer	Lead	Not Sensitive		Not Affected	
Spring	Steel	Not Sensitive		Not Affected	
Contact Block	ARC Resistant	<105°C for Con-	Modern Plastics	2 x 10 <sup>8</sup> RADS	ORNL, Oct. 1970
	Phenolic	tinuous use	Encyclopedia 1978-79		
Operating Head	General Purpose	<105°C for Con-	Modern Plastics	2 x 10 <sup>8</sup> RADS	ORNL, Oct. 1970
	Phenolic	tinuous use	Encyclopedia 1978-79		
Insulation	Mylar	<105°C for Con-	Modern Plastics	1 x 10 <sup>8</sup> RADS	ORNL, Oct. 1970
		tinuous use	Encyclopedia 1978-79		
Contact Plate	Beryllium Copper	Not Sensitive		Not Affected	
Contact Strip	Fine Silver	Not Sensitive		Not Affected	
Wire	Music Wire	Not Sensitive		Not Affected	

Materials & Parts List Reference:

Micro Switch Letter dated 10/21/81

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: R.B. Iso. Plant ID No. Component: SV/WDL-V304 Solenoid Valve Manufacture: ASCO Model Number: * FT 8321-A5 Function: Containment Iso. Accuracy: Spec: N/A Demon: N/A Service: RCS Drain Pump Outlet Valve WDL-V-304 Location: Auxiliary Bldg. Flood Level Elev: N/A Above Flood Level: N/A	Operating Time	1.5 min.	Continuous	1	3	SIMILARITY TO VALVE TESTED BY ASCO AQS 21678	None
	Temperature (°F)	Note 2	346 Accident For 20 minutes	2	3	"	None
	Pressure (PSIA)	Atmospheric	110 Accident For 20 minutes	2	3	"	None
	Relative Humidity (%)	Ambient	100 Accident	2	3	"	None
	Chemical Spray (PH)	N/A	10	2	3	"	None
	Radiation	$3.2 \times 10^5$	$8 \times 10^5$ R Note B	2	3	" Analysis	None
	Aging	Note A	40 years Note C	-	3	Arrhenius Model	None
	Submergence	N/A	N/A	2	-	-	None

Documentation References: \* Class H Coil PIN 103-834-20 installed 12/24/81  
PER JOB TICKET C 5228

Notes:

A) Aging was not considered a design base parameter for TMI-1.

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

1. FSAR Chapter 14.
2. GPMH TDR 282 AREA #13
3. ASCO REPORT AQS 21678/TR Rev. A Per C of C 1/12/81
- 4.
- 5.
- 6.
- 7.
- 8.

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REACTOR BUILDING ISOLATION SYSTEM

Plant I.D. No.: SV/WDL-V-304

Component: Solenoid Valve

Manufacturer: ASCO

Model No.: FT 8321-A5

THERMAL AGING				RADIATION	
PARTS LIST	MATERIALS LIST	QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
Class II Coil	Isomica/NOMEX Silicon Rubber Glass Cloth/Silicon Varnish	<60°C for Con- tinuous use	ASCO REPORT APS 21678/TR Rev. A	2 x 10 <sup>8</sup> RADS	ASCO REPORT APS 21678/TR Rev. A
Disc & O-Ring	BUNA-N	40 Years	EDS Calculations 0370-025-004 & 028	1 x 10 <sup>7</sup> RADS	ORNL, Oct. 1970
Disc Holder	Celcon	<90°C for Con- tinuous use	Modern Plastics Encyclopedia 1978-79	8 x 10 <sup>5</sup> RADS	ORNL, Oct. 1970
Seals	BUNA-N	40 Years	EDS Calculations 0370-025-004 & 028	1 x 10 <sup>7</sup> RADS	ORNL, Oct. 1970
Core Tube	Stainless Steel	Not Sensitive		Not Affected	
Core & Plug Nut	Stainless Steel	Not Sensitive		Not Affected	
Springs	Stainless Steel	Not Sensitive		Not Affected	
Shading Coil	Copper	Not Sensitive		Not Affected	
Cage & Piston	Glass-filled Nylon	<65°C for Con- tinuous use	Modern Plastics Encyclopedia 1978-79	4 x 10 <sup>6</sup> RADS	ORNL, Oct. 1970

Materials & Parts List Reference:  
Asco Catalog

Notes

CONTINUATION

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: R.B. Iso. Plant ID No. SV/WDL-V534 Component: Solenoid Valve Manufacture: ASCO Model Number: * 8321-A5 Function: Containment Iso. Accuracy: Spec: N/A Demon: N/A Service: R.B. Sump Outlet Iso. Valve WDL-V-534 Location: Auxiliary Bldg. Flood Level Elev: N/A Above Flood Level: N/A	Operating Time	1.5 min.	Continuous	1	3	SIMILARITY TO VALVE TESTED BY ASCO AFS 21678	None
	Temperature (°F)	Note 2	346 Accident for 20 minutes	2	3	"	None
	Pressure (PSIA)	Atmospheric	110 Accident for 20 minutes	2	3	"	None
	Relative Humidity (%)	Ambient	100 Accident	2	3	"	None
	Chemical Spray (PH)	N/A	10	2	3	"	None
	Radiation	$1.6 \times 10^5$	$8 \times 10^5$ R Note B	2	3	" Analysis	None
	Aging	Note A	40 years Note B	-	3	Arrhenius Model	None
	Submergence	N/A	N/A	2	-	-	None

Documentation References: \* Class H Coil P/N 103-834-20 installed 12/24/81  
 PER JOB TICKET C5228

Notes:

1. FSAR Chapter 14.
2. GPUN TDR 282 AREA #1
3. ASCO REPORT AFS 21678/TR Rev A PER C of C 1/12/81
- 4.
- 5.
- 6.
- 7.
- 8.

A) Aging was not considered a design base parameter for TMI-1.

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



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COMPONENT MATERIALS EVALUATION SHEET

REACTOR BUILDING ISOLATION SYSTEM

Plant I.D. No.: SV/WDL-V-534

Component: Solenoid Valve

Manufacturer: ASCO

Model No.: 8321-A5

THERMAL AGING				RADIATION	
PARTS LIST	MATERIALS LIST	QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
Class H Coil	Isomica/NOMEX Silicon Rubber Glass Cloth/Silicon Varnish	<60°C for Con- tinuous use	ASCO REPORT AQS 21678/TR Rev. A	2 x 10 <sup>8</sup> RADS	ASCO REPORT AQS 21678/TR Rev. A
Disc & O-Ring	BUNA-N	40 Years	EDS Calculations 0370-025-004 & 028	1 x 10 <sup>7</sup> RADS	ORNL, Oct. 1970
Disc Holder	Celcon	<90°C for Con- tinuous use	Modern Plastics Encyclopedia 1978-79	8 x 10 <sup>5</sup> RADS	ORNL, Oct. 1970
Seals	BUNA-N	40 Years	EDS Calculations 0370-025-004 & 028	1 x 10 <sup>7</sup> RADS	ORNL, Oct. 1970
Core Tube	Stainless Steel	Not Sensitive		Not Affected	
Core & Plug Nut	Stainless Steel	Not Sensitive		Not Affected	
Springs	Stainless Steel	Not Sensitive		Not Affected	
Shading Coil	Copper	Not Sensitive		Not Affected	
Cage & Piston	Glass-filled Nylon	<65°C for Con- tinuous use	Modern Plastics Encyclopedia 1978-79	4 x 10 <sup>6</sup> RADS	ORNL, Oct. 1970

Materials & Parts List Reference:  
Asco Catalog

Notes

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: R.B. Iso. Plant ID No. SV/WDL-V535 Component: Solenoid Valve Manufacture: ASCO Model Number: #8321-A5 Function: Containment Iso. Accuracy: Spec: N/A Demon: N/A Service: R.B. Sump Outlet Iso. Valve WDL-V-535 Location: Auxiliary Bldg.	Operating Time	1.5 min.	Continuous	1	3	SIMILARITY TO VALVE TESTED BY ASCO Aps 21678	None
	Temperature (°F)	Note 2	346 Accident for 20 minutes	2	3	"	None
	Pressure (PSIA)	Atmospheric	110 Accident for 20 minutes	2	3	"	None
	Relative Humidity (%)	Ambient	100 Accident	2	3	"	None
	Chemical Spray (PH)	N/A	10	2	3	"	None
	Radiation	$1.6 \times 10^5$	$8 \times 10^5$ R Note B	2	3	" Analysis	None
	Aging	Note A	40 years Note B	-	3	Arrhenius Model	None
Flood Level Elev: N/A Above Flood Level: N/A	Submergence	N/A	N/A	2	-	-	None

Documentation References: \* C/cgs H Coil P/N 103-834-20 installed 12/24/81  
PER JOB TICKET C5228

Notes:

- FSAR Chapter 14.
- GPUN TDR 282 Area 1
- ASCO REPORT Aps 21678/TR Rev. A per C & C 1/12/81
- 
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- 
- 

A) Aging was not considered a design base parameter for TMI-1.

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

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COMPONENT MATERIALS EVALUATION SHEET

REACTOR BUILDING ISOLATION SYSTEM

Plant I.D. No.: SV/WDL-V-535

Component: Solenoid Valve

Manufacturer: ASCO

Model No.: 8321-A5

THERMAL AGING

RADIATION

PARTS LIST	MATERIALS LIST	QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
Class H Coil	Isomica / NOMEX Silicon Rubber Glass Cloth / Sil. con Varnish	<60°C for Con- tinuous use	ASCO REPORT AQS 21678/TR Rev. A	2 x 10 <sup>8</sup> RADS	ASCO REPORT AQS 21678/TR Rev. A
Disc & O-Ring	BUNA-N	40 Years	EDS Calculations 0370-025-004 & 028	1 x 10 <sup>7</sup> RADS	ORNL, Oct. 1970
Disc Holder	Celcon	<90°C for Con- tinuous use	Modern Plastics Encyclopedia 1978-79	8 x 10 <sup>5</sup> RADS	ORNL, Oct. 1970
Seals	BUNA-N	40 Years	EDS Calculations 0370-025-004 & 028	1 x 10 <sup>7</sup> RADS	ORNL, Oct. 1970
Core Tube	Stainless Steel	Not Sensitive		Not Affected	
Core & Plug Nut	Stainless Steel	Not Sensitive		Not Affected	
Springs	Stainless Steel	Not Sensitive		Not Affected	
Shading Coil	Copper	Not Sensitive		Not Affected	
Cage & Piston	Glass-filled Nylon	<65°C for Con- tinuous use	Modern Plastics Encyclopedia 1978-79	4 x 10 <sup>6</sup> RADS	ORNL, Oct. 1970

Materials & Parts List Reference:  
Asco Catalog

Notes

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REACTOR PROTECTION SYSTEM

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8	0,1,2,4,5	16B	0,1,4,5,6
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Facility: 1

Unit: 1

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## SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Reactor Protection Plant ID No. PS-672 Component: Pressure Switch Manufacture: Static O-Ring Model Number: 12N-K45-CMRR Serial No. 71-6-1122 Function: Reactor Trip Accuracy: Spec: - Demon: - Service: R.B. Pressure Channel A Location: Auxiliary Bldg.	Operating Time	10 Sec.	Continuous	1	4	-	None
	Temperature (°F)	Ambient	180	2	6	-	None
	Pressure (PSIA)	Atmospheric	Atmospheric	2	4	-	None
	Relative Humidity (%RH)	Ambient	Ambient	2	4	-	None
	Chemical Spray	N/A	N/A	-	-	-	None
	Radiation	$3.2 \times 10^5$	$1 \times 10^7$ R Note B	3	4,5	Comparison Test	None
	Aging	Note A	17.5 Years Note B	-	4,7	Arrhenius Model	None
Flood Level Elev: N/A Above Flood Level: N/A	Submergence	N/A	N/A	-	-	-	None

Documentation References:

1. FSAR Chapter 14
2. FSAR Section 6.1.2.12
3. Ltr. GAI/TMI-ICS/4350, Dose Rate Maps, dated 1/16/81.
4. SOR Letter to EDS dated August 4, 1980.
5. "Engr. and Design 17" (1971) 247-280, North-Holland Publishing Company.
6. SOR Catalog, Pressure Switches for Process Application, SOR Form 141, dated 3/80.
7. EDS Nuclear Calculation 0370-025-050, Rev. 0, dated 12/23/80.

Notes:

- A) Aging was not considered a design base parameter for TMI-1.
- B) Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.



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COMPONENT MATERIALS EVALUATION SHEET

REACTOR PROTECTION SYSTEM

Plant I.D. No.: PS-672

Component: Pressure Switch

Manufacturer: Static-O-Ring

Model No.: 12N-K45-CMRR

THERMAL AGING				RADIATION	
PARTS LIST	MATERIALS LIST	QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
Housing	Aluminum	Not Sensitive	GPN Calculations 1101X-5350 - 014	Not Affected	I&E Bulletin 79-01B
Cover	Aluminum	Not Sensitive		Not Affected	
Gasket, Cover	Neoprene	17.5 Years		1 x 10 <sup>7</sup> RADS	
Mounting Bracket	Steel	Not Sensitive	EDS Calculations 0370-025-004 & 028 EDS Calculations 0370-025-004 & 028	Not Affected	ORNL, Oct. 1970
Adjusting Nut	Aluminum	Not Sensitive		Not Affected	
Body	Aluminum	Not Sensitive		Not Affected	
Washer	Stainless Steel	Not Sensitive		Not Affected	
Spring	Music Wire	Not Sensitive		Not Affected	
Spring Stop	Aluminum	Not Sensitive		Not Affected	
Cylinder Disc	Aluminum	Not Sensitive		Not Affected	
Piston Head	Aluminum	Not Sensitive		Not Affected	
Shaft Assy.	Stainless Steel	Not Sensitive		Not Affected	
Diaphragm	Stainless Steel	Not Sensitive		Not Affected	
Secondary Dia- phragm	BUNA-N	40 years		1 x 10 <sup>7</sup> RADS	
O-Ring	BUNA-N	40 Years		1 x 10 <sup>7</sup> RADS	
Pressure Port	Stainless Steel	Not Sensitive		Not Affected	
Screws	Stainless Steel	Not Sensitive		Not Affected	

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CONTINUATION

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Date: 12/31/81

COMPONENT MATERIALS EVALUATION SHEET

Sheet 13B of 16

REACTOR PROTECTION SYSTEM

Plant I.D. No.: PS-672

Component: Pressure Switch

Manufacturer: Static-O-Ring

Model No.: 12N-K45-CMRR

PARTS LIST	MATERIALS LIST	THERMAL AGING		RADIATION	
		QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
Switch					
Case	Phenolic	<105°C for Continuous use	Modern Plastics Encyclopedia 1978-79	2 x 10 <sup>8</sup> RADS	ORNL, Oct. 1970
Spring	Beryllium Copper	Not Sensitive		Not Affected	
Contacts	Silver	Not Sensitive		Not Affected	
Cover Pin	Brass	Not Sensitive		Not Affected	

Materials & Parts List Reference:

Static-O-Ring Catalog.

NOTES:

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Facility: TMI

Unit:

Rev. 6

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Date: 12/31/81 SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Reactor Protection Plant ID No. PS-673	Operating Time	10 Sec.	Continuous	1	4	-	None
Component: Pressure Switch	Temperature (°F)	Ambient	180	2	6	-	None
Manufacture: Static O-Ring	Pressure (PSIA)	Atmospheric	Atmospheric	2	4	-	None
Model Number: 12N-K45-CMRR	Relative Humidity (%)	Ambient	Ambient	2	4	-	None
Function: Serial No. 71-6-1119	Chemical Spray	N/A	N/A	-	-	-	None
Accuracy: Spec: - Demon: -	Radiation	3.2 x 10 <sup>5</sup>	1 x 10 <sup>7</sup> R Note B	3	4,5	Comparison Test	None
Service: R.B. Pressure Channel B	Aging	Note A	12.5 Years Note B	-	4,7	Arrhenius Model	None
Location: Auxiliary Bldg.	Submergence	N/A	N/A	-	-	-	None
Flood Level Elev: N/A							
Above Flood Level: N/A							

Documentation References:

1. FSAR Chapter 14
2. FSAR Section 6.1.2.12
3. Ltr. GAI/TMI-ICS/4350 Dose Rate Maps, dated 1/16/81.
4. SOR Letter to EDS dated August 4, 1980.
5. "Engr. and Design 17" (1971) 247-280, North Holland Publishing Company.
6. SOR Catalog, Pressure Switches for Process Application, SOR Form 141, dated 3/80.
7. EDS Nuclear Calculation 0370-025-030, Rev. 0, dated 12/23/80.

Notes:

- A) Aging was not considered a design base parameter for TMI-1.
- B) Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

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COMPONENT MATERIALS EVALUATION SHEET

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REACTOR PROTECTION SYSTEM

Plant I.D. No.: PS-673

Component: Pressure Switch

Manufacturer: Static-O-Ring

Model No.: 12N-K45-CMRR

THERMAL AGING

RADIATION

Housing	Aluminum	Not Sensitive		Not Affected	
Cover	Aluminum	Not Sensitive		Not Affected	
Gasket, Cover	Neoprene	17.5 Years	GRN Calculations 1101X-5350-014	$1 \times 10^7$ RADS	I&E Bulletin 79-01B
Mounting Bracket	Steel	Not Sensitive		Not Affected	
Adjusting Nut	Aluminum	Not Sensitive		Not Affected	
Body	Aluminum	Not Sensitive		Not Affected	
Washer	Stainless Steel	Not Sensitive		Not Affected	
Spring	Music Wire	Not Sensitive		Not Affected	
Spring Stop	Aluminum	Not Sensitive		Not Affected	
Cylinder Disc	Aluminum	Not Sensitive		Not Affected	
Piston Head	Aluminum	Not Sensitive		Not Affected	
Shaft Assy.	Stainless Steel	Not Sensitive		Not Affected	
Diaphragm	Stainless Steel	Not Sensitive		Not Affected	
Secondary Dia- phragm	BUNA-N	40 years	EDS Calculations 0370-025-004 & 028	$1 \times 10^7$ RADS	ORNL, Oct. 1970
O-Ring	BUNA-N	40 Years	EDS Calculations 0370-025-004 & 028	$1 \times 10^7$ RADS	ORNL, Oct. 1970
Pressure Port	Stainless Steel	Not Sensitive		Not Affected	
Screws	Stainless Steel	Not Sensitive		Not Affected	

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COMPONENT MATERIALS EVALUATION SHEET

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REACTOR PROTECTION SYSTEM

Plant I.D. No.: PS-673

Component: Pressure Switch

Manufacturer: Static-O-Ring

Model No.: 12N-K45-CMTR

THERMAL AGING				RADIATION	
PARTS LIST	MATERIALS LIST	QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
Switch					
Case	Phenolic	<105°C for Con- tinuous use	Modern Plastics Encyclopedia 1978-79	2 x 10 <sup>8</sup> RADS	ORNL, Oct. 1970
Spring	Beryllium Copper	Not Sensitive		Not Affected	
Contacts	Silver	Not Sensitive		Not Affected	
Cover Pin	Brass	Not Sensitive		Not Affected	

Materials & Parts List Reference:

Static-O-Ring Catalog.

NOTES:

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Facility: TMI

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## SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Reactor Protection Plant ID No. PS-674 Component: Pressure Switch Manufacture: Static O-Ring Model Number: 12N-K45-CMRR Serial No. 71-6-1121 Function: Reactor Trip Accuracy: Spec: - Demon: - Service: R.B. Pressure Channel C Location: Auxiliary Bldg.	Operating Time	10 Sec.	Continuous	1	4	-	None
	Temperature (°F)	Ambient	180	2	6	-	None
	Pressure (PSIA)	Atmospheric	Atmospheric	2	4	-	None
	Relative Humidity (%)	Ambient	Ambient	2	4	-	None
	Chemical Spray	N/A	N/A	-	-	-	None
	Radiation	$3.2 \times 10^5$	$1 \times 10^7$ R Note B	3	4,5	Comparison Test	None
	Aging	Note A	17.5 Years Note B	-	4,7	Arrhenius Test	None
Flood Level Elev: N/A Above Flood Level: N/A	Submergence	N/A	N/A	-	-	-	None

Documentation References:

1. FSAR Chapter 14
2. FSAR Section 6.1.2.12
3. Ltr. GAI/TMI-ICS/4350, Dose Rate Maps dated 1/16/81
4. SOR Letter to EDS dated August 4, 1980.
5. "Engr. and Design 17" (1971) 247-280, North-Publishing Company.
6. SOR Catalog, Pressure Switches for Process Application, SOR Form 141, dated 3/80.
7. EDS Nuclear Calculation 0370-025-030, Rev. 0, dated 12/23/80.

Notes:

- A) Aging was not considered a design base parameter for TMI-1.
- B) Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

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Date: 12/31/81

COMPONENT MATERIALS EVALUATION SHEET

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REACTOR PROTECTION SYSTEM

Plant I.D. No.: PS-674

Component: Pressure Switch

Manufacturer: Static-O-Ring

Model No.: 12N-K45-CMRR

THERMAL AGING				RADIATION	
PARTS LIST*	MATERIALS LIST*	QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
Housing	Aluminum	Not Sensitive		Not Affected	
Cover	Aluminum	Not Sensitive		Not Affected	
Gasket, Cover	Neoprene	17.5 Years	GrvH Calculations 11018-5350-014	1 x 10 <sup>7</sup> RADS	I&E Bulletin 79-01B
Mounting Bracket	Steel	Not Sensitive		Not Affected	
Adjusting Nut	Aluminum	Not Sensitive		Not Affected	
Body	Aluminum	Not Sensitive		Not Affected	
Washer	Stainless Steel	Not Sensitive		Not Affected	
Spring	Music Wire	Not Sensitive		Not Affected	
Spring Stop	Aluminum	Not Sensitive		Not Affected	
Cylinder Disc	Aluminum	Not Sensitive		Not Affected	
Piston Head	Aluminum	Not Sensitive		Not Affected	
Shaft Assy.	Stainless Steel	Not Sensitive		Not Affected	
Diaphragm	Stainless Steel	Not Sensitive		Not Affected	
Secondary Dia- phragm	BUNA-N	40 years	EDS Calculations 0370-025-004 & 028	1 x 10 <sup>7</sup> RADS	ORNL, Oct. 1970
O-Ring	BUNA-N	40 Years	EDS Calculations 0370-025-004 & 028	1 x 10 <sup>7</sup> RADS	ORNL, Oct. 1970
Pressure Port	Stainless Steel	Not Sensitive		Not Affected	
Screws	Stainless Steel	Not Sensitive		Not Affected	

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COMPONENT MATERIALS EVALUATION SHEET

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REACTOR PROTECTION SYSTEM

Plant I.D. No.: PS-674

Component: Pressure Switch

Manufacturer: Static-O-Ring

Model No.: 12N-K45-CMRR

THERMAL AGING				RADIATION	
PARTS LIST	MATERIALS LIST	QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
Switch					
Case	Phenolic	<105°C for Continuous use	Modern Plastics Encyclopedia 1978-79	2 x 10 <sup>8</sup> RADS	ORNL, Oct. 1970
Spring	Beryllium Copper	Not Sensitive		Not Affected	
Contacts	Silver	Not Sensitive		Not Affected	
Cover Pin	Brass	Not Sensitive		Not Affected	

Materials & Parts List Reference:

Static-O-Ring Catalog.

NOTES:

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Facility: TMI

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## SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Reactor Protection Plant ID No. PS-675 Component: Pressure Switch Manufacture: Static O-Ring Model Number: 12N-K45-CM3RRY Serial No. 73-5-865 Function: Reactor Trip Accuracy: Spec: Demon: Service: R.B. Pressure Channel D Location: Auxiliary Bldg.	Operating Time	10 Sec.	Continuous	1	4	-	None
	Temperature (°F)	Ambient	180	2	6		None
	Pressure (PSIA)	Atmospheric	Atmospheric	2	4		None
	Relative Humidity (%)	Ambient	Ambient	2	4		None
	Chemical Spray	N/A	N/A	-	-	-	None
	Radiation	$3.2 \times 10^5 R$	$8 \times 10^5 R$ Note B	3	4,5	Comparison Test	None
	Aging	Note A	17.5 Years Note B	-	4,7	Arrhenius Model	None
Flood Level Elev: N/A Above Flood Level: N/A	Submergence	N/A	N/A	-	-	-	None

Documentation References:

1. FSAR Chapter 14
2. FSAR Section 6.1.2.12
3. Ltr. GAI/TMI-ICS/4350, Dose Rate Maps, dated 1/16/81.
4. SOR Letter to EDS dated August 4, 1980.
5. "Engr. and Design 17" (1971) 247-280, North-Holland Publishing Company.
6. SOR Catalog, Pressure Switches for Process Application, SOR Form 141, dated 3/80.
7. EDS Nuclear Calculation 0370-025-030, Rev. 0, dated 12/23/80.

Notes:

- A) Aging was not considered a design base parameter for TMI-1.
- B) Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

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COMPONENT MATERIALS EVALUATION SHEET

REACTOR PROTECTION SYSTEM

Plant I.D. No.: PS-675

Component: Pressure Switch

Manufacturer: Static-O-Ring

Model No.: 12N-K45-CM3RRY

THERMAL AGING				RADIATION	
PARTS LIST	MATERIALS LIST	QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
Housing	Aluminum	Not Sensitive		Not Affected	
Cover	Aluminum	Not Sensitive		Not Affected	
Gasket, Cover	Neoprene	17.5 Years	GPVN Calculations 1101X-5350-014	1 x 10 <sup>7</sup> RADS	I&E Bulletin 79-01B
Mounting Bracket	Steel	Not Sensitive		Not Affected	
Adjusting Nut	Aluminum	Not Sensitive		Not Affected	
Body	Aluminum	Not Sensitive		Not Affected	
Washer	Stainless Steel	Not Sensitive		Not Affected	
Spring	Music Wire	Not Sensitive		Not Affected	
Spring Stop	Aluminum	Not Sensitive		Not Affected	
Cylinder Disc	Aluminum	Not Sensitive		Not Affected	
Piston Head	Aluminum	Not Sensitive		Not Affected	
Shaft Assy.	Stainless Steel	Not Sensitive		Not Affected	
Diaphragm	Stainless Steel	Not Sensitive		Not Affected	
Secondary Dia- phragm	Flourinated Silicone (Note 1)	<105°C for Con- tinuous use	Modern Plastics Encyclopedia 1978-79	8 x 10 <sup>6</sup> RADS (50% retention)	ORNL, Oct. 1970
O-Ring	Teflon	Not Sensitive		8 x 10 <sup>5</sup> RADS (50% retention)	ORNL, Oct. 1970
Pressure Port	Stainless Steel	Not Sensitive		Not Affected	
Screws	Stainless Steel	Not Sensitive		Not Affected	

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COMPONENT MATERIALS EVALUATION SHEET

REACTOR PROTECTION SYSTEM

Plant I.D. No.: PS-675

Component: Pressure Switch

Manufacturer: Static-O-Ring

Model No.: 12N-K45-CM3RRY

THERMAL AGING				RADIATION	
PARTS LIST	MATERIALS LIST	QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
Switch					
Case	Phenolic	<105°C for Continuous use	Modern Plastics Encyclopedia 1978-79	2 x 10 <sup>8</sup> RADS	ORNL, Oct. 1970
Spring	Beryllium Copper	Not Sensitive		Not Affected	
Contacts	Silver	Not Sensitive		Not Affected	
Cover Pin	Brass	Not Sensitive		Not Affected	

Materials & Parts List Reference:

Static-O-Ring Catalog.

NOTES:

1) Referenced to Silicone Rubber.

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1	0,1,2,3,5	11	0,1,4,5,6
1A	0,1,3,5	11A	0,1,4, Deleted
1B	5	11B	0,1,4,5, Deleted
2	0,1,2,3,5	12	0,1,4,5,6
2A	0,1,3,5	12A	0,1,4 Deleted
2B	5	12B	0,1,4,5, Deleted
3	0,1,2,3,5	13	0,1,2,4,5,6
3A	5	13A	0,1,4,6
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4A	5	14A	0,1,4,6
5	0,1,2,3,4,5	15	0,1,2,4,5,6
5A	5	15A	0,1,4,6
6	0,1,2,3,4,5	16	0,1,2,4,5,6
6A	5	16A	0,1,4,6
7	0,1,2,4,5,6	17	0,1,4,5,6
7A	0,1,4,6	17A	0,1,4 Deleted
8	0,1,2,4,5,6	17B	0,1,4,5, Deleted
8A	0,1,4,6	18	0,1,4,5,6
9	0,1,2,4,5,6	18A	0,1,4, Deleted
9A	0,1,4,6	18B	0,1,4,5, Deleted

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Core Flood Plant ID No. LSA/CFV-19A Component: Limit Switch Manufacture: Micro Switch  Model Number: BZE6-2RN Issue F-48 Function: Containment Iso.  Accuracy: Spec: N/A Demon: N/A Service: Core Flood Tanks 'A' Make-up Valve CF-V-19A  Location: Auxiliary Bldg.	Operating Time	Note B	Continuous	1	4	-	None
	Temperature (°F)	Ambient	160	3	4	-	None
	Pressure (PSIA)	Atmospheric	Atmospheric	3	4	-	None
	Relative Humidity (%)	Ambient	Ambient	3	4	-	None
	Chemical Spray	N/A	N/A	-	-	-	None
	Radiation	$3,2 \times 10^5 R$	$1 \times 10^6 R$ Note C	2	4,5	Comparison Test	None
	Aging	Note A	176 years Note C	-	4,6	Arrhenius Model	None
	Submergence	N/A	N/A	-	-	-	None
Flood Level Elev: N/A Above Flood Level: N/A							

Documentation References:

1. FSAR Section 6.1.2.1.3.
2. GAI letter GAI/TMI-1CS/4350, Dose Rate Maps, dated 1/16/81
3. FSAR Section 6.1.2.12.
4. Micro Switch Catalog No. 40, Limit and Enclosed Switches.
5. I&E Bulletin 79-01B, Appendix C, Table C-1.
6. EDS Nuclear Calculation 0370-D25-004 Rev. 0, dated 12/23/80.

Notes:

- A) Aging was not considered a design base parameter for TMI-1.
- B) Normally closed valve, continued operability after RBIS closure is not required.
- C) Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

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COMPONENT MATERIALS EVALUATION SHEET

CORE FLOOD SYSTEM

Plant I.D. No.: LSA/CF-V-19A

Component: Limit Switch

Manufacturer: Micro Switch

Model No.: BZE6-2RN

THERMAL AGING				RADIATION	
PARTS LIST	MATERIALS LIST	QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
Housing	Aluminum	Not Sensitive		Not Affected	
Plunger	Cadmium Plated Steel	Not Sensitive		Not Affected	
BATH TUB SEAL	Neoprene	17.6 Years	6PUN 1101X-5350-014	1 x 10 <sup>6</sup> RADS	KPRI NP 1558
SEAL BOOT	BUNA N	40 YEARS	EDS 0370-025-004	1 x 10 <sup>6</sup> RADS	" "
Screws	Brass	Not Sensitive		Not Affected	
Washer	Lead	Not Sensitive		Not Affected	
Spring	Steel	Not Sensitive		Not Affected	
Contact Block	ARC Resistant	2105°C for Continuous use	Modern Plastics Encyclopedia 1978-79	2 x 10 <sup>8</sup> RADS	ORNL, Oct. 1970
Operating Head	General Purpose	2105°C for Continuous use	Modern Plastics Encyclopedia 1978-79	2 x 10 <sup>8</sup> RADS	ORNL, Oct. 1970
Insulation	Phenolic	2105°C for Continuous use	Modern Plastics Encyclopedia 1978-79	1 x 10 <sup>8</sup> RADS	ORNL, Oct. 1970
Contact Plate	Mylar	Not Sensitive		Not Affected	
Contact Strip	Beryllium Copper	Not Sensitive		Not Affected	
Wire	Fine Silver	Not Sensitive		Not Affected	
	Music Wire	Not Sensitive		Not Affected	

Materials & Parts List Reference:  
Micro Switch letter dated 10/21/81

CONTINUATION

Facility: 1

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## SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Core Flood Plant ID No. LSB/CFV-19A Component: Limit Switch Manufacture: Micro Switch Model Number: BZE6-2RN Issue F-48 Function: Containment Iso. Accuracy: Spec: N/A Demon: N/A Service: Core Flood Tank 'A' Make-up Valve CF-V-19A Location: Auxiliary Bldg.	Operating Time	Note B	Continuous	1	4	-	None
	Temperature (°F)	Ambient	160	3	4	-	None
	Pressure (PSIA)	Atmospheric	Atmospheric	3	4	-	None
	Relative Humidity (%)	Ambient	Ambient	3	4	-	None
	Chemical Spray	N/A	N/A	-	-	-	None
	Radiation	$3.2 \times 10^5$ R	$1 \times 10^6$ R Note C	2	4,5	Comparison Test	None
	Aging	Note A	17.6 years Note C	-	4,6	Arrhenius Model	None
Flood Level Elev: N/A Above Flood Level: N/A	Submergence	N/A	N/A	-	-	-	None

Documentation References:

1. FSAR Section 6.1.2.1.3.
2. GAI Letter GAI/TMI-1CS/4350, Dose Rate Maps, dated 1/16/81.
3. FSAR Section 6.1.2.12.
4. Micro Switch Catalog No. 40, Limit and Enclosed Switches.
5. I&E Bulletin 79-01B, Appendix C, Table C-1.
6. EDS Nuclear Calculation 05790-025-004, Rev. 0, dated 12/23/80.

Notes:

- A) Aging was not considered a design base parameter for TMI-1.
- B) Normally closed valve, continued operability after RBIS closure is not required.
- C) Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.



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COMPONENT MATERIALS EVALUATION SHEET

CORE FLOOD SYSTEM

Plant I.D. No.: LSB/CF-V-19A

Component: Limit Switch

Manufacturer: Micro Switch

Model No.: BZE6-2RN

THERMAL AGING				RADIATION	
PARTS LIST	MATERIALS LIST	QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
Housing	Aluminum	Not Sensitive		Not Affected	
Plunger	Cadmium Plated Steel	Not Sensitive		Not Affected	
BATH TUB SEAL	Neoprene	17.6 Years	GPUN 1101X-5350-014	$1 \times 10^6$ RADS	EPRI NP1558
SEAL BOOT	BUNA N	40 Years	EDS 0370-025-009	$1 \times 10^6$ RADS	" "
Screws	Brass	Not Sensitive		Not Affected	
Washer	Lead	Not Sensitive		Not Affected	
Spring	Steel	Not Sensitive		Not Affected	
Contact Block	ARC Resistant	$\angle 105^\circ\text{C}$ for Con-	Modern Plastics	$2 \times 10^8$ RADS	ORNL, Oct. 1970
	Phenolic	tinuous use	Encyclopedia 1978-79		
Operating Head	General Purpose	$\angle 105^\circ\text{C}$ for Con-	Modern Plastics	$2 \times 10^8$ RADS	ORNL, Oct. 1970
	Phenolic	tinuous use	Encyclopedia 1978-79		
Insulation	Mylar	$\angle 105^\circ\text{C}$ for Con-	Modern Plastics	$1 \times 10^8$ RADS	ORNL, Oct. 1970
		tinuous use	Encyclopedia 1978-79		
Contact Plate	Beryllium Copper	Not Sensitive		Not Affected	
Contact Strip	Fine Silver	Not Sensitive		Not Affected	
Wire	Music Wire	Not Sensitive		Not Affected	

Materials & Parts List Reference:  
Micro Switch letter dated 10/21/81

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# SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Core Flood Plant ID No. LSA/CFV-19B Component: Limit Switch Manufacture: Micro Switch Model Number: BZE6-2RN Issue F-48 Function: Containment Iso. Accuracy: Spec: N/A Demon: N/A Service: Core Flood Tank 'B' Make-up Valve CF-V-19B Location: Auxiliary Bldg. Flood Level Elev: N/A Above Flood Level: N/A	Operating Time	Note B	Continuous	1	4	-	None
	Temperature (°F)	Ambient	160	3	4	-	None
	Pressure (PSIA)	Atmospheric	Atmospheric	3	4	-	None
	Relative Humidity (%)	Ambient	Ambient	3	4	-	None
	Chemical Spray	N/A	N/A	-	-	-	None
	Radiation	$3.2 \times 10^5$ R	$1 \times 10^6$ R Note C	2	4,5	Comparison Test	None
	Aging	Note A	17.6 years Note C	-	4,6	Arrhenius Model	None
	Submergence	N/A	N/A	-	-	-	None

## Documentation References:

1. FSAR Section 6.1.2.1.3.
2. GAI Letter GAI/TMI-1CS/4350, Dose Rate Maps, dated 1/16/81.
3. FSAR Section 6.1.2.12.
4. Micro Switch Catalog No. 40, Limit and Enclosed Switches.
5. I&E Bulletin 79-01B, Appendix C, Table C-1.
6. EDS Nuclear Calculation 0370-025-004, Rev. 0, dated 12/23/80.

## Notes:

- A) Aging was not considered a design base parameter for TMI-1.
- B) Normally closed valves, continued operability after RBIS closure is not required.
- C) Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

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COMPONENT MATERIALS EVALUATION SHEET

CORE FLOOD SYSTEM

Plant I.D. No.: LSA/CF-V-19B

Component: Limit Switch

Manufacturer: Micro Switch

Model No.: BZE6-2RN

THERMAL AGING				RADIATION	
PARTS LIST	MATERIALS LIST	QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
Housing	Aluminum	Not Sensitive		Not Affected	
Plunger	Cadmium Plated Steel	Not Sensitive		Not Affected	
BATH TUB SEAL	Neoprene	17.6 Years	6PVH H01X-5350-014	$1 \times 10^6$ RADS	EPRI NP1558
SEAL BOOT	BUNA N	40 years	EDS 0370-025-004	$1 \times 10^6$ RADS	" "
Screws	Brass	Not Sensitive		Not Affected	
Washer	Lead	Not Sensitive		Not Affected	
Spring	Steel	Not Sensitive		Not Affected	
Contact Block	ARC Resistant	$<105^\circ\text{C}$ for Continuous use	Modern Plastics Encyclopedia 1978-79	$2 \times 10^8$ RADS	ORNL, Oct. 1970
Operating Head	General Purpose	$<105^\circ\text{C}$ for Continuous use	Modern Plastics Encyclopedia 1978-79	$2 \times 10^8$ RADS	ORNL, Oct. 1970
Insulation	Mylar	$<105^\circ\text{C}$ for Continuous use	Modern Plastics Encyclopedia 1978-79	$5 \times 10^7$ RADS	ORNL, Oct. 1970
Contact Plate	Beryllium Copper	Not Sensitive		Not Affected	
Contact Strip	Fine Silver	Not Sensitive		Not Affected	
Wire	Music Wire	Not Sensitive		Not Affected	

Materials & Parts List Reference:  
Micro Switch letter dated 10/21/81

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Facility: TMI

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## SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Core Flood Plant ID No. Component: LSB/CFV-19B Limit Switch Manufacture: Micro Switch Model Number: BZE6-2RN Issue F-48 Function: Containment Iso. Accuracy: Spec: N/A Demon: N/A Service: Core Flood Tank 'B' Make-up Valve CF-V-19B Location: Auxiliary Bldg. Flood Level Elev: N/A Above Flood Level: N/A	Operating Time	Note B	Continuous	1	4	-	None
	Temperature (°F)	Ambient	160	3	4	-	None
	Pressure (PSIA)	Atmospheric	Atmospheric	3	4	-	None
	Relative Humidity (%)	Ambient	Ambient	3	4	-	None
	Chemical Spray	N/A	N/A	-	-	-	None
	Radiation	$3.2 \times 10^5 R$	$1 \times 10^6 R$ Note C	2	4,5	Comparison Test	None
	Aging	Note A	17.6 years Note C		4,6	Arrhenius Model	None
	Submergence	N/A	N/A	-	-	-	None

Documentation References:

1. FSAR Section 6.1.2.1.3.
2. FAI Letter GAI/TMI-ICS/4350, Dose Rate Maps, dated 1/16/81.
3. FSAR Section 6.1.2.12.
4. Micro Switch Catalog No. 40, Limit and Enclosed Switches.
5. I&E Bulletin 79-01B, Appendix C, Table C-1.
6. EDS Calculation 0370-025-004, Rev. 0, dated 12/23/80.

Notes:

- A) Aging was not considered a design base parameter for TMI-1.
- B) Normally closed valve, continued operability after RBIS closure is not required.
- C) Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

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COMPONENT MATERIALS EVALUATION SHEET

CORE FLOOD SYSTEM

Plant I.D. No.: LSB/CF-V-19B

Component: Limit Switch

Manufacturer: Micro Switch

Model No.: BZE6-2RN

THERMAL AGING				RADIATION	
PARTS LIST	MATERIALS LIST	QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
Housing	Aluminum	Not Sensitive		Not Affected	
Plunger	Cadmium Plated Steel	Not Sensitive		Not Affected	
BATH TUB SEAL	Neoprene	17.6 Years	GPUN 1101X-5350-014	$1 \times 10^6$ RADS	IPRI NP155B
SEAL BOOT	BUNA N	40 years	EDS 0370-025-004	$1 \times 10^6$ RADS	" "
Screws	Brass	Not Sensitive		Not Affected	
Washer	Lead	Not Sensitive		Not Affected	
Spring	Steel	Not Sensitive		Not Affected	
Contact Block	ARC Resistant Phenolic	$\angle 105^\circ\text{C}$ for Continuous use	Modern Plastics Encyclopedia 1978-79	$2 \times 10^8$ RADS	ORNL, Oct. 1970
Operating Head	General Purpose Phenolic	$\angle 105^\circ\text{C}$ for Continuous use	Modern Plastics Encyclopedia 1978-79	$2 \times 10^8$ RADS	ORNL, Oct. 1970
Insulation	Mylar	$\angle 105^\circ\text{C}$ for Continuous use	Modern Plastics Encyclopedia 1978-79	$1 \times 10^8$ RADS	ORNL, Oct. 1970
Contact Plate	Beryllium Copper	Not Sensitive		Not Affected	
Contact Strip	Fine Silver	Not Sensitive		Not Affected	
Wire	Music Wire	Not Sensitive		Not Affected	

Materials & Parts List Reference:  
Micro Switch letter dated 10/21/81

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## SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
<b>Core Flood</b> System: Plant ID No. <b>SV/CF-V19A</b> Component: Solenoid Manufacture: <b>ASCO</b> Model Number: <b>206-3815 RVF</b> Function: <b>Containment Iso.</b> Accuracy: Spec: <b>N/A</b> Demon: <b>N/A</b> Service: <b>R.B. Core Flood Tank 'A'</b> Makeup Valve CF V 19A Location: <b>Auxiliary Bldg.</b> Flood Level Elev: <b>N/A</b> Above Flood Level: <b>N/A</b>	Operating Time	Note B	Continuous		3	-	None
	Temperature (°F)	<b>Note 1</b>	346° For 12 minutes	1	3	Test	None
	Pressure (PSIA)	Atmospheric	110 For 12 minutes	1	3	Test	None
	Relative Humidity (%)	Ambient	100 Accident	1	3	Test	None
	Chemical Spray (PH)	N/A	10	1	3	Test	None
	Radiation	<b>3.2 x 10<sup>5</sup> R</b>	<b>2 x 10<sup>8</sup> R</b>	1	3	Test	None
	Aging	Note A	40 years	1	2,3	Test & Arrhenius Model	None
	Submergence	N/A	N/A	1	-	-	None

## Documentation References:

1. GPUN TDR 282 **AREA 13**
2. GPUN Calc. 1101X-5350-033
3. ASCO Test Report **APS-21678/TR Rev. A**

## Notes:

- A) Aging was not considered a design base parameter for TMI-1.
- B. Normally closed valve, continued operability after RBIS closure is not required

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SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
Core Flood System: Plant ID No. <b>SV/CF-V19B</b> Component: Solenoid Manufacture: <b>ASCO</b> Model Number: <b>206-3815 RVF</b> Function: <b>Containment Iso.</b> Accuracy: Spec: <b>N/A</b> Demon: <b>N/A</b> Service: <b>R.B. Core Flood Tank 'A'</b> <b>Makeup Valve</b> <b>CF V 19B</b> Location: <b>Auxiliary Bldg.</b> Flood Level Elev: <b>N/A</b> Above Flood Level: <b>N/A</b>	Operating Time	Note B	Continuous		3	-	None
	Temperature (°F)	<b>Note 1</b>	<b>346° for 12 minutes</b>	1	3	Test	None
	Pressure (PSIA)	Atmospheric	<b>110 for 12 minutes</b>	1	3	Test	None
	Relative Humidity (%)	Ambient	<b>100 Accident</b>	1	3	Test	None
	Chemical Spray (PH)	N/A	10	1	3	Test	None
	Radiation	<b>3.2 K/0<sup>5</sup> R</b>	<b>2 x 10<sup>8</sup> R</b>	1	3	Test	None
	Aging	Note A	40 years	1	2,3	Test & Arrhenius Model	None
	Submergence	N/A	N/A	1	-	-	None

Documentation References:

- 1 GPUN TDR 282 **AREA #12**
- 2 GPUN Calc. 1101X-5350-033
- 3 ASCO Test Report **ADS-21678/TR REV. A**

Notes:

- A) Aging was not considered a design base parameter for TMI-1.
- B. Normally closed valve, continued operability of RBIS closure is not required

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## SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Core Flood Plant ID No. LSA/CFV-20A Component: Limit Switch Manufacture: Micro Switch  Model Number: BZE6-2RN Issue F-48 Function: Containment Iso.  Accuracy: Spec: N/A Demon: N/A  Service: Core Flood Tank Sample Line Cont. Iso. Vlv. CF-V-20A  Location: Auxiliary Bldg.	Operating Time	Note B	Continuous	1	4		None
	Temperature (°F)	Ambient	160	3	4		None
	Pressure (PSIA)	Atmospheric	Atmsopheric	3	4	-	None
	Relative Humidity (%)	Ambient	Ambient	3	4	-	None
	Chemical Spray	N/A	N/A	-	-	-	None
	Radiation	$3.2 \times 10^5 R$	$1 \times 10^6 R$ Note C	2	4,5	Comparison Test	None
	Aging	Note A	17.6 years Note C	-	4,6	Arrhenius Model	None
	Submergence	N/A	N/A	-	-	-	None

Documentation References:

1. FSAR Section 6.1.2.1.3.
2. GAI Letter GAI/TMI-ICS/4350, Dose Rate Maps, dated 1/16/81
3. FSAR Section 6.1.2.12.
4. Micro Switch Catalog No. 40, Limit and Enclosed Switches.
5. I&E Bulletin 79-01B, Appendix C, Table C-1.
6. EDS Nuclear Calculation 0370-025-004, Rev. 0, dated 12/23/80.

Notes:

- A) Aging was not considered a design base parameter for TMI-1.
- B) Normally closed valve, continued operability after RBIS closure is not required.
- C) Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

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CORE FLOOD SYSTEM

Plant I.D. No.: LSA/CF-V-20A

Component: Limit Switch

Manufacturer: Micro Switch

Model No.: BZE6-2RN

THERMAL AGING				RADIATION	
PARTS LIST	MATERIALS LIST	QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
Housing	Aluminum	Not Sensitive		Not Affected	
Plunger	Cadmium Plated Steel	Not Sensitive		Not Affected	
BATH TUB SEAL	Neoprene	17.6 Years	GPUN 1101X-5750-014	1 x 10 <sup>6</sup> RADS	GPRI NP1558
SEAL BOOT	BUNA N	40 YEARS	EDS 0370-025-004	1 x 10 <sup>6</sup> RADS	" "
Screws	Brass	Not Sensitive		Not Affected	
Washer	Lead	Not Sensitive		Not Affected	
Spring	Steel	Not Sensitive		Not Affected	
Contact Block	ARC Resistant	<105°C for Con-	Modern Plastics	2 x 10 <sup>8</sup> RADS	ORNL, Oct. 1970
	Phenolic	tinuous use	Encyclopedia 1978-79		
Operating Head	General Purpose	<105°C for Con-	Modern Plastics	2 x 10 <sup>8</sup> RADS	ORNL, Oct. 1970
	Phenolic	tinuous use	Encyclopedia 1978-79		
Insulation	Mylar	<105°C for Con-	Modern Plastics	1 x 10 <sup>8</sup> RADS	ORNL, Oct. 1970
		tinuous use	Encyclopedia 1978-79		
Contact Plate	Beryllium Copper	Not Sensitive		Not Affected	
Contact Strip	Fine Silver	Not Sensitive		Not Affected	
Wire	Music Wire	Not Sensitive		Not Affected	

Materials & Parts List Reference:  
Micro Switch letter dated 10/21/81

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## SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Core Flood Plant ID No. 1SB/CFV-20A	Operating Time	Note B	Continuous	1	4		None
Component: Limit Switch	Temperature (°F)	Ambient	160	3	4		None
Manufacture: Micro Switch	Pressure (PSIA)	Atmospheric	Atmospheric	3	4	-	None
Model Number: BZE6-2RN Issue F-48	Relative Humidity (%)	Ambient	Ambient	3	4	-	None
Function: Containment Iso.	Chemical Spray	N/A	N/A	-	-	-	None
Accuracy: Spec: N/A Demon: N/A	Radiation	$3.2 \times 10^5 R$	$1 \times 10^6 R$ Note C	2	4,5	Comparison Test	None
Service: Core Flood Tank Sample Line Iso. Vlv. CF-V-20A	Aging	Note A	17.6 years Note C	-	4,6	Arrhenius Model	None
Location: Auxiliary Bldg.	Submergence	N/A	N/A	-	-	-	None
Flood Level Elev: N/A Above Flood Level: N/A							

Documentation References:Notes:

1. FSAR Section 6.1.2.1.3.
2. GAI Letter GAI/TMI-1CS/4350, Dose Rate Maps, dated 1/16/81.
3. FSAR Section 6.1.2.12.
4. Micro Switch Catalog No. 40, Limit and Enclosed Switches.
5. IQE Bulletin 79-01B, Appendix C, Table C-1.
6. EDS Calculation 0370-025-004 Rev. 0, dated 12/23/80.

- A) Aging was not considered a design base parameter for TMI-1.
- B) Normally closed valve, continued operability after RBIS closure is not required.
- C) Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.



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COMPONENT MATERIALS EVALUATION SHEET

CORE FLOOD SYSTEM

Plant I.D. No.: LSB/CF-V-20A

Component: Limit Switch

Manufacturer: Micro Switch

Model No.: BZE6-2RN

PARTS LIST	MATERIALS LIST	THERMAL AGING		RADIATION	
		QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
Housing	Aluminum	Not Sensitive		Not Affected	
Plunger	Cadmium Plated Steel	Not Sensitive		Not Affected	
BATH TUB SEAL	Neoprene	17.6 Years	GPUN 1101X-5350-014	1 x 10 <sup>6</sup> RADS	EPRI NP1558
SEAL GROUT	BUNA N	40 Years	EDS 0370-025-004	1 x 10 <sup>6</sup> RADS	" "
Screws	Brass	Not Sensitive		Not Affected	
Washer	Lead	Not Sensitive		Not Affected	
Spring	Steel	Not Sensitive		Not Affected	
Contact Block	ARC Resistant	<105°C for Con-	Modern Plastics	2 x 10 <sup>8</sup> RADS	ORNL, Oct. 1970
	Phenolic	tinuous use	Encyclopedia 1978-79		
Operating Head	General Purpose	<105°C for Con-	Modern Plastics	2 x 10 <sup>8</sup> RADS	ORNL, Oct. 1970
	Phenolic	tinuous use	Encyclopedia 1976-79		
Insulation	Mylar	<105°C for Con-	Modern Plastics	1 x 10 <sup>8</sup> RADS	ORNL, Oct. 1970
		tinuous use	Encyclopedia 1978-79		
Contact Plate	Beryllium Copper	Not Sensitive		Not Affected	
Contact Strip	Fine Silver	Not Sensitive		Not Affected	
Wire	Music Wire	Not Sensitive		Not Affected	

Materials & Parts List Reference:  
Micro Switch letter dated 10/21/81

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## SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Core Flood Plant ID No. LSA/CFV-20B Component: Limit Switch Manufacture: Micro Switch Model Number: BZE6-2RN Issue F-48 Function: Containment Iso. Accuracy: Spec: N/A Demon: N/A Service: Core Flood Tank 'B' Sample Line Valve CF-V-20B Location: Auxiliary Bldg. Flood Level Elev: N/A Above Flood Level: N/A	Operating Time	Note B	Continuous	1	4		None
	Temperature (°F)	Ambient	160	3	4		None
	Pressure (PSIA)	Atmospheric	Atmospheric	3	4	-	None
	Relative Humidity (%)	Ambient	Ambient	3	4	-	None
	Chemical Spray	N/A	N/A	-	-	-	None
	Radiation	$3.2 \times 10^5 \text{ R}$	$1 \times 10^6 \text{ R}$ Note C	2	4,5	Comparison Test	None
	Aging	Note A	17.6 years Note C	-	4,6	Arrhenius Model	None
	Submergence	N/A	N/A	-	-	-	None

Documentation References:

1. FSAR Section 6.1.2.1.3.
2. GAI Letter GAI/TMI-1CS/4350, Dose Rate Maps, dated 1/16/81.
3. FSAR Section 6.1.2.12.
4. Micro Switch Catalog No. 40, Limit and Enclosed Switches.
5. IQE Bulletin 79-01B, Appendix C, Table C-1.
6. EDS Calculation 0370-925-004 Rev. 0, dated 12/23/80.

Notes:

- A) Aging was not considered a design base parameter for TMI-1.
- B) Normally closed valve, continued operability after RBIS closure is not required.
- C) Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

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COMPONENT MATERIALS EVALUATION SHEET

CORE FLOOD SYSTEM

Plant I.D. No.: LSA/CF-V-20B

Component: Limit Switch

Manufacturer: Micro Switch

Model No.: BZE6-2RN

THERMAL AGING				RADIATION	
PARTS LIST	MATERIALS LIST	QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
Housing	Aluminum	Not Sensitive		Not Affected	
Plunger	Cadmium Plated Steel	Not Sensitive		Not Affected	
BATH TUB SEAL	Neoprene	17.6 Years	GPUN 1101X-5350-014	$1 \times 10^6$ RADS	EPRI NP 1558
SEAL FOOT	BUNA N	40 Years	EDS 0370-025-004	$1 \times 10^6$ RADS	" "
Screws	Brass	Not Sensitive		Not Affected	
Washer	Lead	Not Sensitive		Not Affected	
Spring	Steel	Not Sensitive		Not Affected	
Contact Block	ARC Resistant Phenolic	$\angle 105^\circ\text{C}$ for Continuous use	Modern Plastics Encyclopedia 1978-79	$2 \times 10^8$ RADS	ORNL, Oct. 1970
Operating Head	General Purpose Phenolic	$\angle 105^\circ\text{C}$ for Continuous use	Modern Plastics Encyclopedia 1978-79	$2 \times 10^8$ RADS	ORNL, Oct. 1970
Insulation	Mylar	$\angle 105^\circ\text{C}$ for Continuous use	Modern Plastics Encyclopedia 1978-79	$1 \times 10^8$ RADS	ORNL, Oct. 1970
Contact Plate	Beryllium Copper	Not Sensitive		Not Affected	
Contact Strip	Fine Silver	Not Sensitive		Not Affected	
Wire	Music Wire	Not Sensitive		Not Affected	

Materials & Parts List Reference:  
Micro Switch letter dated 10/21/81

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## SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Core Flood Plant ID No. LSB/CFV-20B Component: Limit Switch Manufacture: Micro Switch Model Number: BZE6-2RN Issue F-48 Function: Containment Iso. Accuracy: Spec: N/A Demon: N/A Service: Core Flood Tank 'B' Sample iso. Valve CF-V-20B Location: Auxiliary Bldg. Flood Level Elev: N/A Above Flood Level: N/A	Operating Time	Note B	Continuous	1	4		None
	Temperature (°F)	Ambient	160	3	4		None
	Pressure (PSIA)	Atmospheric	Atmospheric	3	4	-	None
	Relative Humidity (%)	Ambient	Ambient	3	4	-	None
	Chemical Spray	N/A	N/A	-	-	-	None
	Radiation	$3.2 \times 10^5 R$	$1 \times 10^6 R$ Note C	2	4,5	Comparison Test	None
	Aging	Note A	17.6 years Note C	-	4,6	Arrhenius Model	None
	Submergence	N/A	N/A	-	-	-	None

Documentation References:Notes:

1. FSAR Section 6.1.2.1.3.
2. GAI Letter GAI/TMI-ICS4350 Dose Rate Maps, dated 1/16/81.
3. FSAR Section 6.1.2.12.
4. Micro Switch Catalog No. 40, Limit and Enclosed Switches.
5. I&E Bulletin 79-01B, Appendix C, Table C-1.
6. EDS Calculation 0370-025-004, Rev. 0, dated 12/23/80.

- A) Aging was not considered a design base parameter for TMI-1.
- B) Normally closed valve, continued operability after RBIS closure is not required.
- C) Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

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COMPONENT MATERIALS EVALUATION SHEET

CORE FLOOD SYSTEM

Plant I.D. No.: LSB/CF-V-20B

Component: Limit Switch

Manufacturer: Micro Switch

Model No.: BZE6-2RN

THERMAL AGING

RADIATION

PARTS LIST	MATERIALS LIST	QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
Housing	Aluminum	Not Sensitive		Not Affected	
Plunger	Cadmium Plated Steel	Not Sensitive		Not Affected	
BATH TUB SEAL	Neoprene	17.6 Years	GPUN 1101X-5350-014	1 x 10 <sup>6</sup> RADS	EPRI NP 1558
SEAL BOOT	BUNA N	40 YEARS	EDS 0370-025-004	1 x 10 <sup>6</sup> RADS	" "
Screws	Brass	Not Sensitive		Not Affected	
Washer	Lead	Not Sensitive		Not Affected	
Spring	Steel	Not Sensitive		Not Affected	
Contact Block	ARC Resistant	<105°C for Con-	Modern Plastics	2 x 10 <sup>8</sup> RADS	ORNL, Oct. 1970
	Phenolic	tinuous use	Encyclopedia 1978-79		
Operating Head	General Purpose	<105°C for Con-	Modern Plastics	2 x 10 <sup>8</sup> RADS	ORNL, Oct. 1970
	Phenolic	tinuous use	Encyclopedia 1978-79		
Insulation	Mylar	<105°C for Con-	Modern Plastics	1 x 10 <sup>8</sup> RADS	ORNL, Oct. 1970
		tinuous use	Encyclopedia 1978-79		
Contact Plate	Beryllium Copper	Not Sensitive		Not Affected	
Contact Strip	Fine Silver	Not Sensitive		Not Affected	
Wire	Music Wire	Not Sensitive		Not Affected	

Materials & Parts List Reference:  
Micro Switch letter dated 10/21/81

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## SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Core Flood Plant ID No. SV/CF V20A	Operating Time	Note B	Continuous		3	-	None
Component: Solenoid	Temperature (°F)	Note 1	346° For 12 minutes	1	3	Test	None
Manufacture: ASCO	Pressure (PSIA)	Atmospheric	110 For 12 minutes	1	3	Test	None
Model Number: 206-3815 RVF	Relative Humidity (%)	Ambient	100 Accident	1	3	Test	None
Function: Containment Iso.	Chemical Spray (ph)	N/A	10	1	3	Test	None
Accuracy: Spec: N/A Demon: N/A	Radiation	$3.2 \times 10^5 R$	$2 \times 10^8 R$	1	3	Test	None
Service: Core Flood Tank 'A' Sample Valve CF-V-20A	Aging	Note A	40 years	1	2,3	Test & Arrhenius Model	None
Location: Auxiliary Bldg.	Submergence	N/A	N/A	1	-	-	None
Flood Level Elev: N/A Above Flood Level: N/A							

Documentation References:

GPUN TDR 282 AREA #13

GPUN Calc. 1101X-5350-033

ASCO Test Report APS-21678/TR Rev. A

Notes:

- A) Aging was not considered a design base parameter for TMI-1.
- B) Normally closed valve, continued operability after RBIS closure is not required.

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# SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Core Flood Plant ID No. SV/CF V20B	Operating Time	Note B	Continuous		3	-	None
Component: Solenoid	Temperature (°F)	Note 1	346° For 12 minutes	1	3	Test	None
Manufacture: ASCO	Pressure (PSIA)	Atmospheric	110 For 12 minutes	1	3	Test	None
Model Number: 206-3815 RVF	Relative Humidity (%)	Ambient	100 Accident	1	3	Test	None
Function: Containment Iso.	Chemical Spray (PM)	N/A	10	1	3	Test	None
Accuracy: Spec: N/A Demon: N/A	Radiation	3.2 x 10 <sup>5</sup> R	2 x 10 <sup>8</sup> R	1	3	Test	None
Service: Core Flood Tank 'A' Sample Valve CF-V-20B	Aging	Note A	40 years	1	2,3	Test & Arrhenius Model	None
Location: Auxiliary Bldg.	Submergence	N/A	N/A	1	-	-	None
Flood Level Elev: N/A Above Flood Level: N/A							

## Documentation References:

GPUN TDR 282 ARER #13  
 GPUN Calc. 1101X-5350-033  
 ASCO Test Report AQS-21678/TR REV A.

## Notes:

- Aging was not considered a design base parameter for TMI-1.
- Normally closed valve, continued operability after RBIS closure is not required.

NUCLEAR SERVICES CLOSED LOOP COOLING SYSTEM

LIST OF EFFECTIVE PAGES

<u>PAGE</u>	<u>REVISION</u>	<u>PAGE</u>	<u>REVISION</u>
i	0,1,2,3,4,5	15A	0
ii	0,3,4,5,6	15B	0,1,4,5,6
1	0,1,5	16	0,1,4,5,6
2	0,1,5	16A	0
3	0,1,5	16B	0,1,4,5, Deleted
4	0,1,4,5	17	0,1,4,5,6
5	0,1,4,5	17A	0
6	0,1,3,4,5	17B	0,1,4,5,6
7	0,1,3,4,5	18	0,1,4,5,6
7A	5	18A	0
8	0,1,4,5,6	18B	0,1,4,5,6
8A	0	19	0,1,4,5,6
8B	0,1,4,5,6	19A	0
9	0,1,4,5,6	19B	0,1,4,5, Deleted
9A	0	20	0,1,4,5,6
9B	0,1,4,5,6	20A	0
10	0,1,4,5,6	20B	0,1,4,5,6
10A	0	21	0,1,4,5,6
10B	0,1,4,5, Deleted	21A	0
11	0,1,4,5,6	21B	0,1,4,5,6
11A	0	22	0,1,4,5,6
11B	0,1,4,5,6	22A	0
12	0,1,4,5,6	22B	0,1,4,5, Deleted
12A	0	23	0,1,4,5,6
12B	0,1,4,5,6	23A	0
13	0,1,4,5,6	23B	0,1,4,5,6
13A	0	24	0,1,4,5,6
13B	0,1,4,5, Deleted	24A	0
14	0,1,4,5,6	24B	0,1,4,5,6
14A	0	25	0,1,4,5,6
14B	0,1,4,5,6	25A	0
15	0,1,4,5,6	25B	0,1,4,5, Deleted

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Nuclear Services Plant ID No. Closed Loop Clg. LSA/NSV-52A Component: Limit Switch Manufacture: Micro Switch Model Number: BZE6-2RN Function: R.B. Cooling Accuracy: Spec: N/A Demon: N/A Service: RBEC Unit 'A' Location: Fan Motor Cooler Inlet Intermediate Bldg.	Operating Time	Duration of Accident	Continuous	1	4, See Attached Evaluation	-	None
	Temperature (°F)	Profile 3	160	2	4, See Attached Evaluation	-	None
	Pressure (PSIA)	Profile 3	Atmospheric	2	4, See Attached Evaluation	-	None
	Relative Humidity (%)	100	Ambient	2	4, See Attached Evaluation	-	None
	Chemical Spray	N/A	N/A	-	-	-	None
	Radiation	Neg.	$1 \times 10^6$ R Note B	3	4,5	Comparison Test	None
	Aging	Note A	17.6 years Note B	-	4,6	Arrhenius Model	None
Flood Level Elev: N/A Above Flood Level: N/A	Submergence	N/A	N/A	-	-	-	None

Documentation References:

1. TMI-I Emergency Procedure 1202-6 c
2. EDS Nuclear Report No. 02-0370-1058, Rev. 2 dated 6/23/81.
3. Ltr. GAI/TMI-1CS/4350, Dose Rate Maps, dsated 1/16/81.
4. Micro Switch Catalog No. 40, Limit and Enclosed Switches.
5. I&E Bulletin /9-01B, Appendix C, Table C-1.
6. EDS Nuclear Calculation 0370-025-030, Rev. 0, dated 12/23/80.

Notes:

- A) Aging was not considered a design base parameter for TMI-1.
- B) Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

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COMPONENT MATERIALS EVALUATION SHEET

Plant I.D. No.: LSA/NS-V-52A  
NUCLEAR SERVICES CLOSED LOOP CLG SYS.  
Manufacturer: Micro Switch

Component: Limit Switch  
Model No.: BZE6-2RN

THERMAL AGING				RADIATION	
PARTS LIST	MATERIALS LIST	QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
Housing	Aluminum	Not Sensitive		Not Affected	
Plunger	Cadmium Plated Steel	Not Sensitive		Not Affected	
BATH TUB SEAL	Neoprene	17.6 Years	GPUN 1101X-5350-014	$1 \times 10^6$ RADS	EDRI NP 1558
SEAL BOOT	BUNA N	46 YEARS	RDS 0370-025-004	$1 \times 10^6$ RADS	"
Screws	Brass	Not Sensitive		Not Affected	
Washer	Lead	Not Sensitive		Not Affected	
Spring	Steel	Not Sensitive		Not Affected	
Contact Block	ARC Resistant	$< 105^\circ\text{C}$ for Con-	Modern Plastics	$2 \times 10^8$ RADS	ORNL, Oct. 1970
	Phenolic	tinuous use	Encyclopedia 1978-79		
Operating Head	General Purpose	$< 105^\circ\text{C}$ for Con-	Modern Plastics	$2 \times 10^8$ RADS	ORNL, Oct. 1970
	Phenolic	tinuous use	Encyclopedia 1978-79		
Insulation	Mylar	$< 105^\circ\text{C}$ for Con-	Modern Plastics	$1 \times 10^8$ RADS	ORNL, Oct. 1970
		tinuous use	Encyclopedia 1978-79		
Contact Plate	Beryllium Copper	Not Sensitive		Not Affected	
Contact Strip	Fine Silver	Not Sensitive		Not Affected	
Wire	Music Wire	Not Sensitive		Not Affected	

Materials & Parts List Reference:

Micro Switch Letter dated 10/21/81

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# SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
Nuclear Services System: Closed Loop Clg. Plant ID No. Component: LSB/NSV-52A Limit Switch Manufacture: Micro Switch Model Number: BZE6-2RN Function: R.B. Cooling Accuracy: Spec: N/A Demon: N/A Service: RBEC Unit 'A' Fan Motor Cooler Inlet Location: Intermediate Bldg. Flood Level Elev: N.A. Above Flood Level: N.A.	Operating Time	Duration of Accident	Continuous	1	4, See Attached Evaluation	-	None
	Temperature (°F)	Profile 3	160	2	4, See Attached Evaluation	-	None 1
	Pressure (PSIA)	Profile 3	Atmospheric	2	4, See Attached Evaluation	-	None 1
	Relative Humidity (%)	100	Ambient	2	4, See Attached Evaluation	-	None
	Chemical Spray	N/A	N/A	-	-	-	None
	Radiation	Neg.	1 x 10 <sup>6</sup> R Note B	3	4, 5	Comparison Test	None
	Aging	Note A	17.6 years Note B	-	4, 6	Arrhenius Model	None
	Submergence	N/A	N/A	-	-	-	None

## Documentation References:

1. TMI-I Emergency Procedure 1202-6, C
2. EDS Nuclear Report No. 02-0370-1058, Rev. 2, dated 6/23/81
3. Ltr. GAI/TMI-1CS/4350 Dose Rate Maps, dated 1/16/81.
4. Micro Switch Catalog No. 40, Limit and Enclosed Switches.
5. I&E Bulletin 79-01B, Appendix C, Table C-1.
6. EDS Nuclear Calculation 0370-025-030, Rev. 0, dated 12/25/80.

## Notes:

- A) Aging was not considered a design base parameter for TMI-1.
- B) Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

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COMPONENT MATERIALS EVALUATION SHEET

Plant I.D. No.: LSB/NS-V-52A  
NUCLEAR SERVICES CLOSED LOOP CLG SYS.  
Manufacturer: Micro Switch

Component: Limit Switch  
Model No.: BZE6-2RN

THERMAL AGING

RADIATION

PARTS LIST	MATERIALS LIST	QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
Housing	Aluminum	Not Sensitive		Not Affected	
Plunger	Cadmium Plated Steel	Not Sensitive		Not Affected	
BATHTUB SEAL	Neoprene	17.6 Years	GPVN CAL: 1101X-5356-014	1 x 10 <sup>6</sup> RADS	EPRI NP 1558
SEAL Boot	BUNA N	40 YEARS	EDS CAL: 0370-025-004	1 x 10 <sup>6</sup> RADS	"
Screws	Brass	Not Sensitive		Not Affected	
Washer	Lead	Not Sensitive		Not Affected	
Spring	Steel	Not Sensitive		Not Affected	
Contact Block	ARC Resistant	< 105°C for Con-	Modern Plastics	2 x 10 <sup>8</sup> RADS	ORNL, Oct. 1970
	Phenolic	tinuous use	Encyclopedia 1978-79		
Operating Head	General Purpose	< 105°C for Con-	Modern Plastics	2 x 10 <sup>8</sup> RADS	ORNL, Oct. 1970
	Phenolic	tinuous use	Encyclopedia 1978-79		
Insulation	Mylar	< 105°C for Con-	Modern Plastics	1 x 10 <sup>8</sup> RADS	ORNL, Oct. 1970
		tinuous use	Encyclopedia 1978-79		
Contact Plate	Beryllium Copper	Not Sensitive		Not Affected	
Contact Strip	Fine Silver	Not Sensitive		Not Affected	
Wire	Music Wire	Not Sensitive		Not Affected	

Materials & Parts List Reference:

Micro Switch Letter dated 10/21/81

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Nuclear Services Plant ID No. Closed Loop Clg. SV/NSV 52 A Component: Solenoid Valve Manufacture: ASCO Model Number: 206-3815 RVF Function: R.B. Cooling Accuracy: Spec: N/A Demon: N/A Service: RBEC Unit 'A' Fan Motor Cooler Inlet Location: Intermediate Bldg. Flood Level Elev: N/A Above Flood Level: N/A	Operating Time	Duration of Accident	Continuous	1	4	-	None
	Temperature (°F)	Note 2	346 FOR 12 MINUTES	2	4	Test	None
	Pressure (PSIA)	Note 2	110 FOR 12 MINUTES	2	4	Test	None
	Relative Humidity (%)	Note 2	100 Acc. dat	2	4	Test	None
	Chemical Spray (PH)	N/A	10	2	4	Test	None
	Radiation	Neg.	$2 \times 10^8$ R	2	4	Test	None
	Aging	Note A	40 years	2	3,4	Arrhenius Model & Test	None
	Submergence	N/A	N/A	2	-	-	None

## Documentation References:

1. TMI-1 Emergency Procedure 1202-6C
2. GPUN TDR 282 AREA #17
3. GPUN Calculation 1101X-5350-033
4. ASCO Test Report APS-21678/TR Rev. A

## Notes:

- A) Aging was not considered a design base parameter for TMI-1.

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## SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
Nuclear Services System: Closed Loop Clg. Plant ID No. LSA/NSV-52B Component: Limit Switch Manufacture: Micro Switch Model Number: BZE6-2RN Function: R.B. Cooling Accuracy: Spec: N/A Demon: N/A Service: RBEC Unit 'B' Fan Motor Cooler Inlet Location: Intermediate Bldg.	Operating Time	Duration of Accident	Continuous	1	4, See Attached Evaluation	-	None
	Temperature (°F)	Profile 3	160	2	4, See Attached Evaluation	-	None
	Pressure (PSIA)	Profile 3	Atmospheric	2	4, See Attached Evaluation	-	None
	Relative Humidity (%)	100	Ambient	2	4, See Attached Evaluation	-	None
	Chemical Spray	N/A	N/A	-	-	-	None
	Radiation	Neg.	$1 \times 10^6$ R Note B	3	4,5	Comparison Test	None
	Aging	Note A	17.6 years Note 2	-	4,6	Arrhenius Model	None
Flood Level Elev: N.A. Above Flood Level: N.A.	Submergence	N/A	N/A	-	-	-	None

Documentation References:

1. TMI-I Emergency Procedure 1202-6 c
2. EDS Nuclear Report No. 02-0370-1058, Rev. 2, dated 6/23/81.
3. Ltr. GAI/ MI-1CS/4350 Dose Rate Maps, dated 1/16/81
4. Micro Switch Catalog No. 40, Limit and Enclosed Switches.
5. I&E Bulletin 79-01B, Appendix C, Table C-1.
6. EDS Nuclear Calculation 0370-025-030, Rev. 0, dated 12/23/80.

Notes:

- A) Aging was not considered a design base parameter for TMI-1.
- B) Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

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COMPONENT MATERIALS EVALUATION SHEET

Plant I.D. No.: LSA/NS-V-52B  
NUCLEAR SERVICES CLOSED LOOP CLG SYS.  
Manufacturer: Micro Switch

Component: Limit Switch  
Model No.: BZE6-2RN

THERMAL AGING				RADIATION	
PARTS LIST	MATERIALS LIST	QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
Housing	Aluminum	Not Sensitive		Not Affected	
Plunger	Cadmium Plated Steel	Not Sensitive		Not Affected	
BATH TUB SEAL	Neoprene	17.6 Years	GPUH CAL. 1101X-5350-014	1 x 10 <sup>6</sup> RADS	EPRE NP1558
SEAL BOOT	BUNA N	40 YEARS	EDS CAL 0370-025-004	1 x 10 <sup>6</sup> RADS	EPRE NP1558
Screws	Brass	Not Sensitive		Not Affected	
Washer	Lead	Not Sensitive		Not Affected	
Spring	Steel	Not Sensitive		Not Affected	
Contact Block	ARC Resistant	<105°C for Con-	Modern Plastics	2 x 10 <sup>8</sup> RADS	ORNL, Oct. 1970
	Phenolic	tinuous use	Encyclopedia 1978-79		
Operating Head	General Purpose	<105°C for Con-	Modern Plastics	2 x 10 <sup>8</sup> RADS	ORNL, Oct. 1970
	Phenolic	tinuous use	Encyclopedia 1978-79		
Insulation	Mylar	<105°C for Con-	Modern Plastics	1 x 10 <sup>8</sup> RADS	ORNL, Oct. 1970
		tinuous use	Encyclopedia 1978-79		
Contact Plate	Beryllium Copper	Not Sensitive		Not Affected	
Contact Strip	Fine Silver	Not Sensitive		Not Affected	
Wire	Music Wire	Not Sensitive		Not Affected	

Materials & Parts List Reference:

Micro Switch Letter dated 10/21/81

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
Nuclear Services System: Closed Loop Clg. Plant ID No. Component: LSB/NSV-52B Limit Switch Manufacture: Micro Switch Model Number: BZE6-2RN Function: R.B. Cooling Accuracy: Spec: N/A Demon: N/A Service: RBEC Unit 'B' Fan Motor Cooler Inlet Location: Intermediate Bldg. Flood Level Elev: N.A. Above Flood Level: N.A.	Operating Time	Duration of Accident	Continuous	1	4, See Attached Evaluation	-	None
	Temperature (°F)	Profile 3	160	2	4, See Attached Evaluation	-	None
	Pressure (PSIA)	Profile 3	Atmospheric	2	4, See Attached Evaluation	-	None
	Relative Humidity (%)	100	Ambient	2	4, See Attached Evaluation	-	None
	Chemical Spray	N/A	N/A	-	-	-	None
	Radiation	Neg.	$1 \times 10^4$ R Note B	3	4, 5	Comparison Test	None
	Aging	Note A	17.6 years Note B	-	4, 6	Arrhenius Model	None
	Submergence	N/A	N/A	-	-	-	None

Documentation References:

1. TMI-I Emergency Procedure 1202-6C
2. EDS Nuclear Report No. 02-0370-1058, Rev. Z., dated 6/23/81
3. Ltr. GAI/TMI-1CS/4350 Dose Rate Maps, dated 1/16/81
4. Micro Switch Catalog No. 40, Limit and Enclosed Switches.
5. I&E Bulletin 79-01B, Appendix C, Table C-1.
6. EDS Nuclear Calculation 03/0-025-030, REV. 0, dated 12/23/80.

Notes:

- A) Aging was not considered a design base parameter for TMI-1.
- B) Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

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COMPONENT MATERIALS EVALUATION SHEET

NUCLEAR SERVICES CLOSED LOOP CLG SYS.

Plant I.D. No.: LSB/NS-V-52B

Component: Limit Switch

Manufacturer: Micro Switch

Model No.: BZE6-2RN

THERMAL AGING				RADIATION	
PARTS LIST	MATERIALS LIST	QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
Housing	Aluminum	Not Sensitive		Not Affected	
Plunger	Cadmium Plated Steel	Not Sensitive		Not Affected	
BATH TUB SEAL	Neoprene	17.6 Years	GPVN CAL 1101X-5350-014	$1 \times 10^6$ RADS	EPRI NP 1558
SEAL BOOT		40 years	EOS CAL 0370-025-004	$1 \times 10^6$ RADS	"
Screws	Brass	Not Sensitive		Not Affected	
Washer	Lead	Not Sensitive		Not Affected	
Spring	Steel	Not Sensitive		Not Affected	
Contact Block	ARC Resistant	$\leq 105^\circ\text{C}$ for Continuous use	Modern Plastics Encyclopedia 1978-79	$2 \times 10^8$ RADS	ORNL, Oct. 1970
Operating Head	Phenolic	$\leq 105^\circ\text{C}$ for Continuous use	Modern Plastics Encyclopedia 1978-79	$2 \times 10^8$ RADS	ORNL, Oct. 1970
Insulation	General Purpose Phenolic	$\leq 105^\circ\text{C}$ for Continuous use	Modern Plastics Encyclopedia 1978-79	$1 \times 10^8$ RADS	ORNL, Oct. 1970
Contact Plate	Mylar	$\leq 105^\circ\text{C}$ for Continuous use	Modern Plastics Encyclopedia 1978-79		
Contact Strip	Beryllium Copper	Not Sensitive		Not Affected	
Wire	Fine Silver	Not Sensitive		Not Affected	
	Music Wire	Not Sensitive		Not Affected	

Materials & Parts List Reference:

Micro Switch Letter dated 10/21/81

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Nuclear Services Plant ID No. Closed Loop Clg. Component: SV/NSV 52 B Solenoid Valve Manufacture: ASCO Model Number: 206-3815 RVF Function: R.B. Cooling Accuracy: Spec: N/A Demon: N/A Service: RBEC Unit "B" Fan Motor Cooler Inlet Location: Intermediate Bldg. Flood Level Elev: N/A Above Flood Level: N/A	Operating Time	Duration of Accident	Continuous	1	4	-	None
	Temperature (°F)	Note 2	346 For 20 minutes	2	4	Test	None
	Pressure (PSIA)	Note 2	110 For 20 minutes	2	4	Test	None
	Relative Humidity (%)	Note 2	100 Ambient	2	4	Test	None
	Chemical Spray (PH)	N/A	10	2	4	Test	None
	Radiation	Neg.	$2 \times 10^8 R$	2	4	Test	None
	Aging	Note A	40 years	2	3,4	Arrhenius Model & Test	None
	Submergence	N/A	N/A	2	-	-	None

## Documentation References:

TMI-1 Emergency Procedure 1202-6C  
 GPUN TDR 282 AREA 17  
 GPUN Calculation 1101X-5350-033  
 ASCO Test Report AQS-21678/TR Rev. A

## Notes:

- A) Aging was not considered a design base parameter for TMI-1.

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
Nuclear Services System: Closed Loop Clg. Plant ID No. Component: LSA/NSV-52C Limit Switch Manufacture: Micro Switch Model Number: BZE6-2RN Function: R.B. Cooling Accuracy: Spec: N/A Demon: N/A Service: RBEC Unit 'C' Fan Motor Cooler Inlet Location: Intermediate Bldg. Flood Level Elev: N.A. Above Flood Level: N.A.	Operating Time	Duration of Accident	Continuous	1	4, See Attached Evaluation	-	None
	Temperature (°F)	Profile 3	160	2	4, See Attached Evaluation	-	None
	Pressure (PSIA)	Profile 3	Atmospheric	2	4, See Attached Evaluation	-	None
	Relative Humidity (%)	100	Ambient	2	4, See Attached Evaluation	-	None
	Chemical Spray	N/A	N/A	-	-	-	None
	Radiation	Neg.	1 x 10 <sup>6</sup> R Note B	3	4, 5	Comparison Test	None
	Aging	Note A	17.6 years Note B	-	4, 6	Arrhenius Model	None
	Submergence	N/A	N/A	-	-	-	None

Documentation References:

1. TMI-1 Emergency Procedure 1202-6 c
2. EDS Nuclear Report No. 02-0370-1058, Rev. 2, dated 6/27/81.
3. Ltr. GAI/TMI-1CS/4350 Dose Rate Maps, dated 1/16/81
4. Micro Switch Catalog No. 40, Limit and Enclosed Switches.
5. IQE Bulletin 79-01B, Appendix C, Table C-1.
6. EDS Nuclear Calculation 0370-025-030, Rev. 0, dated 12/23/80.

Notes:

- A) Aging was not considered a design base parameter for TMI-1.
- B) Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

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Plant I.D. No.: LSA/NS-V-52C  
NUCLEAR SERVICES CLOSED LOOP CLG SYS.  
Manufacturer: Micro Switch

Component: Limit Switch  
Model No.: BZE6-2RN

THERMAL AGING				RADIATION	
PARTS LIST	MATERIALS LIST	QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
Housing	Aluminum	Not Sensitive		Not Affected	
Plunger	Cadmium Plated Steel	Not Sensitive		Not Affected	
BATH TUB SEAL	Neoprene	17.6 Years	GPUN CAL 1101X-5350-014	1 x 10 <sup>6</sup> RADS	EPRI NP 1558
SEAL BOOT	BUNA N	40 YEARS	EDS CAL 0370-025-004	1 x 10 <sup>6</sup>	EPRI NP 1558
Screws	Brass	Not Sensitive		Not Affected	
Washer	Lead	Not Sensitive		Not Affected	
Spring	Steel	Not Sensitive		Not Affected	
Contact Block	ARC Resistant	<105°C for Con-	Modern Plastics	2 x 10 <sup>8</sup> RADS	ORNL, Oct. 1970
	Phenolic	tinuous use	Encyclopedia 1978-79		
Operating Head	General Purpose	<105°C for Con-	Modern Plastics	2 x 10 <sup>8</sup> RADS	ORNL, Oct. 1970
	Phenolic	tinuous use	Encyclopedia 1978-79		
Insulation	Mylar	<105°C for Con-	Modern Plastics	1 x 10 <sup>8</sup> RADS	ORNL, Oct. 1970
		tinuous use	Encyclopedia 1978-79		
Contact Plate	Beryllium Copper	Not Sensitive		Not Affected	
Contact Strip	Fine Silver	Not Sensitive		Not Affected	
Wire	Music Wire	Not Sensitive		Not Affected	

Materials & Parts List Reference:

Micro Switch Letter dated 10/21/81

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## SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
Nuclear Services System: Closed Loop Clg. Plant ID No. Component: LSB/NSV-52C Limit Switch Manufacture: Micro Switch Model Number: BZE6-2RN Function: R.B. Cooling Accuracy: Spec: N/A Demon: N/A Service: RBEC Unit 'C' Fan Motor Cooler Inlet Location: Intermediate Bldg. Flood Level Elev: N.A. Above Flood Level: N.A.	Operating Time	Duration of Accident	Continuous	1	4, See Attached Evaluation	-	None
	Temperature (°F)	Profile 3	160	2	4, See Attached Evaluation	-	None
	Pressure (PSIA)	Profile 3	Atmospheric	2	4, See Attached Evaluation	-	None
	Relative Humidity (%)	100	Ambient	2	4, See Attached Evaluation	-	None
	Chemical Spray	N/A	N/A	-	-	-	None
	Radiation	Neg.	1 x 10 <sup>6</sup> R Note B	3	4,5	Comparison Test	None
	Aging	Note A	17.6 years Note B	-	4,6	Arrhenius Model	None
	Submergence	N/A	N/A	-	-	-	None

Documentation References:

1. TMI-I Emergency Procedure 1202-6 C
2. EDS Nuclear Report No. 02-0370-1058, Rev. 2, dated 6/23/81.
3. Ltr. GAI/TMI-1CS/4350 Dose Rate Maps, dated 1/16/81.
4. Micro Switch Catalog No. 40, Limit and Enclosed Switches.
5. I&E Bulletin 79-01B, Appendix C, Table C-1.
6. EDS Nuclear Calculation 0370-025-030, Rev. 0, dated 12/23/80.

Notes:

- A) Aging was not considered a design base parameter for TMI-1.
- B) Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

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COMPONENT MATERIALS EVALUATION SHEET

Plant I.D. No.: LSB/NS-V-52C  
NUCLEAR SERVICES CLOSED LOOP CLG SYS.  
Manufacturer: Micro Switch

Component: Limit Switch  
Model No.: BZE6-2RN

THERMAL AGING				RADIATION	
PARTS LIST	MATERIALS LIST	QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
Housing	Aluminum	Not Sensitive		Not Affected	
Plunger	Cadmium Plated Steel	Not Sensitive		Not Affected	
BATHTUB SEAL	Neoprene	17.6 Years	GPUN CAL 1101X-S750-014	1 x 10 <sup>6</sup> RADS	EPRI NP 1558
SEAL BOOT	BUNA N	40 YEARS	NDS CAL 0370-025-004		"
Screws	Brass	Not Sensitive		Not Affected	
Washer	Lead	Not Sensitive		Not Affected	
Spring	Steel	Not Sensitive		Not Affected	
Contact Block	ARC Resistant	< 105°C for Con-	Modern Plastics	2 x 10 <sup>8</sup> RADS	ORNL, Oct. 1970
	Phenolic	tinuous use	Encyclopedia 1978-79		
Operating Head	General Purpose	< 105°C for Con-	Modern Plastics	2 x 10 <sup>8</sup> RADS	ORNL, Oct. 1970
	Phenolic	tinuous use	Encyclopedia 1978-79		
Insulation	Mylar	< 105°C for Con-	Modern Plastics	1 x 10 <sup>8</sup> RADS	ORNL, Oct. 1970
		tinuous use	Encyclopedia 1978-79		
Contact Plate	Beryllium Copper	Not Sensitive		Not Affected	
Contact Strip	Fine Silver	Not Sensitive		Not Affected	
Wire	Music Wire	Not Sensitive		Not Affected	

Materials & Parts List Reference:

Micro Switch Letter dated 10/21/81

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Nuclear Services Plant ID No. Closed Loop Clg. SV/NSV 52 C Component: Solenoid Valve Manufacture: ASCO	Operating Time	Duration of Accident	Continuous	1	4	-	None
	Temperature (°F)	Note 2	346 for 20 minutes	2	4	Test	None
	Pressure (PSIA)	Note 2					
Model Number: 206-3815 RVF Function: R.B. Cooling Accuracy: Spec: N/A Demon: N/A Service: RBEC Unit 'C' Fan Motor Cooler Inlet Location: Intermediate Bldg. Flood Level Elev: N/A Above Flood Level: N/A	Relative Humidity (%)	Note 2	100 Acc. Luf	2	4	Test	None
	Chemical Spray (PH)	N/A	10	2	4	Test	None
	Radiation	Neg.	$2 \times 10^8 R$	2	4	Test	None
	Aging	Note A	40 years	2	3,4	Arrhenius Model & Test	None
	Submergence	N/A	N/A	2	-	-	None

## Documentation References:

## Notes:

TMI-1 Emergency Procedure 1202-6C  
 GPUN TDR 282 ARKA #17  
 GPUN Calculation 1101X-5350-033  
 ASCO Test Report AQS-21678/TR REV. A

A) Aging was not considered a design base parameter  
 for TMI-1.

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
Nuclear Services System: Closed Loop Clg. Plant ID No. LSA/NSV-53A Component: Limit Switch Manufacture: Micro Switch  Model Number: BZE6-2RN  Function: R.B. Cooling Accuracy: Spec: N/A Demon: N/A Service: RBEC Unit 'A' Fan Motor Cooler Outlet Location: Intermediate Bldg.  Flood Level Elev: N.A. Above Flood Level: N.A.	Operating Time	Duration of Accident	Continuous	1	4, See Attached Evaluation	-	None
	Temperature (°F)	Profile 3	160	2	4, See Attached Evaluation	-	None
	Pressure (PSIA)	Profile 3	Atmospheric	2	4, See Attached Evaluation	-	None
	Relative Humidity (%)	100	Ambient	2	4, See Attached Evaluation	-	None
	Chemical Spray	N/A	N/A	-	-	-	None
	Radiation	Neg.	$1 \times 10^4$ R Note B	3	4,5	Comparison Test	None
	Aging	Note A	17.6 years Note B	-	4,6	Arrhenius Model	None
	Submergence	N/A	N/A	-	-	-	None

Documentation References:

1. TMI-I Emergency Procedure 1202-6c
2. EDS Nuclear Report No. 02-0370-1058, Rev. 2, dated 6/23/81.
3. Ltr. GAI/TMI-1CS/4350 Dose Rate Maps, dated 1/16/81.
4. Micro Switch Catalog No. 40, Limit and Enclosed Switches.
5. I&E Bulletin 79-91B, Appendix C, Table C-1.
6. EDS Nuclear Calculation 0370-025-030, Rev. 0, dated 12/23/80.

Notes:

- A) Aging was not considered a design base parameter for TMI-1.
- B) Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

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Plant I.D. No.: LSA/NS-V-53A  
NUCLEAR SERVICES CLOSED LOOP CLG SYS.  
Manufacturer: Micro Switch

Component: Limit Switch  
Model No.: BZE6-2RN

THERMAL AGING

RADIATION

PARTS LIST	MATERIALS LIST	QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
Housing	Aluminum	Not Sensitive		Not Affected	
Plunger	Cadmium Plated Steel	Not Sensitive		Not Affected	
BATH TUB SEAL	Neoprene	17.6 Years	GPUN CAL 1101X-5350-014	1 x 10 <sup>6</sup> RADS	EPRI NP 1558
SEAL BOOT	BUNA N	40 YEARS	EDS CAL 0370-025-004	1 x 10 <sup>6</sup> RADS	"
Screws	Brass	Not Sensitive		Not Affected	
Washer	Lead	Not Sensitive		Not Affected	
Spring	Steel	Not Sensitive		Not Affected	
Contact Block	ARC Resistant	<105°C for Con-	Modern Plastics	2 x 10 <sup>8</sup> RADS	ORNL, Oct. 1970
	Phenolic	tinuous use	Encyclopedia 1978-79		
Operating Head	General Purpose	<105°C for Con-	Modern Plastics	2 x 10 <sup>8</sup> RADS	ORNL, Oct. 1970
	Phenolic	tinuous use	Encyclopedia 1978-79		
Insulation	Mylar	<105°C for Con-	Modern Plastics	1 x 10 <sup>8</sup> RADS	ORNL, Oct. 1970
		tinuous use	Encyclopedia 1978-79		
Contact Plate	Beryllium Copper	Not Sensitive		Not Affected	
Contact Strip	Fine Silver	Not Sensitive		Not Affected	
Wire	Music Wire	Not Sensitive		Not Affected	

Materials & Parts List Reference:

Micro Switch Letter dated 10/21/81

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
Nuclear Services System: Closed Loop Clg. Plant ID No. Component: LSR/NSV-53A Limit Switch Manufacture: Micro Switch Model Number: BZE6-2RN Function: R.B. Cooling Accuracy: Spec: N/A Demon: N/A Service: RBEC Unit 'A' Fan Motor Cooler Outlet Location: Intermediate Bldg. Flood Level Elev: N.A. Above Flood Level: N.A.	Operating Time	Duration of Accident	Continuous	1	4, See Attached Evaluation	-	None
	Temperature (°F)	Profile 3	160	2	4, See Attached Evaluation	-	None
	Pressure (PSIA)	Profile 3	Atmospheric	2	4, See Attached Evaluation	-	None
	Relative Humidity (%)	100	Ambient	2	4, See Attached Evaluation	-	None
	Chemical Spray	N/A	N/A	-	-	-	None
	Radiation	Neg.	1 x 10 <sup>-6</sup> R Note B	3	4,5	Comparison Test	None
	Aging	Note A	17.6 years Note B	-	4,6	Arrhenius Model	None
	Submergence	N/A	N/A	-	-	-	None

Documentation References:

1. TMI-I Emergency Procedure 1202-6c
2. EDS Nuclear Report No. 02-0370-1058, Rev. Z, dated 6/23/81.
3. Ltr. GAI/TMI-1CS/4350 Dose Rate Maps, dated 1/16/81
4. Micro Switch Catalog No. 40, Limit and Enclosed Switches.
5. IGE Bulletin 79-01B, Appendix C, Table C-1.
6. EDS Nuclear Calculation 0370-025-030, Rev. 0, dated 12/23/80.

Notes:

- A) Aging was not considered a design base parameter for TMI-1.
- B) Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

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Plant I.D. No.: LSB/NS-V-53A  
NUCLEAR SERVICES CLOSED LOOP CLG SYS.  
Manufacturer: Micro Switch

Component: Limit Switch  
Model No.: BZE6-2RN

THERMAL AGING				RADIATION	
PARTS LIST	MATERIALS LIST	QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
Housing	Aluminum	Not Sensitive		Not Affected	
Plunger	Cadmium Plated Steel	Not Sensitive		Not Affected	
BATH TUB SEAL	Neoprene	17.6 Years	GPDM CAL 1101X-5350-014	1 x 10 <sup>6</sup> RADS	EPRI NP 1558
SEAL BOOT	BUNA N	40 YEARS	EDS CAL 0370-025-004	1 x 10 <sup>6</sup> RADS	"
Screws	Brass	Not Sensitive		Not Affected	
Washer	Lead	Not Sensitive		Not Affected	
Spring	Steel	Not Sensitive		Not Affected	
Contact Block	ARC Resistant	< 105°C for Con-	Modern Plastics	2 x 10 <sup>8</sup> RADS	ORNL, Oct. 1970
	Phenolic	tinuous use	Encyclopedia 1978-79		
Operating Head	General Purpose	< 105°C for Con-	Modern Plastics	2 x 10 <sup>8</sup> RADS	ORNL, Oct. 1970
	Phenolic	tinuous use	Encyclopedia 1978-79		
Insulation	Mylar	< 105°C for Con-	Modern Plastics	1 x 10 <sup>8</sup> RADS	ORNL, Oct. 1970
		tinuous use	Encyclopedia 1978-79		
Contact Plate	Beryllium Copper	Not Sensitive		Not Affected	
Contact Strip	Fine Silver	Not Sensitive		Not Affected	
Wire	Music Wire	Not Sensitive		Not Affected	

Materials & Parts List Reference:

Micro Switch Letter dated 10/21/81

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Nuclear Services Plant ID No. Closed Loop Clg. SV/NSV 53A Component: Solenoid Valve Manufacture: ASCO Model Number: 206-3815 RVF Function: R.B. Cooling Accuracy: Spec: N/A Demon: N/A Service: RBEC Unit 'A' Fan Motor Cooler Inlet Location: Intermediate Bldg. Flood Level Elev: N/A Above Flood Level: N/A	Operating Time	Duration of Accident	Continuous	1	4	-	None
	Temperature (°F)	Note 2	346 for 20 minutes	2	4	Test	None
	Pressure (PSIA)	Note 2	110 for 20 minutes	2	4	Test	None
	Relative Humidity (%)	Note 2	100 accident	2	4	Test	None
	Chemical Spray (PH)	N/A	10	2	4	Test	None
	Radiation	Neg.	$2 \times 10^8 R$	2	3,4	Test	None
	Aging	Note A	40 years	2	3,4	Arrhenius Model & Test	None
	Submergence	N/A	N/A	2	-	-	None

## Documentation References:

1. TMI-1 Emergency Procedure 1202-6C
2. GPUN TDR 282 ARER #17
3. GPUN Calculation 1101X-5350-033
4. ASCO Test Report AQS-21678/TR Rev. A

## Notes:

- A) Aging was not considered a design base parameter for TMI-1.

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
Nuclear Services System: Closed Loop Clg. Plant ID No. Component: ISA/MSV-53B Limit Switch Manufacture: Micro Switch Model Number: BZE6-2RN Function: R.B. Cooling Accuracy: Spec: N/A Demon: N/A Service: RBEC Unit 'B' Fan Motor Cooler Outlet Location: Intermediate Bldg. Flood Level Elev: N.A. Above Flood Level: N.A.	Operating Time	Duration of Accident	Continuous	1	4, See Attached Evaluation	-	None
	Temperature (°F)	Profile 3	160	2	4, See Attached Evaluation	-	None
	Pressure (PSIA)	Profile 3	Atmospheric	2	4, See Attached Evaluation	-	None
	Relative Humidity (%)	100	Ambient	2	4, See Attached Evaluation	-	None
	Chemical Spray	N/A	N/A	-	-	-	None
	Radiation	Neg.	$1 \times 10^6$ R Note B	3	4,5	Comparison Test	None
	Aging	Note A	17.6 years Note B	-	4,6	Arrhenius Model	None
	Submergence	N/A	N/A	-	-	-	None

Documentation References:

1. TMI-I Emergency Procedure 1202-6c
2. FDS Nuclear Report No. 02-0370-1058, Rev. Z, dated 6/23/81
3. LTR. GAI/TMI-1CS/4350 Dose Rate Maps, dated 1/16/81.
4. Micro Switch Catalog No. 40, Limit and Enclosed Switches.
5. I&E Bulletin 79-01B, Appendix C, Table C-1.
6. EDS Nuclear Calculation 0370-025-030, Rev. 0, dated 12/23/80.

Notes:

- A) Aging was not considered a design base parameter for TMI-1.
- B) Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

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Plant I.D. No.: LSA/NS-V-53B  
NUCLEAR SERVICES CLOSED LOOP CLG SYS.  
Manufacturer: Micro Switch

Component: Limit Switch  
Model No.: BZE6-2

THERMAL AGING				RADIATION	
PARTS LIST	MATERIALS LIST	QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
Housing	Aluminum	Not Sensitive		Not Affected	
Plunger	Cadmium Plated Steel	Not Sensitive		Not Affected	
BATH TUB SEAL	Neoprene	17.6 Years	GPUN CAL 1101X-535U-014	1 x 10 <sup>6</sup> RADS	KPII HP 1558
SEAL BOOT	BUNA N	40 YEARS	EDS CAL 0370-025-004	1 x 10 <sup>6</sup> RADS	"
Screws	Brass	Not Sensitive		Not Affected	
Washer	Lead	Not Sensitive		Not Affected	
Spring	Steel	Not Sensitive		Not Affected	
Contact Block	ARC Resistant	<105°C for Con-	Modern Plastics	2 x 10 <sup>8</sup> RADS	ORNL, Oct. 1970
	Phenolic	tinuous use	Encyclopedia 1978-79		
Operating Head	General Purpose	<105°C for Con-	Modern Plastics	2 x 10 <sup>8</sup> RADS	ORNL, Oct. 1970
	Phenolic	tinuous use	Encyclopedia 1978-79		
Insulation	Mylar	<105°C for Con-	Modern Plastics	1 x 10 <sup>8</sup> RADS	ORNL, Oct. 1970
		tinuous use	Encyclopedia 1978-79		
Contact Plate	Beryllium Copper	Not Sensitive		Not Affected	
Contact Strip	Fine Silver	Not Sensitive		Not Affected	
Wire	Music Wire	Not Sensitive		Not Affected	

Materials & Parts List Reference:

Micro Switch Letter dated 10/21/81

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
Nuclear Services System: Closed Loop Clg. Plant ID No. Component: LSB/NSV-53B Limit Switch Manufacture: Micro Switch Model Number: BZE6-2RN Function: R.B. Cooling Accuracy: Spec: N/A Demon: N/A Service: RBEC Unit 'B' Fan Motor Cooler Outlet Location: Intermediate Bldg. Flood Level Elev: N.A. Above Flood Level: N.A.	Operating Time	Duration of Accident	Continuous	1	4, See Attached Evaluation	-	None
	Temperature (°F)	Profile 3	160	2	4, See Attached Evaluation	-	None
	Pressure (PSIA)	Profile 3	Atmospheric	2	4, See Attached Evaluation	-	None
	Relative Humidity (%)	100	Ambient	2	4, See Attached Evaluation	-	None
	Chemical Spray	N/A	N/A	-	-	-	None
	Radiation	Neg.	<sup>1</sup> x 10 <sup>6</sup> R Note B	3	4,5	Comparison Test	None
	Aging	Note A	17.6 years Note B	-	4,6	Arrhenius Model	None
	Submergence	N/A	N/A	-	-	-	None

Documentation References:

1. TMI-I Emergency Procedure 1202-6 c
2. FDS Nuclear Report No. 02-0370-1058, Rev. Z dated 6/23/81
3. Ltr. GAI/TMI-ICS/4350 Dose Rate Maps, dated 1/16/81.
4. Micro Switch Catalog No. 40, Limit and Enclosed Switches.
5. I&E Bulletin 79-01B, Appendix C, Table C-1.
6. EDS Nuclear Calculation 03/0-025-030, Rev. 0, dated 12/23/80.

Notes:

- A) Aging was not considered a design base parameter for TMI-1.
- B) Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

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COMPONENT MATERIALS EVALUATION SHEET

Plant I.D. No.: LSB/NS-V-53B  
NUCLEAR SERVICES CLOSED LOOP CLG SYS.  
Manufacturer: Micro Switch

Component: Limit Switch  
Model No.: BZE6-2

THERMAL AGING				RADIATION	
PARTS LIST	MATERIALS LIST	QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
Housing	Aluminum	Not Sensitive		Not Affected	
Plunger	Cadmium Plated Steel	Not Sensitive		Not Affected	
BATH TUB SEAL	Neoprene	17.6 Years	GPUN CAL 1101X-5350-014	1 x 10 <sup>6</sup> RADS	IPRI NP 1558
SEAL BOOT	BUNA N	40 YEARS	EDS CAL 0370-025-004	1 x 10 <sup>6</sup> RADS	"
Screws	Brass	Not Sensitive		Not Affected	
Washer	Lead	Not Sensitive		Not Affected	
Spring	Steel	Not Sensitive		Not Affected	
Contact Block	ARC Resistant	<105°C for Con-	Modern Plastics	2 x 10 <sup>8</sup> RADS	ORNL, Oct. 1970
	Phenolic	tinuous use	Encyclopedia 1978-79		
Operating Head	General Purpose	<105°C for Con-	Modern Plastics	2 x 10 <sup>8</sup> RADS	ORNL, Oct. 1970
	Phenolic	tinuous use	Encyclopedia 1978-79		
Insulation	Mylar	<105°C for Con-	Modern Plastics	1 x 10 <sup>8</sup> RADS	ORNL, Oct. 1970
		tinuous use	Encyclopedia 1978-79		
Contact Plate	Beryllium Copper	Not Sensitive		Not Affected	
Contact Strip	Fine Silver	Not Sensitive		Not Affected	
Wire	Music Wire	Not Sensitive		Not Affected	

Materials & Parts List Reference:

Micro Switch Letter dated 10/21/81

CONTINUATION

Facility: TMI  
Unit: 1  
Docket: 50-289

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# SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Nuclear Services Plant ID No. Closed Loop Clg. SV/NSV 53B Component: Solenoid Valve Manufacture: ASCO Model Number: 206-3815 RVF Function: R.B. Cooling Accuracy: Spec: N/A Demon: N/A Service: RBEC Unit 'B' Fan Motor Cooler Inlet Location: Intermediate Bldg. Flood Level Elev: N/A Above Flood Level: N/A	Operating Time	Duration of Accident	Continuous	1	4	-	None
	Temperature (°F)	Note 2	346	2	4	Test	None
	Pressure (PSIA)	Note 2	110	2	4	Test	None
	Relative Humidity (%)	Note 2	100	2	4	Test	None
	Chemical Spray (PH)	N/A	10	2	4	Test	None
	Radiation	Neg.	$2 \times 10^8 R$	2	3,4	Test	None
	Aging	Note A	40 years	2	3,4	Arrhenius Model & Test	None
	Submergence	N/A	N/A	2	-	-	None

## Documentation References:

TMI-1 Emergency Procedure 1202-6C  
GPUN TDR 282 ARKA 17  
GPUN Calculation 1101X-5350-033  
ASCO Test Report APS-21678/TR Rev A

## Notes:

A) Aging was not considered a design base parameter for TMI-1.

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## SYSTEM COMPONENT EVALUATION WORK SHEET

Sheet 23 of 25

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
Nuclear Services System: Closed Loop Clg. Plant ID No. Component: LSA/NSV-53C Limit Switch Manufacture: micro Switch Model Number: BZE6-2RN Function: R.B. Cooling Inlet Accuracy: Spec: N/A Demon: N/A Service: RBEC Unit 'C' Fan Motor Cooler Outlet Location: Intermediate Bldg. Flood Level Elev: N.A. Above Flood Level: N.A.	Operating Time	Duration of Accident	Continuous	1	4, See Attached Evaluation	-	None
	Temperature (°F)	Profile 3	160	2	4, See Attached Evaluation	-	None
	Pressure (PSIA)	Profile 3	Atmospheric	2	4, See Attached Evaluation	-	None
	Relative Humidity (%)	100	Ambient	2	4, See Attached Evaluation	-	None
	Chemical Spray	N/A	N/A	-	-	-	None
	Radiation	Neg.	1 x 10 <sup>6</sup> /R Note B	3	4, 5	Comparison Test	None
	Aging	Note A	17.6 years Note B	-	4, 6	Arrhenius Model	None
	Submergence	N/A	N/A	-	-	-	None

Documentation References:

1. TMI-1 Emergency Procedure 1202-6 C
2. EDS Nuclear Report No. 02-0370-1058, Rev. 2, dated 6/23/81.
3. Ltr. GAI/TMI-1CS/4350 Dose Rate Maps, dated 1/16/81.
4. Micro Switch Catalog No. 40, Limit and Enclosed Switches.
5. I&E Bulletin 79-01B, Appendix C, Table C-1.
6. EDS Nuclear Calculation 0370-025-030, Rev. 0, dated 12/23/80.

Notes:

- A) Aging was not considered a design base parameter for TMI-1
- B) Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

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COMPONENT MATERIALS EVALUATION SHEET

Plant I.D. No.: LSA/NS-V-53C  
NUCLEAR SERVICES CLOSED LOOP CLG SYS.  
Manufacturer: Micro Switch

Component: Limit Switch  
Model No.: BZE6-2RN

THERMAL AGING				RADIATION	
PARTS LIST	MATERIALS LIST	QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
Housing	Aluminum	Not Sensitive		Not Affected	
Plunger	Cadmium Plated Steel	Not Sensitive		Not Affected	
BATH TUB SEAL	Neoprene	17.6 Years	GPVN CAL 11011-5350-014	$1 \times 10^6$ RADS	12 PRI NP 1558
SEAL BOOT	BUNA N	40 YEARS	EDS CAL 0370-025-004	$1 \times 10^6$ RADS	"
Screws	Brass	Not Sensitive		Not Affected	
Washer	Lead	Not Sensitive		Not Affected	
Spring	Steel	Not Sensitive		Not Affected	
Contact Block	ARC Resistant	$< 105^\circ\text{C}$ for Con-	Modern Plastics	$2 \times 10^8$ RADS	ORNL, Oct. 1970
	Phenolic	tinuous use	Encyclopedia 1978-79		
Operating Head	General Purpose	$< 105^\circ\text{C}$ for Con-	Modern Plastics	$2 \times 10^8$ RADS	ORNL, Oct. 1970
	Phenolic	tinuous use	Encyclopedia 1978-79		
Insulation	Mylar	$< 105^\circ\text{C}$ for Con-	Modern Plastics	$1 \times 10^8$ RADS	ORNL, Oct. 1970
		tinuous use	Encyclopedia 1978-79		
Contact Plate	Beryllium Copper	Not Sensitive		Not Affected	
Contact Strip	Fine Silver	Not Sensitive		Not Affected	
Wire	Music Wire	Not Sensitive		Not Affected	

Materials & Parts List Reference:

Micro Switch Letter dated 10/21/81

CONTINUATION



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## SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
Nuclear Services System: Closed Loop Clg. Plant ID No. Component: LSB/NSV-53C Limit Switch Manufacture: Micro Switch Model Number: BZE6-2RN Function: R.B. Cooling 'C' Accuracy: Spec: N/A Demon: N/A Service: RBEC Unit 'C' Fan Motor Cooler Outlet Location: Intermediate Bldg. Flood Level Elev: N.A. Above Flood Level: N.A.	Operating Time	Duration of Accident	Continuous	1	4, See Attached Evaluation	-	None
	Temperature (°F)	Profile 3	160	2	4, See Attached Evaluation	-	None
	Pressure (PSIA)	Profile 3	Atmospheric	2	4, See Attached Evaluation	-	None
	Relative Humidity (%)	100	Ambient	2	4, See Attached Evaluation	-	None
	Chemical Spray	N/A	N/A	-	-	-	None
	Radiation	Neg.	$1 \times 10^6$ R Note B	3	4, 5	Comparison Test	None
	Aging	Note A	17.6 years Note B	-	4, 6	Arrhenius Model	None
	Submergence	N/A	N/A	-	-	-	None

Documentation References:

1. TMI-I Emergency Procedure 1202-6 c
2. EDS Nuclear Report No. 02-0370-1058, Rev. 6, dated 6/23/81
3. Ltr. GAI/TMI-1CS/4350 Dose Rate Maps, dated 1/16/81.
4. Micro Switch Catalog No. 40, Limit and Enclosed Switches.
5. IGE Bulletin 79-01B, Appendix C, Table C-1.
6. EDS Nuclear Calculation 03/0-025-030, Rev. 0, dated 12/23/80.

Notes:

- A) Aging was not considered a design base parameter for TMI-1.
- B) Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

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COMPONENT MATERIALS EVALUATION SHEET

Plant I.D. No.: LSB/NS-V-53C  
NUCLEAR SERVICES CLOSED LOOP CLG SYS.  
Manufacturer: Micro Switch

Component: Limit Switch  
Model No.: BZE6-2RN

THERMAL AGING				RADIATION	
PARTS LIST	MATERIALS LIST	QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
Housing	Aluminum	Not Sensitive		Not Affected	
Plunger	Cadmium Plated Steel	Not Sensitive		Not Affected	
BATH TUB SEAL	Neoprene	17.6 Years	GPUN CAL 1101X-5350-014	1 x 10 <sup>6</sup> RADS	EPRI NP1558
SEAL BODY	BUNA N	40 YEARS	EDS CAL 0370-025-004	1 x 10 <sup>6</sup> RADS	"
Screws	Brass	Not Sensitive		Not Affected	
Washer	Lead	Not Sensitive		Not Affected	
Spring	Steel	Not Sensitive		Not Affected	
Contact Block	ARC Resistant	<105°C for Con-	Modern Plastics	2 x 10 <sup>8</sup> RADS	ORNL, Oct. 1970
	Phenolic	tinuous use	Encyclopedia 1978-79		
Operating Head	General Purpose	<105°C for Con-	Modern Plastics	2 x 10 <sup>8</sup> RADS	ORNL, Oct. 1970
	Phenolic	tinuous use	Encyclopedia 1978-79		
Insulation	Mylar	<105°C for Con-	Modern Plastics	1 x 10 <sup>8</sup> RADS	ORNL, Oct. 1970
		tinuous use	Encyclopedia 1978-79		
Contact Plate	Beryllium Copper	Not Sensitive		Not Affected	
Contact Strip	Fine Silver	Not Sensitive		Not Affected	
Wire	Music Wire	Not Sensitive		Not Affected	

Materials & Parts List Reference:

Micro Switch Letter dated 10/21/81

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## SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Nuclear Services Plant ID No. Closed Loop Clg. SV/NSV 53C Component: Solenoid Valve Manufacture: ASCO Model Number: 206-3815 RVF Function: R.B. Cooling Accuracy: Spec: N/A Demon: N/A Service: RBEC Unit 'C' Fan Motor Cooler Inlet Location: Intermediate Bldg. Flood Level Elev: N/A Above Flood Level: N/A	Operating Time	Duration of Accident	Continuous	1	4	-	None
	Temperature (°F)	Note 2	346 for 20 minutes	2	4	Test	None
	Pressure (PSIA)	Note 2	110 for 20 minutes	2	4	Test	None
	Relative Humidity (%)	Note 2	100 Accident	2	4	Test	None
	Chemical Spray (PH)	N/A	10	2	4	Test	None
	Radiation	Neg.	$2 \times 10^8 R$	2	4	Test	None
	Aging	Note A	40 years	2	3,4	Arrhenius Model & Test	None
	Submergence	N/A	N/A	2	-	-	None

## Documentation References:

TMI-1 Emergency Procedure 1202-6C  
 CPUN TDR 282 AREA # 17  
 CPUN Calculation 1101X-5350-033  
 ASCO Test Report AQS-21678/TR Rev. A.

## Notes:

A) Aging was not considered a design base parameter  
 for TMI-1.

TMI-1  
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ADDITIONAL ACCIDENT MONITORING EQUIPMENT

LIST OF EFFECTIVE PAGES

<u>PAGE</u>	<u>REVISION</u>	<u>PAGE</u>	<u>REVISION</u>
1	0,1,2,3,4,5	9B	5
1i	0,3,4,5,6	10	0,1,2,5,6
1	0,1,2,4,5,6	10A	0,1,4,5,6
1A	4,5,6	10B	5
2	0,1,2,4,5,6	11	0,1,2,5,6
2A	4,5,6	11A	0,1,4,5,6
3	2,4,5,6	11B	5
3A	4,5,6	12	0,1,2,5,6
4	2,4,5,6	12A	0,1,4,5,6
4A	4,5,6	12B	5
5	0,1,4,5,6	13	0,1,2,5,6
5A	5,6	13A	0,1,4,5,6
6	0,1,4,5,6	13B	5
6A	5,6	14	0,1,2,5,6
7	0,1,4,5,6	14A	0,1,4,5,6
7A	5,6	14B	5
8	0,1,2,5,6	15	0,1,2,5,6
8A	0,1,4,5,6	15A	0,1,4,5,6
8B	5	15B	5
9	0,1,2,5,6		
9A	0,1,4,5,6		

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## SYSTEM COMPONENT EVALUATION WORK SHEET

Sheet 1 of 15

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: AAME/RCS Plant ID No. SP1A-LT2 Component: Level Transmitter Manufacture: Bailey Meter Model Number: BY 8B41X-A Function: MSLB & FWLB Monitoring Accuracy: Spec: - Demon: Max. Inac. 2% Service: Steam Gen. 'A' Level Operate Range Location: Containment Flood Level Elev: 286.66 ft. Above Flood Level: Yes	Operating Time	Accident Duration	24 hours	3	6	Simultaneous Test	None
	Temperature (°F)	See Accident Profile 1	286	1	6	Simultaneous Test	None
	Pressure (PSIA)	See Accident Profile 2	74	2	6	Simultaneous Test	None
	Relative Humidity (%)	100	100	3	6	Simultaneous Test	None
	Chemical Spray	Note A	Note C	4		Engineering Analyses	None
	Radiation	$2 \times 10^7$	$4 \times 10^7$ R	5	6	Sequential Test	None
	Aging	Note B	12.8 years	-	7	Engineering Analysis	None
	Submergence	Note D	N/A	-	-	-	None

Documentation References:

1. FSAR Chapter 14, Figure 14-63A
2. FSAR Chapter 14, Figure 14-66
3. FSAR Chapter 14.
4. Lesson Plan for TMI-1 ESAS
5. I & E Bulletin 79-01B, Enclosure 4, Paragraph 4.1.
6. B&W Letter, McBee to Levandoski, Environmental Qualification Subcommittee, dated 2/11/80.
7. GPUN Calculation No. 1101X-5350-011

Notes:

- A. Borated water at 2270 ppm Boron, with NaOH to raise PH  $\approx$  9.5.
- B. Aging was not considered a design base parameter for TMI-1.
- C. See attached evaluation
- D. Component not subject to submergence. Flood level revised in TDR-TMI-160, Rev. 1 dated 2/10/81 to 286.66 ft.



ELECTRICAL COMPONENT EVALUATION

The component was not subjected to chemical spray.

Assessment:

Oak Ridge National Laboratory Report "Design Considerations for Reactor Containment Spray Systems" (ORNL-TM-2412) concluded that chemical spray solutions exhibited negligible corrosion on ferrous alloys.

The Bailey Model BY-8-B41X-A level transmitter has a STN 316 baked enamel sealed (explosion proof housing) and therefore would show negligible corrosion due to chemical spray solutions.

Safety Impact:

None

**CONTINUATION**

Facility: TMI  
Unit: 1  
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SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: AAME/RCS Plant ID No. SP1B-LT2 Component: Level Transmitter Manufacture: Bailey Meter Model Number: BY 8B41X-A Function: MSLB & FWLB Monitoring Accuracy: Spec: — Demon: Max. Inac. 2% Service: Steam Gen. 'B' Level Operate Range Location: Containment Flood Level Elev: 286.66 ft. Above Flood Level: Yes	Operating Time	Accident Duration	24 hours	3	6	Simultaneous Test	None
	Temperature (°F)	See Accident Profile 1	286	1	6	Simultaneous Test	None
	Pressure (PSIA)	See Accident Profile 2	74	2	6	Simultaneous Test	None
	Relative Humidity (%)	100	100	3	6	Simultaneous Test	None
	Chemical Spray	Note A	Note C	4		Engineering Analysis	None
	Radiation	$2 \times 10^7$	$4 \times 10^7$ R	5	6	Sequential Test	None
	Aging	Note B	12.8 yrs	-	7	Engineering Analysis	None
	Submergence	Note D	N/A	-	-	-	None

Documentation References:

1. FSAR Figure 14-63A
2. FSAR Figure 14-66
3. FSAR Chapter 14
4. Lesson Plan for TMI-1 ESAS
5. I & E Bulletin 79-01B, Encl. 4, Para. 4.1.
6. B&W Letter, McBee to Levandoski, Environmental Qualification Subcommittee, dated 2/11/80.
- GPUN CAL. 1101X-5350-011

Notes:

- A. Borated water at 2270 ppm Boron, with NaOH to raise PH to 9.5.
- B. Aging was not considered a design base parameter for TMI-1.
- C. See attached evaluation
- D. Component not subject to submergence. Flood level revised in TDP-TMI-160, Rev. 1 dated 2/10/81 to 286.66 ft.

ELECTRICAL COMPONENT EVALUATION

The component was not subjected to chemical spray.

Assessment:

Oak Ridge National Laboratory Report "Design Considerations for Reactor Containment Spray Systems" (ORNL-TM-2412) concluded that chemical spray solutions exhibited negligible corrosion on ferrous alloys.

The Bailey Model BY-8.B41X-A level transmitter has a STN 316 Baked Enamel Sealed (explosion proof housing) and therefore would show negligible corrosion due to chemical spray solutions.

Safety Impact:

None

**CONTINUATION**

Facility: TMI

Unit: 1

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## SYSTEM COMPONENT EVALUATION WORK SHEET

Sheet 3 of 15

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
<b>System:</b> AAME/RCS <b>Plant ID No.</b> SP1A-LT4 <b>Component:</b> Level Transmitter <b>Manufacture:</b> Bailey Meter  <b>Model Number:</b> BY-8B41X-A  <b>Function:</b> MSLB, FWLB <b>Accuracy:</b> Spec: ____ <b>Demon:</b> Max. Inac. 2% <b>Service:</b> Steam Generator 'A' <b>Level Start-up Range</b>  <b>Location:</b> Containment  <b>Flood Level Elev:</b> 286.66 ft. <b>Above Flood Level:</b> Yes	<b>Operating Time</b>	Duration of Accident	24 hours	1	6	Simultaneous Test	None
	<b>Temperature (°F)</b>	See Profile 1	286	2	6	Simultaneous Test	None
	<b>Pressure (PSIA)</b>	See Profile 2	74	3	6	Simultaneous Test	None
	<b>Relative Humidity (%)</b>	100	100	1	6	Simultaneous Test	None
	<b>Chemical Spray</b>	Note B	Note C	4		Engineering Analysis	None
	<b>Radiation</b>	$2 \times 10^7 \text{ R}$	$4 \times 10^7 \text{ R}$	5	6	Sequential Test	None
	<b>Aging</b>	Note A	12.8 yrs.	-	7	Engineering Analysis	None
	<b>Submergence</b>	Note D	N/A	-	-	-	None

Documentation References:

1. FSAR Chapter 14.
2. FSAR Chapter 14, Figure 14-63A.
3. FSAR Chapter 14, Figure 14-66.
4. Lesson Plan for TMI-1 ESAS.
5. I&E Bulletin 79-01B, Enclosure 4, Paragraph 4.1.
6. B&W Letter, McBee to Levandoski, Environmental Qualification Subcommittee, dated 2/11/80.
7. GPUN calculation No. 1101X-5350-011

Notes:

- A) Aging was not considered a design base parameter for TMI-1.
- B) Borated Water at 2270 ppm Boron with NAOH to raise PH  $\approx$  9.5.
- C) See attached evaluation
- D) Component not subject to submergence. Flood level revised in TDR-TMI-160, Rev. 1 dated 2/10/81 to 286.66 ft.

ELECTRICAL COMPONENT EVALUATION

The component was not subjected to chemical spray.



Assessment:

Oak Ridge National Laboratory Report "Design Considerations for Reactor Containment Spray Systems" (ORNL-TM-2412) concluded that chemical spray solutions exhibited negligible corrosion on ferrous alloys.

The Bailey model BY-8.B41X-A level transmitter has a STN 316 baked enamel sealed (explosion proof housing) and therefore would show negligible corrosion due to chemical spray solutions.

Safety Impact:

None

**CONTINUATION**



Facility: TMI  
Unit: 1  
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# SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: AAME/RCS Plant ID No. SP1B-LT4 Component: Level Transmitter Manufacture: Bailey Meter Model Number: BY 8B41X-A Function: MSLB, FWLB Accuracy: Spec: — Demon: Max. Inac. 2% Service: Steam Generator 'B' Level Start-up Range Location: Containment  Flood Level Elev: 286.66 ft. Above Flood Level: Yes	Operating Time	Duration of Accident	24 hours	1	6	Simultaneous Test	None
	Temperature (°F)	See Profile 1	286	2	6	Simultaneous Test	None
	Pressure (PSIA)	See Profile 2	74	3	6	Simultaneous Test	None
	Relative Humidity (%)	100	100	1	6	Simultaneous Test	None
	Chemical Spray	Note B	Note C	4		Engineering Analysis	None
	Radiation	$2 \times 10^7$ R	$4 \times 10^7$ R	5	6	Sequential Test	None
	Aging	Note A	12.8 years	-	7	Engineering Analysis	None
	Submergence	Note D	N/A	-	-	-	None

## Documentation References:

1. FSAR Chapter 14.
2. FSAR Chapter 14, Figure 14-63A.
3. FSAR Chapter 14, Figure 14-66.
4. Lesson Plan for TMI-1 ESAS.
5. I&E Bulletin 79-01B, Enclosure 4, Paragraph 4.1.
6. B&W Letter, McBee to Levandoski, Environmental Qualification Subcommittee, dated 2/11/80.
7. GPUN Calculation No. 1101X-5350-011.

## Notes:

- A) Aging was not considered a design base parameter for TMI-1.
- B) Borated Water at 2270 ppm Boron with NAOH to raise PH to 9.5.
- C) See attached evaluation.
- D) Component not subject to submergence. Flood level revised in TDR-TMI-160, Rev. 1 dated 2/10/81 to 286.66 ft.

ELECTRICAL COMPONENT EVALUATION

The component was not subjected to chemical spray.

Assessment:

Oak Ridge National Laboratory Report "Design Considerations for Reactor Containment Spray Systems" (ORNL-TM-2412) concluded that chemical spray solutions exhibited negligible corrosion on ferrous alloys.

The Baily Model BY-8B41X-A level transmitter has a STN 315 baked enamel sealed (explosion proof housing) and therefore would show negligible corrosion due to chemical spray solutions.

Safety Impact:

None

**CONTINUATION**

Facility: TMI

Unit: 1

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Date: 12/31/91

## SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: AAME/RCS Plant ID No. Component: RC1-LTI Level Transmitter Manufacture: Bailey Meter Model Number: BY-3B40X-A S.N. 720171 Function: LOCA Monitoring Accuracy: Spec: Demon: 2% Inac. Service: Pressurizer Level Location: Containment	Operating Time	Accident Duration	24 Hours	3	7	Simultaneous Test	None
	Temperature (°F)	See Accident Profile 1	286	1	6	Simultaneous Test	None
	Pressure (PSIA)	See Accident Profile 2	74	2	6	Simultaneous Test	None
	Relative Humidity (%)	100	100	3	6	Simultaneous Test	None
	Chemical Spray	Note A	Note C	4		Engineering Analysis	NONE
	Radiation	$2 \times 10^7$	$4 \times 10^7$	5	6	Sequential Test	None
	Aging	Note B	12.8 years	-	8	Engineering Analysis	None
Flood Level Elev: 286.66 ft. Above Flood Level: Yes	Submergence	N/A	N/A	-	-	-	None

Documentation References:

1. FSAR Chapter 14, Figure 14-63A.
2. FSAR Chapter 14, Figure 14-66
3. FSAR Chapter 14.
4. Lesson Plan for TMI-1 ESAS
5. I & E Bulletin 79-01B, Enclosure 4, Paragraph 4.1.
6. B & W letter McBee to Levandoski, Environmental Qualification Subcommittee, dated 2-11-80.
7. B & W letter file no. 582-7148/T1.2, Serial ESC-157, dated 6/12/80.
8. GPUN Calculation No. 1101X-5350-011

Notes:

- A. Borated water at 2270 ppm Boron with NaOH to raise PH  $\approx$  9.5.
- B. Aging was not considered a design base parameter for TMI-1.
- C. See attached evaluation

ELECTRICAL COMPONENT EVALUATION

The component was not subjected to chemical spray.

Assessment:

Oak Ridge National Laboratory Report "Design Considerations for Reactor Containment Spray Systems" (ORNL-TM-2412) concluded that chemical spray solutions exhibited negligible corrosion on ferrous alloys.

The Bailey Model BY-3B40X-A level transmitter has a STN 316 baked enamel sealed (explosion proof housing) and therefore would show negligible corrosion due to chemical spray solutions.

Safety Impact:

None

Facility: TMI

Unit: 1

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Date: 12/31/81 SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: AAME/RCS Plant ID No. RC1-LT2 Component: Level Transmitter Manufacture: Bailey Meter Model Number: BY 3B40X-A S.N. 720172 Function: LOCA Monitoring Accuracy: Spec: Demon: 2% inac. Service: Pressurizer Level Location: Containment Flood Level Elev: 286.66 ft. Above Flood Level: Yes	Operating Time	Accident Duration	24 Hours	3	7	Simultaneous Test	None
	Temperature (°F)	See Accident Profile 1	286	1	6	Simultaneous Test	None
	Pressure (PSIA)	See Accident Profile 2	74	2	6	Simultaneous Test	None
	Relative Humidity (%)	100	100	3	6	Simultaneous Test	None
	Chemical Spray	Note A	Note C	4		Engineering, Analysis	None
	Radiation	$2 \times 10^7 R$	$4 \times 10^7 R$	5	6	Sequential Test	None
	Aging	Note B	12 <sup>2</sup> years	-	8	Engineering Analysis	None
	Submergence	N/A	N/A	-	-	-	None

Documentation References:

1. FSAR Chapter 14, Figure 14-63A
2. FSAR Chapter 14, Figure 14-66
3. FSAR Chapter 14
4. Lesson Plan for TMI-1 ESAS
5. I & E Bulletin 79-01B, Enclosure 4, Paragraph 4.1.
6. B & W letter McBee to Levandoski, Environmental Qualification Subcommittee, dated 2-11-80.
7. B & W letter file no. 582-7148/TI.2, serial ESC-157, dated 6-12-80.
8. GPUN Calculation No. 1101X-5350-011.

Notes:

- A. Borated water at 2270 ppm Boron with NaOH to raise PH  $\approx$  9.5.
- B. Aging was not considered a design base parameter for TMI-1.
- C. See attached evaluation



ELECTRICAL COMPONENT EVALUATION

The component was not subjected to chemical spray.

Assessment:

Oak Ridge National Laboratory Report "Design Considerations for Reactor Containment Spray Systems" (ORNL-TM-2412) concluded that chemical spray solutions exhibited negligible corrosion on ferrous alloys.

The Bailey Model BY-3B40X-A level transmitter has a STN 316 baked enamel sealed (explosion proof housing) and therefore would show negligible corrosion due to chemical spray solutions.

Safety Impact:

None

Facility: MI

Unit:

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Docket: 50-289

Date: 12/31/81

## SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: AAME/RCS Plant ID No. RC1-LT3 Component: Level Transmitter Manufacture: Bailey Meter Model Number: BY 3B40X-A S.N. 720173 Function: LOCA Monitoring Accuracy: Spec: Demon: 2% inac. Service: Pressurizer Level Location: Containment Flood Level Elev: 286.66 ft. Above Flood Level: Yes	Operating Time	Accident Duration	24 Hours	3	7	Simultaneous Test	None
	Temperature (°F)	See Accident Profile 1	286	1	6	Simultaneous Test	None
	Pressure (PSIA)	See Accident Profile 2	74	2	6	Simultaneous Test	None
	Relative Humidity (%)	100	100	3	6	Simultaneous Test	None
	Chemical Spray	Note A	Note C	4		Engineering Analysis	None
	Radiation	$2 \times 10^7 R$	$4 \times 10^7 R$	5	6	Sequential Test	None
	Aging	Note B	12.8 years	-	8	Engineering Analysis	None
	Submergence	N/A	N/A	-	-	-	None

Documentation References:

1. FSAR Chapter 14, Figure 14-63A
2. FSAR Chapter 14, Figure 14-66
3. FSAR Chapter 14
4. Lesson Plan for TMI-1 ESAS
5. I & E Bulletin 79-01B, Enclosure 4, Paragraph 4.1.
6. B & W letter McBee to Levandoski, Environmental Qualification Subcommittee, dated 2-11-80.
7. B & W letter file no. 582-714B/TI.2, Serial ESC-157, dated 6-12-80.
8. GPUN Calculation No. 1101X-5350-011.

Notes:

- A. Borated water at 2270 ppm Boron with NAOH to raise PH  $\approx$  9.5.
- B. Aging was not considered a design base parameter for TMI-1.
- C. See attached evaluation

ELECTRICAL COMPONENT EVALUATION

The component was not subjected to chemical spray.

Assessment:

Oak Ridge National Laboratory Report "Design Considerations for Reactor Containment Spray Systems" (ORNL-TM-2412) concluded that chemical spray solutions exhibited negligible corrosion on ferrous alloys.

The Bailey Model BY-3B40X-A level transmitter has a STN 316 baked enamel sealed (explosion proof housing) and therefore would show negligible corrosion due to chemical spray solutions.

Safety Impact:

None

Facility: II  
Unit: 1  
Docket: 50-289

Rev. 6

Date: 12/31/80

# SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: AAME/RCS Plant ID No. RC5A-TE1 Component: Temperature Transmitter Manufacture: Rosemount Model Number: 177GY Function: For Calculation of Tsat. Accuracy: Spec: Demon: Service: Reactor outlet Temp. Location: Containment Flood Level Elev: 286.66 ft. Above Flood Level: Yes	Operating Time	Accident Duration	24 hours	1	8	Simultaneous Test	None
	Temperature (°F)	See Profile 1	325	2	7	Simultaneous Test	None
	Pressure (PSIA)	See Profile 2	75	3	7	Simultaneous Test	None
	Relative Humidity (%)	100	100	4	7	Simultaneous Test	None
	Chemical Spray	Note B	Note C	5	9	Comparison Test	None
	Radiation	$2 \times 10^7 R$	$7 \times 10^7 R$ Note D	6	7	Sequential Test	None
	Aging	Note A	40 years Note D	-	See Attached Evaluation	Engineering Analysis	None
	Submergence	N/A	N/A	-	-	-	None

## Documentation References:

1. TMI-1 Emergency Procedure 1202-6c
2. FSAR Chapter 14, Figure 14-63A.
3. FSAR Chapter 14, Figure 14-66.
4. FSAR Chapter 14.
5. Lesson Plan for TMI-1 ESAS.
6. I & E Bulletin 79-01B, Enclosure 4, Paragraph 4.1.
7. B & W Ltr. McBee to Levandoski, Environmental Qualification Subcommittee, dated 2/11/80.
8. Record of Conversation, EDS and B & W, dated 7/30/80.
9. Oak Ridge National Lab. Report ORNL-TM-2412, dated 5/71.

## Notes:

- A) Aging was not considered a design base parameter for TMI-1.
- B) Borated water of 2270 ppm Boron with NaOH to raise PH  $\approx$  9.5.
- C) Component is not sensitive to chemical spray exposure. See attached evaluation.
- D) Attached evaluation indicates no component parts that exhibit significant thermal aging.

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COMPONENT MATERIALS EVALUATION SHEET

NAME/RCS Plant I.D. No.: RC5A-TE1 Component: Temperature Transmitter  
Manufacturer: Rosemount Model No.: 177GY

THERMAL AGING				RADIATION	
PARTS LIST	MATERIALS LIST	QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
Temperature Well	Austenitic Stainless Steel	Not Sensitive		$3.8 \times 10^8$ RADS	B&W Ltr. dated 2/11/80 - SUBJ: Environmental Qualification Subcommittee
Connection Head	Metallic	Not Sensitive		$3.8 \times 10^8$ RADS	
Pipe	Steel	Not Sensitive		$3.8 \times 10^8$ RADS	
Gasket	Flexitallic Gasket	Not Sensitive		$3.8 \times 10^8$ RADS	
Nut	Steel	Not Sensitive		$3.8 \times 10^8$ RADS	
Lead O-Ring	ETHYLENE PROPYLENE NOTE #1	40 YEARS	GPUH CAL 1101X-5350-033	$7 \times 10^7$ RADS	KPRI NP1558
Electrical Wire	Copper	Not Sensitive		$3.8 \times 10^8$ RADS	

Materials & Parts List reference:  
B&W Letter to B&W Owners Group, dated 6/12/80.  
Rosemount Drawing 177GY, dated 1/27/67.

Note #1 TMI-1 TEWR NO 800254 Replaced Neoprene with Ethylene Propylene



Facility: TMI  
Unit: A  
Docket: 50-289

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Date: 12/21/81

# SYSTEM COMPONENT EVALUATION WORK SHEET

Sheet 9 of 15

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: AAME/RCS Plant ID No. RC5A- TE2 Component: Temperature Trans- mitter Manufacture: Rosemount Model Number: 177GY Function: For Calculation of Tsat. Accuracy: Spec: Demon: Service: Reactor Outlet Temp. Location: Containment	Operating Time	Accident Duration	24 hours	1	8	Simultaneous Test	None
	Temperature (°F)	See Profile 1	325	2	7	Simultaneous Test	None
	Pressure (PSIA)	See Profile 2	75	3	7	Simultaneous Test	None
	Relative Humidity (%)	100	100	4	7	Simultaneous Test	None
	Chemical Spray	Note B	Note C	5	9	Comparison Test	None
	Radiation	2 x 10 <sup>7</sup> R	7 x 10 <sup>7</sup> R Not D	6	7	Sequential Test	None
	Aging	Note A	40 years Note D	-	SEE Attached Evaluation	Engineering Analysis	None
Flood Level Elev: 286.66 ft. Above Flood Level: Yes	Submergence	N/A	N/A	-	-	-	None

## Documentation References:

1. TMI-1 Emergency Procedure 1202-6 c
2. FSAR Chapter 14, Figure 14-63A.
3. FSAR Chapter 14, Figure 14-66.
4. FSAR Chapter 14.
5. Lesson Plan for TMI-1 ESAS.
6. I & E Bulletin 79-01B, Enclosure 4, Paragraph 4.1.
7. B & W Ltr. McBee to Levandoski, Environmental Qualification Subcommittee, dated 2/11/80.
8. Record of Conversation, EDS and B & W, dated 7/30/80.
9. Oak Ridge National Lab. Report ORNL-TM-2412, dated 5/71.

## Notes:

- A) Aging was not considered a design base parameter for TMI-1.
- B) Borated water of 2270 ppm Boron with NaOH to raise PH ≈ 9.5.
- C) Component is not sensitive to chemical spray exposure. See attached evaluation.
- D) Attached evaluation indicates no component parts that exhibit significant thermal aging.

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COMPONENT MATERIALS EVALUATION SHEET

AAAE/RCS

Plant I.D. No.: RC5A-TE2

Component: Temperature Transmitter

Manufacturer: Rosemount

Model No.: 177GY

THERMAL AGING

RADIATION

PARTS LIST	MATERIALS LIST	QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
Temperature Well	Austenitic Stainless Steel	Not Sensitive		$3.8 \times 10^8$ RADS	B&W Ltr. dated 2/11/80 - SUBJ: Environmental Qualification Subcommittee
Connection Head	Metallic	Not Sensitive		$3.8 \times 10^8$ RADS	
Pipe	Steel	Not Sensitive		$3.8 \times 10^8$ RADS	
Gasket	Flexitallic Gasket	Not Sensitive		$3.8 \times 10^8$ RADS	
Nut	Steel	Not Sensitive		$3.8 \times 10^8$ RADS	
Head O-Ring	ETHYLENE PROPYLENE Note #1	40 years	GRUN CAL 1101X-5350-033	$7 \times 10^7$ RADS	EPRI NP 1558
Electrical Wire	Copper	Not Sensitive		$3.8 \times 10^8$ RADS	

Materials & Parts List reference:

B&W Letter to B&W Owners Group, dated 6/12/80.

Rosemount Drawing 177GY, dated 1/27/67.

Note #1 TMI-1 TFWR NO. B00254 REPLACED NEEPRENE WITH ETHYLENE PROPYLENE

Facility: MI

Unit: 1

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Docket: 50-289

Date: 12/31/81

## SYSTEM COMPONENT EVALUATION WORK SHEET

Sheet 10 of 15

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: AAME/RCS Plant ID No. RCSA-TE3 Component: Temperature Transmitter Manufacturer: Rosemount Model Number: 177GY Function: For Calculation of Tsat. Accuracy: Spec: Demon: Service: Reactor outlet Temp. Location: Containment	Operating Time	Accident Duration	24 hours	1	8	Simultaneous Test	None
	Temperature (°F)	See Profile 1	325	2	7	Simultaneous Test	None
	Pressure (PSIA)	See Profile 2	75	3	7	Simultaneous Test	None
	Relative Humidity (%)	100	100	4	7	Simultaneous Test	None
	Chemical Spray	Note B	Note C	5	9	Comparison Test	None
	Radiation	$2 \times 10^7 R$	$7 \times 10^7 R$	6	7	Sequential Test	None
	Aging	Note A	40 years Note D	-	See Attached Evaluation	Engineering Analysis	None
Flood Level Elev: 286.66 ft. Above Flood Level: Yes	Submergence	N/A	N/A	-	-	-	None

## Documentation References:

1. TMI-1 Emergency Procedure 1202-6 c
2. FSAR Chapter 14, Figure 14-63A.
3. FSAR Chapter 14, Figure 14-66.
4. FSAR Chapter 14.
5. Lesson Plan for TMI-1 ESAS.
6. I & E Bulletin 79-01B, Enclosure 4, Paragraph 4.1.
7. B & W Ltr. McBee to Levandoski, Environmental Qualification Subcommittee, dated 2/11/80.
8. Record of Conversation, EDS and B & W, dated 7/30/80.
9. Oak Ridge National Lab. Report ORNL - TM-2412, dated 5/71.

## Notes:

- A) Aging was not considered a design base parameter for TMI-1.
- B) Borated water of 2270 ppm Boron with NaOH to raise PH  $\approx$  9.5.
- C) Component is not sensitive to chemical spray exposure. See attached evaluation.
- D) Attached evaluation indicates no component parts that exhibit significant thermal aging.

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COMPONENT MATERIALS EVALUATION SHEET

AAME/RCS

Plant I.D. No.: RC5A-TE3

Component: Temperature Transmitter

Manufacturer: Rosemount

Model No.: 177GY

THERMAL AGING

RADIATION

PARTS LIST	MATERIALS LIST	QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
Temperature Well	Austenitic Stainless Steel	Not Sensitive		$3.8 \times 10^8$ RADS	B&W Ltr. dated 2/11/80 - SUBJ: Environmental Qualification Subcommittee
Connection Head	Metallic	Not Sensitive		$3.8 \times 10^8$ RADS	
Pipe	Steel	Not Sensitive		$3.8 \times 10^8$ RADS	
Gasket	Flexitallic Gasket	Not Sensitive		$3.8 \times 10^8$ RADS	
Nut	Steel	Not Sensitive		$3.8 \times 10^8$ RADS	
Head O-Ring	ETHYLENE PROPYLENE Note 1	40 YEARS	GPVW CAL 1101X-5350-033	$7 \times 10^7$ RADS	EPRI NP 1558
Electrical Wire	Copper	Not Sensitive		$3.8 \times 10^8$ RADS	

Materials & Parts List reference:

B&W Letter to B&W Owners Group, dated 6/12/80.

Rosemount Drawing 177GY, dated 1/27/67.

Note 1: TME-1 TFWR NO 300254 REPLACED NITROGEN WITH ETHYLENE PROPYLENE

Facility: TMI

Unit: 1

Rev. 6

Docket: 50-289

Date: 12/31/81

## SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: AAME/RCS Plant ID No. RC5A- TE4 Component: Temperature Transmitter Manufacture: Rosemount Model Number: 177GY Function: For Calculation of Tsat. Accuracy: Spec: Demon: Service: Reactor OUTlet Temp. Location: Containment	Operating Time	Accident Duration	24 hours	1	8	Simultaneous Test	None
	Temperature (°F)	See Profile 1	325	2	7	Simultaneous Test	None
	Pressure (PSIA)	See Profile 2	75	3	7	Simultaneous Test	None
	Relative Humidity (%)	100	100	4	7	Simultaneous Test	None
	Chemical Spray	Note B	Note C	5	9	Comparison Test	None
	Radiation	$2 \times 10^7 R$	$7 \times 10^7 R$ Note D	6	7	Sequential Test	None
	Aging	Note A	40 years Note D	-	See Attached Evaluation	Engineering Analysis	None
Flood Level Elev: 286.66 ft. Above Flood Level: Yes	Submergence	N/A	N/A	-	-	-	None

Documentation References:

1. TMI-1 Emergency Procedure 1202-6 c
2. FSAR Chapter 14, Figure 14-63A.
3. FSAR Chapter 14, Figure 14-66.
4. FSAR Chapter 14.
5. Lesson Plan for TMI-1 ESAS.
6. I & E Bulletin 79-01B, Enclosure 4, Paragraph 4.1.
7. B & W Ltr. McBee to Levandoski, Environmental Qualification Subcommittee, dated 2/11/80.
8. Record of Conversation, EDS and B & W, dated 7/30/80.
9. Oak Ridge National Lab. Report ORNL-TM-2412, dated 5/71.

Notes:

- A) Aging was not considered a design base parameter for TMI-1.
- B) Borated water of 2270 ppm Boron with NaOH to raise PH  $\approx$  9.5.
- C) Component is not sensitive to chemical spray exposure. See attached evaluation.
- D) Attached evaluation indicates no component parts that exhibit significant thermal aging.



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COMPONENT MATERIALS EVALUATION SHEET

AAAME/RCS

Plant I.D. No.: RC5A-TE4

Component: Temperature Transmitter

Manufacturer: Rosemount

Model No.: 177GY

THERMAL AGING

RADIATION

PARTS LIST	MATERIALS LIST	QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
Temperature Well	Austenitic Stainless Steel	Not Sensitive		$3.8 \times 10^8$ RADS	B&W Ltr. dated 2/11/80 - SUBJ: Environmental Qualification Subcommittee
Connection Head	Metallic	Not Sensitive		$3.8 \times 10^8$ RADS	
Pipe	Steel	Not Sensitive		$3.8 \times 10^8$ RADS	
Gasket	Flexitallic Gasket	Not Sensitive		$3.8 \times 10^8$ RADS	
Nut	Steel	Not Sensitive		$3.8 \times 10^8$ RADS	
Head O-Ring	ETHYLENE PROPYLENE Note 1	40 YEARS	GPUH CAL. 1101A-S350-033	$7 \times 10^7$ RADS	EPRI NP 1558
Electrical Wire	Copper	Not Sensitive		$3.8 \times 10^8$ RADS	

Materials & Parts List reference:  
B&W Letter to B&W Owners Group, dated 6/12/80.  
Rosemount Drawing 177GY, dated 1/27/67.

Note 1 TMI-1 TFWR NO B00254 REPLACED NEOPRENE WITH ETHYLENE PROPYLENE

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: AAME/RCS Plant ID No.	Operating Time	Accident Duration	24 hours	1	8	Simultaneous Test	None
Component: RCSB-TE1 Temperature Transmitter Manufacture: Rosemount	Temperature (°F)	See Profile 1	325	2	7	Simultaneous Test	None
Model Number: 177GY	Pressure (PSIA)	See Profile 2	75	3	7	Simultaneous Test	None
Function: For Calculation of Tsat.	Relative Humidity (%)	100	100	4	7	Simultaneous Test	None
Accuracy: Spec: Demon:	Chemical Spray	Note B	Note C	5	9	Comparison Test	None
Service: Reactor outlet Temp.	Radiation	$2 \times 10^7 R$	$7 \times 10^7 R$ NOTE D	6	7	Sequential Test	None
Location: Containment	Aging	Note A	40 years Note D	-	See Attached Evaluation	Engineering Analysis	None
Flood Level Elev: 286.66 ft. Above Flood Level: Yes	Submergence	N/A	N/A	-	-	-	None

Documentation References:

1. TMI-1 Emergency Procedure 1202-6 c
2. FSAR Chapter 14, Figure 14-63A.
3. FSAR Chapter 14, Figure 14-66.
4. FSAR Chapter 14.
5. Lesson Plan for TMI-1 ESAS.
6. I & E Bulletin 79-01B, Enclosure 4, Paragraph 4.1.
7. B & W Ltr. McBee to Levandoski, Environmental Qualification Subcommittee, dated 2/11/80.
8. Record of Conversation, EDS and B & W, dated 7/30/80.
9. Oak Ridge National Lab. Report ORNL-TM-2412, dated 5/71.

Notes:

- A) Aging was not considered a design base parameter for TMI-1.
- B) Borated water of 2270 ppm Boron with NaOH to raise PH  $\approx$  9.5.
- C) Component is not sensitive to chemical spray exposure. See attached evaluation.
- D) Attached evaluation indicates no component parts that exhibit significant thermal aging.

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COMPONENT MATERIALS EVALUATION SHEET

AAME/RCS Plant I.D. No.: RC5B-TEL Component: Temperature Transmitter  
Manufacturer: Rosemount Model No.: 177GY

THERMAL AGING

RADIATION

PARTS LIST	MATERIALS LIST	QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
Temperature Well	Austenitic Stainless Steel	Not Sensitive		$3.8 \times 10^8$ RADS	B&W Ltr. dated 2/11/80 - SUBJ: Environmental Qualification Subcommittee
Connection Head	Metallic	Not Sensitive		$3.8 \times 10^8$ RADS	
Pipe	Steel	Not Sensitive		$3.8 \times 10^8$ RADS	
Gasket	Flexitallic Gasket	Not Sensitive		$3.8 \times 10^8$ RADS	
Nut	Steel	Not Sensitive		$3.8 \times 10^8$ RADS	
Head O-Ring	ETHYLENE PROPYLENE Note 1	40 YEARS	GPVN CAL. 1101X-5350-033	$7 \times 10^7$ RADS	IEPRI NP1558
Electrical Wire	Copper	Not Sensitive		$3.8 \times 10^8$ RADS	

Materials & Parts List reference:

B&W Letter to B&W Owners Group, dated 6/12/80.

Rosemount Drawing 177GY, dated 1/27/67.

Note 1 IME-1 TEWR NO. 1300254 REPLACED NEDPRENE WITH ETHYLENE PROPYLENE

Facility: TMI  
Unit: 1  
Docket: 50-289

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Date: 12/31/81

# SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: AAME/RCS Plant ID No. RC5B-TE2 Component: Temperature Transmitter Manufacturer: Rosemount Model Number: 177GY Function: For Calculation of Tsat. Accuracy: Spec: Demon; Service: Reactor outlet Temp. Location: Containment Flood Level Elev: 286.66 ft. Above Flood Level: Yes	Operating Time	Accident Duration	24 hours	1	8	Simultaneous Test	None
	Temperature (°F)	See Profile 1	325	2	7	Simultaneous Test	None
	Pressure (PSIA)	See Profile 2	75	3	7	Simultaneous Test	None
	Relative Humidity (%)	100	100	4	7	Simultaneous Test	None
	Chemical Spray	Note B	Note C	5	9	Comparison Test	None
	Radiation	$2 \times 10^7 R$	$7 \times 10^7 R$ NOTE D	6	7	Sequential Test	None
	Aging	Note A	40 years Note D	-	See Attached Evaluation	Engineering Analysis	None
	Submergence	N/A	N/A	-	-	-	None

## Documentation References:

1. TMI-1 Emergency Procedure 1202-6 c
2. FSAR Chapter 14, Figure 14-63A.
3. FSAR Chapter 14, Figure 14-66.
4. FSAR Chapter 14.
5. Lesson Plan for TMI-1 ESAS.
6. I & E Bulletin 79-01B, Enclosure 4, Paragraph 4.1.
7. B & W Ltr. McBee to Levandoski, Environmental Qualification Subcommittee, dated 2/11/80.
8. Record of Conversation, EDS and B & W, dated 7/30/80.
9. Oak Ridge National Lab. Report ORNL-TM-2142 dated 5/71.

## Notes:

- A) Aging was not considered a design base parameter for TMI-1.
- B) Borated water of 2270 ppm Boron with NaOH to raise pH  $\approx$  9.5.
- C) Component is not sensitive to chemical spray exposure. See attached evaluation
- D) Attached evaluation indicates no component parts that exhibit significant thermal aging.

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Date: 12/31/81

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COMPONENT MATERIALS EVALUATION SHEET

AAME/RCS

Plant I.D. No.: RC5B-TE2

Component: Temperature Transmitter

Manufacturer: Rosemount

Model No.: 177GY

THERMAL AGING

RADIATION

PARTS LIST	MATERIALS LIST	QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
Temperature Well	Austenitic Stainless Steel	Not Sensitive		$3.8 \times 10^8$ RADS	B&W Ltr. dated 2/11/80 - SUBJ: Environmental Qualification Subcommittee
Connection Head	Metallic	Not Sensitive		$3.8 \times 10^8$ RADS	
Pipe	Steel	Not Sensitive		$3.8 \times 10^8$ RADS	
Gasket	Flexitallic Gasket	Not Sensitive		$3.8 \times 10^8$ RADS	
Nut	Steel	Not Sensitive		$3.8 \times 10^8$ RADS	
Head O-Ring	ETHYLENE PROPYLENE Note 1	40 years	GPUN CAL 1101Y-S350-033	$7 \times 10^7$ RADS	GPRI NP 155B
Electrical Wire	Copper	Not Sensitive		$3.8 \times 10^8$ RADS	

Materials & Parts List reference:

B&W Letter to B&W Owners Group, dated 6/12/80.

Rosemount Drawing 177GY, dated 1/27/67.

NOTE 1 TMI-1 TFWR NO B00254 REPLACED NEOPRENE WITH ETHYLENE PROPYLENE



Facility: TMI  
Unit: 1  
Docket: 50-289

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# SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: AAME/RCS Plant ID No. Component: RCSB-TE3 Temperature Transmitter Manufacturer: Rosemount Model Number: 177GY Function: For Calculation of Tsat. Accuracy: Spec: Demon: Service: Reactor outlet Temp. Location: Containment Flood Level Elev: 286.66 ft. Above Flood Level: Yes	Operating Time	Accident Duration	24 hours	1	8	Simultaneous Test	None
	Temperature (°F)	See Profile 1	325	2	7	Simultaneous Test	None
	Pressure (PSIA)	See Profile 2	75	3	7	Simultaneous Test	None
	Relative Humidity (%)	100	100	4	7	Simultaneous Test	None
	Chemical Spray	Note B	Note C	5	9	Comparison Test	None
	Radiation	$2 \times 10^7 R$	$7 \times 10^7 R$ Note D	6	7	Sequential Test	None
	Aging	Note A	40 years Note D	-	See Attached Evaluation	Engineering Analysis	None
	Submergence	N/A	N/A	-	-	-	None

## Documentation References:

1. TMI-1 Emergency Procedure 1202-6 c
2. FSAR Chapter 14, Figure 14-63A.
3. FSAR Chapter 14, Figure 14-66.
4. FSAR Chapter 14.
5. Lesson Plan for TMI-1 ESAS.
6. I & E Bulletin 79-01B, Enclosure 4, Paragraph 4.1.
7. B & W Ltr. McBee to Levandoski, Environmental Qualification Subcommittee, dated 2/11/80.
8. Record of Conversation, EDS and B & W, dated 7/30/80.
9. Oak Ridge National Lab. Report ORNL-TM-2412 dated 5/71.

## Notes:

- A) Aging was not considered a design base parameter for TMI-1.
- B) Borated water of 2270 ppm Boron with NaOH to raise PH  $\approx$  9.5.
- C) Component is not sensitive to chemical spray exposure. See attached evaluation.
- D) Attached evaluation indicates no component parts that exhibit significant thermal aging.

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COMPONENT MATERIALS EVALUATION SHEET

AAME/RCS

Plant I.D. No.: RC5B-TE3

Component: Temperature Transmitter

Manufacturer: Rosemount

Model No.: 177GY

THERMAL AGING

RADIATION

PARTS LIST	MATERIALS LIST	QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
Temperature Well	Austenitic Stainless Steel	Not Sensitive		$3.8 \times 10^8$ RADS	B&W Ltr. dated 2/11/80 - SUBJ: Environmental Qualification Subcommittee
Connection Head	Metallic	Not Sensitive		$3.8 \times 10^8$ RADS	
Pipe	Steel	Not Sensitive		$3.8 \times 10^8$ RADS	
Gasket	Flexitallic Gasket	Not Sensitive		$3.8 \times 10^8$ RADS	
Nut	Steel	Not Sensitive		$3.8 \times 10^8$ RADS	
Head O-Ring	ETHYLENE PROPYLENE Note 1	40 YEARS	GPUH CAL 1101X-5350-033	$7 \times 10^7$ RADS	EPRI NP1558
Electrical Wire	Copper	Not Sensitive		$3.8 \times 10^8$ RADS	

Materials & Parts List reference:

B&W Letter to B&W Owners Group, dated 6/12/80.

Rosemount Drawing 177GY, dated 1/27/67.

Note - 1 TMJ-1 TFWR NO B00254 REPLACED NEOPRENE WITH ETHYLENE PROPYLENE

Facility: TMI  
Unit: 1  
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# SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: AAME/RCS Plant ID No. Component: RC5B-TE4 Temperature Transmitter Manufacturer: Rosemount Model Number: 177GY Function: For Calculation of Tsat. Accuracy: Spec: Demon: Service: Reactor outlet Temp. Location: Containment	Operating Time	Accident Duration	24 hours	1	8	Simultaneous Test	None
	Temperature (°F)	See Profile 1	325	2	7	Simultaneous Test	None
	Pressure (PSIA)	See Profile 2	75	3	7	Simultaneous Test	None
	Relative Humidity (%)	100	100	4	7	Simultaneous Test	None
	Chemical Spray	Note B	Note C	5	9	Comparison Test	None
	Radiation	2 x 10 <sup>7</sup> R	7 x 10 <sup>7</sup> R Note D	6	7	Sequential Test	None
	Aging	Note A	40 years Note D	-	See Attached Evaluation	Engineering Analysis	None
Flood Level Elev: 286.66 ft. Above Flood Level: Yes	Submergence	N/A	N/A	-	-	-	None

## Documentation References:

1. TMI-1 Emergency Procedure 1202-6 c
2. FSAR Chapter 14, Figure 14-63A.
3. FSAR Chapter 14, Figure 14-66.
4. FSAR Chapter 14.
5. Lesson Plan for TMI-1 ESAS.
6. I & E Bulletin 79-01B, Enclosure 4, Paragraph 4.1.
7. B & W Ltr. McBee to Levandoski, Environmental Qualification Subcommittee, dated 2/11/80.
8. Record of Conversation, EDS and B & W, dated 7/30/80.
9. Oak Ridge National Lab. Report ORNL-TM-2412, dated 5/71.

## Notes:

- A) Aging was not considered a design base parameter for TMI-1.
- B) Borated water of 2270 ppm Boron with NaOH to raise PH  $\approx$  9.5.
- C) Component is not sensitive to chemical spray exposure. See attached evaluation.
- D) Attached evaluation indicates no component part that exhibit significant thermal aging.

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COMPONENT MATERIALS EVALUATION SHEET

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AAE/RCS

Plant I.D. No.: RC5B-TE4

Component: Temperature Transmitter

Manufacturer: Rosemount

Model No.: 177GY

THERMAL AGING

RADIATION

PARTS LIST	MATERIALS LIST	QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
Temperature Well	Austenitic Stainless Steel	Not Sensitive		$3.8 \times 10^8$ RADS	B&W Ltr. dated 2/11/80 - SUBJ: Environmental Qualification Subcommittee
Connection Head	Metallic	Not Sensitive		$3.8 \times 10^8$ RADS	
Pipe	Steel	Not Sensitive		$3.8 \times 10^8$ RADS	
Gasket	Flexitallic Gasket	Not Sensitive		$3.8 \times 10^8$ RADS	
Nut	Steel	Not Sensitive		$3.8 \times 10^8$ RADS	
Head O-Ring	ETHYLENE PROPYLENE NOTE 1	40 YEARS	GPVH CAL. 1101X-5350-033	$7 \times 10^7$ RADS	EPRI HP 1558
Electrical Wire	Copper	Not Sensitive		$3.8 \times 10^8$ RADS	

Materials & Parts List reference:  
B&W Letter to B&W Owners Group, dated 6/12/80.  
Rosemount Drawing 177GY, dated 1/27/67.

NOTE 1 TMI-1 TFWR NO BCO254 REPLACED NITROGEN WITH ETHYLENE PROPYLENE

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Facility: MI

Unit:

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## SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
Display System: Instrumentation Plant ID No. CF2-LT1 Component: Level Transmitter Manufacture: Rosemount Model Number: 1151 Function: Core Flood Accuracy: Spec: N/A Demon: N/A Service: Core Flood Tank Level 'A' Location: Containment Flood Level Elev: 286.66 ft. Above Flood Level:	Operating Time	Note A					
	Temperature (°F)	Note A					
	Pressure (PSIA)	Note A					
	Relative Humidity (%)	Note A					
	Chemical Spray	Note A					
	Radiation	Note A					
	Aging	Note A					
	Submergence	Note A					

Documentation References:Notes:

- A. Component is exempt from qualification. See attached evaluation for justification.

Facility: TMI

Unit: 1

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## SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
Display System: Instrumentation Plant ID No. CF2-LT2 Component: Level Transmitter Manufacture: Rosemount Model Number: 1151 Function: Core Flood Accuracy: Spec: N/A Demon: N/A Service: Core Flood Tank Level 'A' Location: Containment Flood Level Elev: 286.66 ft. Above Flood Level:	Operating Time	Note A					
	Temperature (°F)	Note A					
	Pressure (PSIA)	Note A					
	Relative Humidity (%)	Note A					
	Chemical Spray	Note A					
	Radiation	Note A					
	Aging	Note A					
	Submergence	Note A					

Documentation References:Notes:

- A. Component is exempt from qualification. See attached evaluation for justification.

Facility: TMI

Unit:

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## SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
Display System: Instrumentation Plant ID No. CF2-LT3 Component: Level Transmitter Manufacture: Rosemount  Model Number: 1151  Function: Core Flood Accuracy: Spec: N/A Demon: N/A  Service: Core Flood Tank Level 'B'  Location: Containment  Flood Level Elev: 2866.66 ft. Above Flood Level:	Operating Time	Note A					
	Temperature (°F)	Note A					
	Pressure (PSIA)	Note A					
	Relative Humidity (%)	Note A					
	Chemical Spray	Note A					
	Radiation	Note A					
	Aging	Note A					
	Submergence	Note A					

Documentation References:Notes:

- A. Component is exempt from qualification. See attached evaluation for justification.

Facility: TMI

Unit: 1

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## SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
Display System: Instrumentation Plant ID No. CF2-LT4 Component: Level Transmitter Manufacture: Rosemount Model Number: 1151 Function: Core Flood Accuracy: Spec: N/A Demon: N/A Service: Core Flood Tank Level 'B' Location: Containment Flood Level Elev: 286.66 ft. Above Flood Level:	Operating Time	Note A					
	Temperature (°F)	Note A					
	Pressure (PSIA)	Note A					
	Relative Humidity (%)	Note A					
	Chemical Spray	Note A					
	Radiation	Note A					
	Aging	Note A					
	Submergence	Note A					

Documentation References:Notes:

- \*A. Component is exempt from qualification. See attached evaluation for justification.



Facility: TMI

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## SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
Display System: Instrumentation Plant ID No. MU24-DPT1 Component: Ultrasonic Manufacture: Controlotron Corp. Model Number: Series 240 Function: RCS Monitoring Accuracy: Spec: N/A Demon: N/A Service: Normal Makeup Flow Location: Auxiliary Building Flood Level Elev: N/A Above Flood Level: N/A	Operating Time	Note A					
	Temperature (°F)	Note A					
	Pressure (PSIA)	Note A					
	Relative Humidity (%)	Note A					
	Chemical Spray	Note A					
	Radiation	Note A					
	Aging	Note A					
	Submergence	Note A					

Documentation References:Notes:

- A. Component is exempt from qualification. See attached evaluation for justification.

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## SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
Display System: Instrumentation Plant ID No. RC2-TE1 Component: Temperature Element Manufacture: Rosemount  Model Number: 104 AFP-7  Function: RCS Monitoring Accuracy: Spec: N/A Demon: N/A  Service: Pressurizer Temperature  Location: Containment  Flood Level Elev: 286.66 ft. Above Flood Level:	Operating Time	Note A					
	Temperature (°F)	Note A					
	Pressure (PSIA)	Note A					
	Relative Humidity (%)	Note A					
	Chemical Spray	Note A					
	Radiation	Note A					
	Aging	Note A					
	Submergence	Note A					

Documentation References:Notes:

- A. Component is exempt from qualification. See attached evaluation for justification.

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## SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Display Instrumentation Plant ID No. RC2-TE2 Component: Temperature Element Manufacture: Rosemount Model Number: 104 AFP-7 Function: RCS Monitoring Accuracy: Spec: N/A Demon: N/A Service: Pressurizer Temperature Location: Containment Flood Level Elev: 286.66 ft Above Flood Level:	Operating Time	Note A					
	Temperature (°F)	Note A					
	Pressure (PSIA)	Note A					
	Relative Humidity (%)	Note A					
	Chemical Spray	Note A					
	Radiation	Note A					
	Aging	Note A					
	Submergence	Note A					

Documentation References:Notes:

- A. Component is exempt from qualification. See attached evaluation for justification.

Facility: TMI

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## SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
Display System: Instrumentation Plant ID No. FY-23-A Component: FY-24-B FY-25-C Compensator Manufacture: Foxboro  Model Number: 66 DT-OH1 . Function: Temp Compensation  Accuracy: Spec: Demon: Service: RB Emerg. Cooler outlet Flow  Location: Intermediate Bldg.  Flood Level Elev: N/A Above Flood Level:	Operating Time	Note A					
	Temperature (°F)	Note A					
	Pressure (PSIA)	Note A					
	Relative Humidity (%)	Note A					
	Chemical Spray	N/A					
	Radiation	Note A					
	Aging	Note A					
	Submergence	N/A					

Documentation References:Notes:

A) Component is exempt from Qualification  
 see attached evaluation for justification

Facility: TMI

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## SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
Display System: Instrumentation Plant ID No. DFA-23-A DFA-24-B DFA-25-C Component: Alarm Unit Manufacture: Foxboro Model Number: 63U-FT Function: Alarm Accuracy: Spec: Demon: Service: RB Emerg. Cooler Flow Error Limit Location: Intermediate Bldg. Flood Level Elev: N/A Above Flood Level:	Operating Time	Note A					
	Temperature (°F)	Note A					
	Pressure (PSIA)	Note A					
	Relative Humidity (%)	Note A					
	Chemical Spray	N/A					
	Radiation	Note A					
	Aging	Note A					
	Submergence	N/A					

Documentation References:Notes:

A) Component is exempt from Qualification  
 see attached evaluation for justification

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## SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Common Plant ID No. Various Component: Terminal Block Manufacture: States Co.  Model Number: NT  Function: Various  Accuracy: Spec: N/A Demon: N/A Service: Various  Location: Intermediate Building	Operating Time	Accident Duration	8 days	1	6	Simultaneous Test	None
	Temperature (°F)	See Accident Profile 4	340	2	4, 7	Simultaneous Test	None
	Pressure (PSIA)	See Accident Profile 4	103	2	4, 7	Simultaneous Test	None
	Relative Humidity (%)	100	100	2	6, 7	Simultaneous Test	None
	Chemical Spray	N/A	-	-	6	Simultaneous Test	None
	Radiation	Neg.	$1 \times 10^8 R$	3	6	Separate Test	None
	Aging	Note A	40 years	-	5 Note B	Comparison Test	None
Flood Level Elev: Above Flood Level:	Submergence	N/A	N/A	-	-	-	None

Documentation References:

1. FSAR Chapter 14
2. EDS Nuclear Rpt No. 02-0370-1058 Rev. 2 dated 6/23/81
3. LTR GAI/TMI-ICS/4350, Dose Rate Maps, dated 1/16/81
4. Terminal Block LOCA Test for Electrical Penetration Assemblies by R.M. Schuster, 11/6/73
5. States Company Ltr. to Yankee Atomic Elec. Co., dated 1/27/78
6. Southern Company Services Ltr. to EDS, dated 9/18/80
7. GE LTR To Vermont Yankee dated 2/2/78

Notes:

- A) Aging was not considered a design base parameter for TMI-1.
- B) Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

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## SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Common Plant ID No. N/A Component: Thyrector Manufacture: General Electric Model Number: CR 2095100 DJA Function: Voltage Suppression Accuracy: Spec: N/A Demon: N/A Service: Various Location: Intermediate Building Flood Level Elev: N/A Above Flood Level: N/A	Operating Time	Duration of Accident		1			Note B
	Temperature (°F)	See Profile 3		2			Note B
	Pressure (PSIA)	See Profile 3		2			Note B
	Relative Humidity (%)	100		2			Note B
	Chemical Spray	N/A	N/A	-			Note B
	Radiation	Negligible		3			Note B
	Aging	Note A		-			Note B
	Submergence	N/A	N/A	-			Note B

Documentation References:

1. FSAR Chapter 14.
2. EDS Nuclear Report No. 02-0370-1058, Rev. 2, dated 6/27/81.
3. Ltr. GAT/TMI-165/4350, Data Rate Maps, dated 1/16/81

Notes:

- A. Aging was not considered a design base parameter for TMI-1.
- B. Components will be replaced with qualified General Semiconductor Transorbs Model No. 1N6071A.

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# SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Common Plant ID No. N/A  Component: Terminal Block Manufacture: General Electric  Model Number: CR-151  Function: Various  Accuracy: Spec: N/A Demon: N/A  Service: Electrical Penetration  Location: Auxiliary Building  Flood Level Elev: N/A Above Flood Level: N/A	Operating Time	Duration of Accident	Continuous 10.37 Days	1	4, 5		None
	Temperature (°F)	Ambient	340	2	4, 5	Simultaneous Test	None
	Pressure (PSIA)	Atmospheric	103	2	4, 5	Simultaneous Test	None
	Relative Humidity (%)	Ambient	100	2	4, 5	Simultaneous Test	None
	Chemical Spray	N/A	-	-	-	-	None
	Radiation	$8 \times 10^5$ R	$1 \times 10^7$ R	3	7	ENGINEERING ANALYSIS	None
	Aging	Note A	40 years	-	4, 6	ENGINEERING ANALYSIS	None
	Submergence	N/A	-	-	-	-	None

## Documentation References:

1. FSAR Chapter 14
2. FSAR Section 6.1.2.12
3. Ltr. GA1/TMI-ICS/4350, Dose Rate Maps, dated 1/16/81
4. Ltr. GE to JCP&L No. G-EN-8-18 dated 2/24/78
5. GE Terminal Block Test Report dated 11/6/73
6. GPUN Calculation 1101X 5350-013
7. B&W Document 77-112-7001-00 dated 7/81 PAGE 71

## Notes:

- A. Aging was not considered a design base parameter for TMI-1.

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# SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
System: Common Plant ID No. N/A	Operating Time	Duration of Accident	Continuous	1	4,5	Engineering Analysis	None
Component: Terminal Block	Temperature (°F)	See Profile 4	340	2	4,5	"	None
Manufacture: General Electric	Pressure (PSIA)	See Profile 4	103	2	4,5	"	None
Model Number: EB-25	Relative Humidity (%)	100	100	2	4,5	"	None
Function: Various	Chemical Spray	N/A					None
Accuracy: Spec: N/A Demon: N/A	Radiation	Negligible	$1 \times 10^7$	3	7	"	None
Service: Various IE	Aging	Note A	40 years		4,6	"	None
Location: Intermediate Building	Submergence	N/A					None
Flood Level Elev: N/A Above Flood Level: N/A							

## Documentation References:

- FSAR Chapter 14
- EDS Nuclear Report No. 02-0370-1058, Rev. 2 dated 6/23/81
- Ltr. GAI/TMI-ICS 4350, Dose Rate Maps, dated 1/16/81
- Ltr. GE to JCP&L No. G-EN-8/18 dated 2/24/78
- GE Terminal Block Test Report dated 11/6/73
- GPUN Calculation 1101X-535-013
- B&W Document 77-1127001-00 dated 7/81. PAGE 71

## Notes:

- Aging was not considered a design base parameter for TMI-1.

COLD SHUTDOWN  
MASTER LIST

Three Mile Island

Unit 1

Docket No. 50-289

(Class IE Electrical Equipment Required to  
Function Under Postulated Accident  
Conditions)

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Sheet 2 of 2

System: MAIN STEAM

COMPONENTS

Plant Identification Number	Generic Name	LOCATION		See 79-01B RPT Volume 1
		Inside Primary Containment	Outside Primary Containment	
LSB/MS-V-13B	Limit Switch		X	X
PS-21	Pressure Switch <del>DELETED</del> PER ECM-076		X	
PS-22	Pressure Switch <del>DELETED</del> PER ECM-076		X	
SP-6A-PT1	Steam Generator Pressure Transmitter	X		X
SP-6A-PT2	Steam Generator Pressure Transmitter	X		X
SP-6B-PT1	Steam Generator Pressure Transmitter	X		X
SP-6B-PT2	Steam Generator Pressure Transmitter	X		X
T-54	Terminal Box		X	
T-55	Terminal Box		X	
T-231	Terminal Box		X	X
T-233	Terminal Box		X	X
Penet. 205	Electrical Penetration Assy.	X		X
Penet. 313	Electrical Penetration Assy.	X		X
1C ES Valve CC	Valve Control Center		X	X
	Cable (Power)		X	X
	Cable (Control)		X	X
	Cable (Instrumentation)	X	X	X
	Conax Seal Assembly	X		X



COLD SHUTDOWN  
MASTER LIST

Three Mile Island  
Unit 1

Docket No. 50-289

(Class IE Electrical Equipment Required to  
Function Under Postulated Accident  
Conditions)

Rev. 6  
Date 12/31/81  
Sheet 1 of 3

System: EMERGENCY FEEDWATER/FEEDWATER

COMPONENTS				
Plant Identification Number	Generic Name	LOCATION		See 79-01B RPT Volume 1
		Inside Primary Containment	Outside Primary Containment	
EF-P-2A	Pump Motor		X	X
EF-P-2B	Pump Motor		X	X
EF-V-1A	Valve Motor Operator		X	X
EF-V-1B	Valve Motor Operator		X	X
EF-V-2A	Valve Motor Operator		X	X
EF-V-2B	Valve Motor Operator		X	X
EF-V-4	Valve Motor Operator		X	
EF-V-5	Valve Motor Operator		X	
SV/EF-V-8A	Solenoid Valve		X	X
SV/EF-V-8B	Solenoid Valve		X	X
SV/EF-V-8C	Solenoid Valve		X	X
EF-V-30A/Cont. Pnl. SV1 & SV3	Solenoid Valve		X	X
EF-V-30A/Cont. Pnl. SV2 & SV4	Solenoid Valve		X	X
EF-V-30B/Cont. Pnl. SV1 & SV3	Solenoid Valve		X	X
EF-V-30B/Cont. Pnl. SV2 & SV4	Solenoid Valve		X	X
F1-577	Diff. Press. Trans.		X	X
F1-578	Diff. Press. Trans.		X	X
F1-579	Diff. Press. Trans.		X	X



# COLD SHUT DOWN

TMI-1  
Docket 50-289

## MAIN STEAM SYSTEM LIST OF EFFECTIVE PAGES

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i	0,5
ii	0,5,6
1	0,5
1A	5
2	0,5
2A	5
3	0,5,6
4	0,5,6
4A	0,5
5	0,5,6
6	0,5,6
6A	0,5
7	deleted
8	deleted
9	0,5
10	0,5
11	0,5
12	0,5
13	0,5,6 DELETED
14	0,5,6 DELETED
<del>4B</del>	6
<del>6B</del>	6
<del>3A</del>	6
<del>3B</del>	6
<del>5A</del>	6
<del>5B</del>	6

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Facility: TMI

Unit: 1

Rev. 6

COLD SHUTDOWN

Docket: 50-289

Date: 12/31/81

## SYSTEM COMPONENT EVALUATION WORK SHEET

Sheet 3 of 14

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
<b>System:</b> Main Steam <b>Plant ID No.</b> SP-V-4A <b>Component:</b> E/P Converter <b>Manufacture:</b> Bailey <b>Model Number:</b> RD-1211C S.N. 665461 <b>Function:</b> Note B Cooldown Control <b>Accuracy:</b> Spec: N/A Demon: N/A <b>Service:</b> Atmospheric Dump Valve MS-V-4 <b>Location:</b> Intermediate Building	Operating Time	Duration of Accident	Note C	1	3	Analysis	none
	Temperature (°F)	Note 2	Note C	2	3	Analysis	none
	Pressure (PSIA)	Note 2	40	2	3	SPECIFICATION	none
	Relative Humidity (%)	Note 2	Note C	2	3	Analysis	none
	Chemical Spray	N/A	N/A	2	-	N/A	none
	Radiation	Neg.	N/A	2		N/A	none
	Aging	Note A	Note D	-	3	Analysis	none
	Submergence	N/A	N/A	2	-	-	none

Documentation References:

1. FSAR Chapter 10.
2. GPUH TDR 282 AREA #17
3. BAILEY METER PRODUCT SPECIFICATION E92-10

Notes:

- A. Aging was not considered a design base parameter for TMI-1.
- B. Cold shutdown was not considered a design base parameter for TMI-1.
- C. SEE ELECTRICAL EVALUATION SHEET
- D. SEE COMPONENT MATERIALS EVALUATION SHEET

ELECTRICAL COMPONENT EVALUATION

The RP-1211C E/P converter data does not fully envelope the pressure, temperature or humidity service condition profile for a main steam line break in the intermediate building.

Assessment:

Converter operation (max. ambient of 180°F and 40 psig) will be protected by its aluminum housing. The die-cast aluminum housing is classified as NEMA 3 (dust tight, rain tight and sleet-resistant for outdoor use) will protect it from the 322°F, 24.2 psia, and 100% relative humidity accident environment.

Safety Impact:

None

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COLD SHUTDOWN

Sheet 3B of 14

COMPONENT MATERIALS EVALUATION SHEET

Main Steam

Plant I.D. No.: SP-V-4A

Component: E/P Converter

Manufacturer: Bailey

Model No.: RP-1211C

PARTS LIST	MATERIALS LIST	THERMAL AGING		RADIATION	
		QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
5311428-2 o-ring	Note 2	Note i			
5311428-3 o-ring	Note 2	Note 1			
6614221-1 Cover gasket	Note 2	Note 1			

- Notes:
1. Items are included within the preventative maintenance program (IC-66) to be replaced ~ 7 years
  2. Lab analysis will be conducted to determine material identification

Facility: TMI  
Unit: 1  
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COLD SHUTDOWN

# SYSTEM COMPONENT EVALUATION WORK SHEET

Sheet 4 of 14

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
<b>System:</b> Main Steam <b>Plant ID No.</b> LSA/MS-V-4A <b>Component:</b> Limit Switch <b>Manufacture:</b> Fisher Governor Co.  <b>Model Number:</b> Type-304 S.N. 4600587  <b>Function:</b> Note B Cooldown Control <b>Accuracy:</b> Spec: N/A Demon: N/A  <b>Service:</b> Atmospheric Dump Valve MS-V-4A  <b>Location:</b> Intermediate Building  <b>Flood Level Elev:</b> N/A <b>Above Flood Level:</b> N/A	<b>Operating Time</b>	Duration of Accident	CONTINUOUS	1	7		NONE
	<b>Temperature (°F)</b>	See Accident Profile 3	Note C	2	7	ENGINEERING ANALYSIS	NONE
	<b>Pressure (PSIA)</b>	See Accident Profile 3	Note C	2	7	ENGINEERING ANALYSIS	NONE
	<b>Relative Humidity (%)</b>	100		2	7		NONE
	<b>Chemical Spray</b>	N/A	N/A	-	-	-	NONE
	<b>Radiation</b>	Neg.	$1 \times 10^7 R$ Note D	3	4,5	Comparison Test	None
	<b>Aging</b>	Note A	40 years Note D	-	4,6	Arrhenius Model	None
	<b>Submergence</b>	N/A	N/A	-	-	-	NONE

## Documentation References:

- FSAR Chapter 10.
- EDS Nuclear Report No. 02-0370-1058, Rev. 2, dated 6/23/81.
- Ltr. GAI/TMI-ICS/4350, Dose Rate Maps, Dated 1/16/81
- Fisher Type 304 instruction manual, form 2007, dated Oct. 1978.
- "Engineering and Design, 17" (1971) 247-280 North Holland Publishing Co.
- EDS Nuclear Calculation 0370-025-004, Rev. 1, dated 6/22/81.
- Fisher Bulletin 62.3:304 dated Sept. 1978

## Notes:

- Aging was not considered a design base parameter for TMI-1.
- Cold shutdown was not considered a design base parameter for TMI-1.  
SEE Electrical Component Evaluation Sheet
- Materials evaluation conducted. Materials sensitive to radiation and/or thermal aging summarized on attached evaluation.

ELECTRICAL COMPONENT EVALUATION

Limit switch data does not envelope the pressure, temperature or humidity service conditions profile for a main steam line break accident in the intermediate building.

Assessment:

The limit switch operation (180°F max. ambient) will be protected by its aluminum housing. Housing is CSA listed as explosion-proof in class 1 groups C and D and water tight. Accident max. transients of 322°F, 24.2 psia, and 100% relative humidity have been predicted.

Safety Impact:

None



Facility: IMI

Unit: 1

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COLD SHUTDOWN

## SYSTEM COMPONENT EVALUATION WORK SHEET

Sheet 5 of 14

EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
<b>System:</b> Main Steam <b>Plant ID No:</b> SP-V-4B <b>Component:</b> E/P Converter <b>Manufacturer:</b> Bailey  <b>Model Number:</b> RP-1211C S.N. 665455 <b>Function:</b> Note B Cooldown Control <b>Accuracy:</b> Spec: N/A Demon: N/A <b>Service:</b> Atmospheric Dump Valve MS-V-4B  <b>Location:</b> Intermediate Building	Operating Time	Duration of Accident	Note C	1	3	Analysis	none
	Temperature (°F)	Note 2	Note C	2	3	Analysis	none
	Pressure (PSIA)	Note 2	40	2	3	SPECIFICATION	none
	Relative Humidity (%)	Note 2	Note C	2	3	ANALYSIS	none
	Chemical Spray	N/A	N/A	2	-	N/A	none
	Radiation	Neg.	N/A	2		N/A	none
	Aging	Note A	Noted	-	3	ANALYSIS	none
	Submergence	N/A	N/A	2	-	-	none

Documentation References:

1. FSAR Chapter 10.
2. GPUN TDR 282 AREA #17
3. BAILEY METAR PRODUCT SPECIFICATION E92-10

Notes:

- A. Aging was not considered a design base parameter for IMI-1.
- B. Cold shutdown was not considered a design base parameter for IMI-1.
- C. SEE ELECTRICAL EVALUATION SHEET.
- D. SEE COMPONENT MATERIALS EVALUATION SHEET.

ELECTRICAL COMPONENT EVALUATION

The RP-1211C E/P converter data does not fully envelope the pressure, temperature or humidity service condition profile for a main steam line break in the intermediate building.

Assessment:

Converter operation (max. ambient of 180°F and 40 psig) will be protected by its aluminum housing. The die-cast aluminum housing is classified as NEMA 3 (dust tight, rain tight and sleet-resistant for outdoor use) will protect it from the 322°F, 24.2 psia, and 100% relative humidity accident environment.

Safety Impact:

None

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Date: 12/31/81

COLD SHUTDOWN

Sheet 5B of 14

COMPONENT MATERIALS EVALUATION SHEET

Main Steam

Plant I.D. No.: SP-V-48

Manufacturer: Bailey

Component: E/P Converter

Model No.: RP-1211C

THERMAL AGING

RADIATION

PARTS LIST	MATERIALS LIST	QUALIFICATION	REFERENCE	QUALIFICATION	REFERENCE
5311428-2 o-ring	Note 2	Note 1			
5311428-3 o-ring	Note 2	Note 1			
6614221-1 Cover gasket	Note 2	Note 1			

- Notes:
1. Items are included within the preventative maintenance program (IC-66) to be replaced ~ 3 years
  2. Lab analysis will be conducted to determine material identification.

Facility: TMI

Unit: 1

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COLD SHUTDOWN

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## SYSTEM COMPONENT EVALUATION WORK SHEET

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EQUIPMENT DESCRIPTION	ENVIRONMENT			DOCUMENTATION REF.		Qualification Method	Outstanding Items
	Parameter	Specification	Qualification	Specification	Qualification		
<b>System:</b> Main Steam <b>Plant ID No.</b> ISA/MS-V-4B <b>Component:</b> Limit Switch <b>Manufacturer:</b> Fisher Governor Co.  <b>Model Number:</b> Type-304 S.N. 4649158  <b>Function:</b> Note B Cooldown Control <b>Accuracy:</b> Spec: N/A Demon: N/A  <b>Service:</b> Atmospheric Dump Valve MS-V-4B  <b>Location:</b> Intermediate Building	Operating Time	Duration of Accident	Continuous	1	7	Engineering Analysis	None
	Temperature (°F)	See Accident Profile 3	Note C	2	7	"	None
	Pressure (PSIA)	See Accident Profile 3	Note C	2	7	"	None
	Relative Humidity (%)	100	Note C	2	7	"	None
	Chemical Spray	N/A	N/A	-	-	-	None
	Radiation	Neg.	$1 \times 10^7 R$ Note D	3	4,5	Comparison Test	None
	Aging	Note A	40 years Note D	-	4,6	Arrhenius Model	None
	Submergence	N/A	N/A	-	-	-	None

Documentation References:

1. FSAR Chapter 10.
2. EDS Nuclear Report No. 02-0370-1058, Rev. 2, dated 6/23/81.
3. Ltr. GAI/TMI-ICS/4350, Dose Rate Maps, Dated 1/16/81
4. Fisher Type 304 Instruction Manual, form 2007, dated Oct. 1972.
5. "Engineering & Design, 17" (1971) 241-280 North Holland Publishing Co.
6. EDS Nuclear Calculation 0370-025-004, Rev. 1, dated 6/22/81.
7. Fisher Controls Bulletin 62.3:304

Notes:

- A. Aging was not considered a design base parameter for TMI-1.
- B. Cold shutdown was not considered a design base parameter for TMI-1.
- C. SEE Electrical Component Evaluation sheet

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

ELECTRICAL COMPONENT EVALUATION

Limit switch data does not envelope the pressure, temperature or humidity service conditions profile for a main steam line break accident in the intermediate building.

Assessment:

The limit switch operation (180°F max. ambient) will be protected by its aluminum housing. Housing is CSA listed as explosion-proof in class 1 groups C and D and water tight. Accident max. transients of 322°F, 24.2 psia, and 100% relative humidity have been predicted.

Safety Impact:

None