



Carolina Power & Light Company

JAN 25 1983

Director of Nuclear Reactor Regulation
Attention: Mr. D. B. Vassallo, Chief
Operating Reactors Branch No. 2
Division of Licensing
United States Nuclear Regulatory Commission
Washington, DC 20555

BRUNSWICK STEAM ELECTRIC PLANT, UNIT NOS. 1 AND 2
DOCKET NOS. 50-325 AND 50-324
LICENSE NOS. DPR-71 AND DPR-62
ENVIRONMENTAL QUALIFICATION OF
SAFETY RELATED ELECTRICAL EQUIPMENT

Dear Mr. Vassallo:

Carolina Power & Light Company (CP&L) has received your letter dated December 20, 1982, which forwarded the Safety Evaluation Report (SER) and Technical Evaluation Report (TER) concerning the environmental qualification of safety-related electrical equipment for the Brunswick Steam Electric Plant, Unit Nos. 1 and 2. The purpose of this letter is to provide CP&L's 30-day response to the Staff's request for justifications for continued operation (JCO's) as outlined in the SER.

As requested, the information enclosed provides a technical basis for the continued operation of the Brunswick Plant for that equipment which has been determined by the Staff to be either (1) unqualified or (2) as not having qualification established and for which JCO's have not been previously submitted. In addition, CP&L reaffirms the previously submitted basis for continued operation for those items not addressed by this submittal. Enclosure 1 provides a list, itemized by TER item number, of the status of JCO's for all TER items. Enclosure 2 consists of those JCO's which address the Staff's SER request discussed above. Of particular note, a JCO for Raychem cable (TER Item 164) was provided by our submittal dated December 31, 1982 and is not included herein. Carolina Power & Light Company believes that there are no known concerns relating to the environmental qualification of safety-related electrical equipment which would interfere with safe, continued operation of the Brunswick Plant.

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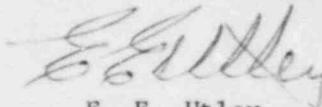
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Mr. D. B. Vassallo

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If you should have any questions on this response, please contact our staff.

Yours very truly,



E. E. Utley
Executive Vice President
Power Supply and
Engineering & Construction

WRM/kjr (6053C12T5)
Enclosures

cc: Mr. D. O. Myers (NRC-BSEP)
Mr. J. P. O'Reilly (NRC-R11)
Mr. S. D. MacKay (NRC)

ENCLOSURE 1

STATUS OF JUSTIFICATIONS FOR CONTINUED OPERATION
BRUNSWICK STEAM ELECTRIC PLANT, UNIT NOS. 1 AND 2

JUSTIFICATION FOR CONTINUED OPERATION (JCO) STATUS SHEET

<u>TER Item Number</u>	<u>JCO Enclosed</u>	<u>JCO Submitted 3/82</u>	<u>JCO Submitted 10/80</u>	<u>JCO Not Required</u>
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1				X NOTE 1
2	X			
3	X			
4	X			
5	X			
6	X			
7	X			
8	X			
9	X			
10	X			
11	X			
12	X			
13	X			
14	X			
15	X			
16	X			
17	X			
18	X			
19	X			
20	X			
21	X			
22		X		
23		X		
24		X		
25		X		
26		X		
27		X		
28		X		
29		X		
30		X		
31		X		
32		X		
33		X		
34		X		
35		X		
36		X		
37		X		
38		X		
39		X		
40		X		
41		X		
42		X		
43		X		
44		X		
45		X		
46	X			
47		X		
48		X		
49		X		
50		X		

<u>TER Item Number</u>	<u>JCO Enclosed</u>	<u>JCO Submitted 3/82</u>	<u>JCO Submitted 10/80</u>	<u>JCO Not Required</u>
51		X		
52		X		
53		X		
54		X		
55		X		
56	X			
57	X			
58	X			
59	X			
60	X			
61	X			
62	X			
63	X			
64				
65				X NOTE 2
66		X		X NOTE 2
67		X		
68		X		
69		X		
70	X			
71	X			
72	X			
73	X			
74	X			
75	X			
76	X			
77	X			
78	X			
79	X			
80	X			
81	X			
82		X		
83		X		
84	X			
85	X			
86	X			
87	X			
88	X			
89				X NOTE 2
90		X		
91	X			
92				X NOTE 2
93		X		
94	X			
95		X		
96		X		
97		X		
98		X		
99	X			
100		X		

<u>TER Item Number</u>	<u>JCO Enclosed</u>	<u>JCO Submitted 3/82</u>	<u>JCO Submitted 10/80</u>	<u>JCO Not Required</u>
101	X			
102	X			
103	X			
104	X			
105	X			
106	X			
107		X		
108		X		
109		X		
110		X		
111		X		
112		X		
113		X		
114		X		
115	X			
116	X			
117	X			
118	X			
119				X NOTE 3
120				X NOTE 3
121				X NOTE 3
122	X			
123		X		
124		X		
125		X		
126		X		
127		X		
128		X		
129		X		
130	X			
131	X			
132		X		
133	X			
134	X			
135	X			
136	X			
137	X			
138	X			
139	X			
140	X			
141		X		
142	X			
143		X		
144		X		
145	X			
146	X			
147		X		
148		X		
149		X		
150		X		

<u>TER Item Number</u>	<u>JCO Enclosed</u>	<u>JCO Submitted 3/82</u>	<u>JCO Submitted 10/80</u>	<u>JCO Not Required</u>
151		X		
152	X			
153		X		
154			X	
155	X			
156	X			
157	X			
158	X			
159	X			
160	X			
161				X NOTE 1
162	X			
163	X			
164				X NOTE 4
165	X			
166				X NOTE 3
167	X			
168				X NOTE 1
169		X		
170		X		
171				X NOTE 1
172	X			
173	X			
174	X			
175				X NOTE 3
176	X			
177	X			
178	X			
179		X		
180		X		
181		X		
182		X		
183				X NOTE 3

NOTES

1. Item is Category II.c.
2. Item has been removed from the plant.
3. Item is Category I.a.
4. Item was justified in our letter of 12/31/82 (Eury - Vassallo).

ENCLOSURE 2

JUSTIFICATIONS FOR CONTINUED OPERATION
BRUNSWICK STEAM ELECTRIC PLANT, UNIT NOS. 1 AND 2

TER ITEM NUMBERS: 2, 3, 4, 5, 7, 8, 9, 11, 12, 13,
14, 15, 16, and 17

LIMITORQUE MOTORIZED VALVE ACTUATOR (SMB SERIES)

Plant ID Numbers:	B21-F019	E21-F004A	E51-F008	A-BFV-RB
	E11-F002A	E21-F004B	E51-F013	B-BFV-RB
	E11-F002B	E21-F015A	E51-F019	C-BFV-RB
	E11-F008	E21-F015B	E51-F029	D-BFV-RB
	E11-F023	E21-F031A	E51-F031	E-BFV-RB
	E11-F052B	E21-F031B		F-BFV-RB
	E11-F068A		G31-F004	G-BFV-RB
	E11-F068B	E41-F001		H-BFV-RB
	E11-F075	E41-F003	SW-V101	I-BFV-RB
	E11-F103A	E41-F004	SW-V102	
	E11-F103B	E41-F006	SW-V105	N-BFV-RB
	E11-F104A	E41-F007	SW-V106	
	E11-F104B	E41-F008	SW-V111	CAC-V23
	E11-V35	E41-F012	SW-V117	
	E11-V36	E41-F041	SW-V118	
	E11-V37	E41-F042		
	E11-V38	E41-F059		

NOTE: ID Numbers SW-V103 and SW-V104 are not on the safety related equipment list.

Component materials of the Limitorque Motorized Valve Actuators have been identified. These materials have been evaluated per DOR guidelines and by applying Arrhenius techniques. Results of this analysis indicate that the Class B or Class H insulation system, Durez switches, and internal wire insulation materials have greater than forty (40) years demonstrated qualified life at the maximum reactor building temperature of 104°F (Reference: Patel Report Number PEI-TR-83-4-3).

Therefore, continued operation is justified.

TER ITEM NUMBERS: 2, 4, 12, 16, 18, 19, AND 20

LIMITORQUE MOTORIZED VALVE ACTUATOR (SMB SERIES)

Plant ID Numbers:

B21-F016	E11-F009	E21-F001A	*E51-F007
B32-F031A	E11-F015A	E21-F001B	*G31-F001
B32-F031B	E11-F015B	E21-F005A	
B32-F032A	E11-F020A	E21-F005B	
B32-F032B	E11-F020B	E21-F037A	
	*E11-F022	E21-F037B	
	E11-F122A	E41-F002	
	E11-F122B		

*Motors with Class H insulation.

Component materials of the Limitorque Motorized Valve Actuators have been identified. These materials have been evaluated per DOR guidelines and by applying Arrhenius techniques. Results of this analysis indicate that the Class RH insulation system, melamine switches, and internal wire insulation materials have greater than 40 years demonstrated qualified life at the maximum drywell temperature of 150°F (Reference: Patel Report Number PEI-TR-83-4-3).

Motors with Class H insulation systems have been identified above by an asterisk. These motors are superior in construction (per Limitorque Corporation) to the Class B insulated motors successfully tested to 2×10^5 rads gamma. Additionally, these Class H motors have been successfully LOCA tested to a peak temperature of 329°F which exceeds the postulated plant accident at Brunswick.

Therefore, continued operation is justified.

TER ITEM NUMBERS: 6, 10, 12, 14, 16, and 21

LIMITORQUE MOTORIZED VALVE ACTUATOR (SMB SERIES)

Plant ID Numbers:	E11-F003A	E11-F011A	E11-F028A
	E11-F003B	E11-F011B	E11-F028B
	E11-F004A	E11-F016A	E11-F047A
	E11-F004B	E11-F016B	E11-F047B
	E11-F004C	E11-F017A	E11-F048A
	E11-F004D	E11-F017B	E11-F048B
	E11-F006A	E11-F021A	E11-F049
	E11-F006B	E11-F021B	E11-F052A
	E11-F006C	E11-F024A	SGT-V8
	E11-F006D	E11-F024B	SGT-V9
	E11-F007A	E11-F027A	
	E11-F007B	E11-F027B	

NOTE: ID Numbers E11-F007C and D are not on the list of safety related equipment.

Component materials of the Limitorque Motorized Valve Actuator have been identified. These materials have been evaluated per DOR guidelines and by applying Arrhenius techniques. Results of this analysis indicate that the Class H motor insulation system, melamine switches, and internal wire insulation materials have greater than forty (40) years demonstrated qualified life at the maximum reactor building temperature of 104°F (Reference: Patel Report Number PEI-TR-83-4-2).

Therefore, continued operation is justified.

TER ITEM NUMBER 18

LIMITORQUE MOTORIZED VALVE ACTUATOR (SMB SERIES)

Plant ID Numbers: B32-F043A
B32-F043B
B32-F044A
B32-F044B

The motorized valve actuators listed have been disabled and the valves locked in the required position per NRC regulations.

These valves are not required for accident mitigation and therefore, continued operation is justified.

TER ITEM NUMBER 46

AVCO SOLENOID VALVE 5450-5

Plant ID Numbers: B21-F013 A Through H
 B21-F013 J Through L

NOTE: The TER erroneously identifies these valves
as ASCO valves.

These valves have been replaced with Target Rock Valves (Part
Number $\frac{1}{2}$ SMS-A-01-2). The Target Rock Valves are qualified for use at
BSEP (Reference: Target Rock Report Number 2199A dated December 27,
1979).

Therefore, continued operation is justified.

TER ITEM NUMBER 56

BARTON PRESSURE SWITCH MODEL 288

Plant ID Numbers:

B21-PS-N021B
B21-PS-N021D
E41-PDS-N004
E41-PDS-N005
E51-PDS-N017
E51-PDS-N018

These pressure switches have been replaced with Rosemount Pressure Transmitters (Part Numbers 1152GP and 1152DP Series). The Rosemount pressure transmitters are qualified for use at BSEP (Reference: United Engineers Report Number UC-33229, dated August 20, 1982).

Therefore, continued operation is justified.

NOTE: New plant ID numbers were assigned to the replacement pressure transmitters as follows (respectively):

B21-PT-N021B
B21-PT-N021D
E41-PDT-N004
E41-PDT-N005
E51-PDT-N017
E51-PDT-N018

TER ITEM NUMBERS 57 AND 59

BARTON Differential Pressure Indicating Switch Models 288A/289A

Plant ID Numbers:

CAC-PDS-4222	E41-PS-N001A
CAC-PDS-4223	E41-PS-N001B
	E41-PS-N001C
	E41-PS-N001D

Component materials of the Barton differential pressure switches have been identified. These materials have been evaluated per DOR guidelines and by applying Arrhenius techniques. Results of this analysis indicate that the nonmetallic components have greater than 1.5×10^4 years of expected life at the maximum reactor building temperature of 104°F . The pressure switch nonmetallic materials are exposed to the plant postulated accident temperature peak of 180°F for thirty-five (35) minutes. The accident temperature then decreases to 125°F within three (3) hours of event initiation. With an expected life of 96 years at 180°F , the pressure switch nonmetallic materials are insensitive to thermal degradation for the required operating period.

Additionally, similar switches have been successfully tested for six (6) hours at 100% RH, 7 inches W.C. with temperatures from 40°F to 212°F . Also, the radiation testing performed (3.6×10^6 rads gamma) on similar switches exceeds the postulated TID (1×10^5 rads gamma) for these switches (Reference: Patel Report Number PEI-TR-83-4-22).

Therefore, continued operation is justified.

TER ITEM NUMBER 58

BARTON PRESSURE SWITCH MODEL 288A

Plant ID Numbers:

B21-PDS-N006A	B21-PDS-N008A
B21-PDS-N006B	B21-PDS-N008B
B21-PDS-N006C	B21-PDS-N008C
B21-PDS-N006D	B21-PDS-N008D
B21-PDS-N007A	B21-PDS-N009A
B21-PDS-N007B	B21-PDS-N009B
B21-PDS-N007C	B21-PDS-N009C
B21-PDS-N007D	B21-PDS-N009D

These pressure switches have been replaced with Rosemount Pressure Transmitters (Part Number 1152DP7E22). The Rosemount pressure transmitters are qualified for use at BSEP (Reference: United Engineers Report Number UC-33229, dated August 20, 1982).

Therefore, continued operation is justified.

NOTE: New plant ID numbers were assigned to the replacement pressure transmitters as follows (respectively):

B21-PDT-N006A
B21-PDT-N006B
B21-PDT-N006C
B21-PDT-N006D
B21-PDT-N007A
B21-PDT-N007B
B21-PDT-N007C
B21-PDT-N007D
B21-PDT-N008A
B21-PDT-N008B
B21-PDT-N008C
B21-PDT-N008D
B21-PDT-N009A
B21-PDT-N009B
B21-PDT-N009C
B21-PDT-N009D

TER ITEM NUMBERS 60 AND 61

STATIC-O-RING PRESSURE SWITCH MODEL 12N-AA4-X10TT

Plant ID Numbers:

E11-PS-N010A	E11-PS-N019A
E11-PS-N010B	E11-PS-N019B
E11-PS-N010C	E11-PS-N019C
E11-PS-N010D	E11-PS-N019D
E11-PS-N011A	C72-PS-N002A
E11-PS-N011B	C72-PS-N002B
E11-PS-N011C	C72-PS-N002C
E11-PS-N011D	C72-PS-N002D

These pressure switches have been replaced with Rosemount Pressure Transmitters (Part Number 1152GP4E22). The Rosemount pressure transmitters are qualified for use at BSEP (Reference: United Engineers Report Number UC-33229, dated August 20, 1982).

Therefore, continued operation is justified.

NOTE: New plant ID numbers were assigned to the replacement pressure transmitters as follows (respectively):

E11-PT-N010A
E11-PT-N010B
E11-PT-N010C
E11-PT-N010D
E11-PT-N011A
E11-PT-N011B
E11-PT-N011C
E11-PT-N011D
E11-PT-N019A
E11-PT-N019B
E11-PT-N019C
E11-PT-N019D
C72-PT-N002A
C72-PT-N002B
C72-PT-N002C
C72-PT-N002D

TER ITEM NUMBERS 62 AND 63

STATIC-O-RING PRESSURE SWITCH MODELS 5N-AA3-X9-STT
AND 6N-AA21-X9-SVTT

Plant ID Numbers: E21-PS-N008A E21-PS-N009A
 E21-PS-N008B E21-PS-N009B
 E41-PS-N010

Component materials of the Static-O-Ring Pressure Switches have been identified. These materials have been evaluated per DOR guidelines and by applying Arrhenius techniques. Results of this analysis indicate that each of the non-metallic materials (Viton A, Neoprene, General Purpose Phenolic and Ethylene Propylene rubber) has an expected life in excess of 261 years at the maximum reactor building temperature of 104°F. The switch nonmetallic materials are exposed to the plant postulated accident temperature peak of 192°F for a maximum of 10 minutes. The accident temperature then decreases to 125°F within 3 hours of event initiation. With an expected life of 564 days at 192°F, the switch nonmetallic materials are insensitive to thermal degradation for the required operating period of 24 hours. Also, similar switches were tested at high humidity for 100 days at 150°F with no failures observed. Prior to the accident testing these switches had been thermally aged for 2400 hours at 80°C.

Additionally, at the highest dose rate during the initial 24 hours after the accident, the total accumulated dose of the non-metallics will be significantly less than the lowest radiation damage threshold. (Reference: Patel Report: PEI-TR-83-4-18.)

Therefore, continued operation is justified.

TER ITEM NUMBER 70

BARKSDALE PRESSURE SWITCH MODEL B2T-M12SS

Plant ID Numbers: B21-PS-N021A
B21-PS-N021C
E41-PS-N023A
E41-PS-N023B
E51-PS-N023C
E51-PS-N023D

These pressure switches have been replaced with Rosemount Pressure Transmitters (Part Numbers 1152GP Series). The Rosemount pressure transmitters are qualified for use at BSEP (Reference: United Engineers Report Number UC-33229, dated August 20, 1982).

Therefore, continued operation is justified.

NOTE: New plant ID numbers were assigned to the replacement pressure transmitters as follows (respectively):

B21-PT-N021A
B21-PT-N021C
E41-PT-N023A
E41-PT-N023B
E51-PT-N023C
E51-PT-N023D

TER ITEM NUMBER 71, 72, 73, 74, 75, 76, 77, 78, 79, 80,
81 AND 99

Barksdale Pressure Switch Models: B2T-M12SS, D2H-M150SS, D2T-M18SS,
D2T-M150SS, P1H-M340SS, TC9622-1
and T2H-M251S-12

Plant ID Numbers:	E11-PS-N016A	E41-PSH-N012A	RIP-PSL-1218
	E11-PS-N016B	E41-PSH-N012B	PIP-PSL-1219
	E11-PS-N016C	E41-PSH-N012C	RIP-PSL-1220
	E11-PS-N016D	E41-PSH-N012D	RIP-PSL-1221
	E11-PS-N020A	E41-PSH-N017A	RIP-PSL-1222
	E11-PS-N020B	E41-PSH-N017B	RIP-PSL-1223
	E11-PS-N020C	E41-PSH-N027	RIP-PSL-1225
	E11-PS-N020D	E51-PS-N019A	RIP-PSL-1227
		E51-PS-N019B	RIP-PSL-1228
		E51-PS-N019C	RIP-PSL-1229
	RIP-PSL-1200	E51-PS-N019D	B32-PS-N018A
	RIP-PSL-1201	E51-PS-N020	B32-PS-N018A-1
	RIP-PSL-1206	E51-PSH-N009A	B32-PS-N018B
	RIP-PSL-1209	E51-PSH-N009B	SW-TSH-1109
	RIP-PSL-1210	E51-PSH-N012A	SW-TSH-1110
	RIP-PSL-1211	E51-PSH-N012B	SW-TSH-1111
	RIP-PSL-1212	E51-PSH-N012C	SW-TSH-1112
	RIP-PSL-1217	E51-PSH-N012D	

Component materials of the Barksdale switches have been identified. These materials have been evaluated per DOR guidelines and by applying Arrhenius techniques. Results of this analysis indicate that all materials, except for Buna-N rubber, have greater than 47 years expected life at the maximum reactor building temperature of 104°F. The switch materials are exposed to the plant postulated accident temperature peak of 298°F for only three (3) minutes. The accident temperature then decreases to 14°F within one (1) hour of event initiation. With an expected life of 146 hours at 298°F, the switch nonmetallic materials are insensitive to thermal degradation for the required operating period.

For Buna-N, the rubber manufacturer's literature recommends continuous use up to 200°F and extreme use to 300°F for short durations. Therefore, continued operation is justified for switches with Buna-N rubber due to the relatively mild postulated accident profile.

Also, the component nonmetallic materials have been successfully radiation aged during qualification testing (while being used in similar applications) to levels greater than 1×10^7 rads gamma, the postulated accident TID for BSEP.

In addition, the Brunswick switches are located in NEMA 3, 4, 12 or 13 enclosures where the effects of direct steam impingement/humidity would be significantly reduced during the postulated accident (Reference: Patel Report Number PEI-TR-83-4-23).

Therefore, continued operation is justified.

TER ITEM NUMBERS 84, 86, AND 87

YARWAY LEVEL SWITCH MODEL 4418C/4418EC

Plant ID Numbers:

*B21-LS-N021A	B21-LS-N031A
*B21-LS-N021C	B21-LS-N031B
B21-LS-N024A	B21-LS-N031C
B21-LS-N024B	B21-LS-N031D
B21-LS-N025A	B21-LS-N042A
B21-LS-N025B	B21-LS-N042B
	B21-LITS-N036
	B21-LITS-N037

*Items deleted from the list of safety-related equipment.

These level switches have been replaced with Rosemount Pressure Transmitters (Part Numbers 1152DP Series and 1152GP Series). The Rosemount pressure transmitters are qualified for use at BSEP (Reference: United Engineers Report Number UC-33229, dated August 20, 1982).

Therefore, continued operation is justified.

NOTE: New plant ID numbers were assigned to the replacement pressure transmitters as follows (respectively):

B21-LT-N024A
B21-LT-N024B
B21-LT-N025A
B21-LT-N025B
B21-LT-N031A
B21-LT-N031B
B21-LT-N031C
B21-LT-N031D
B21-LT-N042A
B21-LT-N042B
B21-LT-N036
B21-LT-N037

YARWAY LEVEL INDICATING SWITCH MODEL 4418EC

Plant ID Numbers: B21-LITS-N026A
B21-LITS-N026B

Component materials of the Yarway Level Switch, Model 4418EC, have been identified. These materials have been evaluated per DOR Guidelines and by applying Arrhenius techniques. Results of this analysis indicate that all nonmetallic materials, except the Buna-N O ring seal, have greater than 83 years expected life at the maximum Reactor Building maximum temperature of 104°F. The level indicating switch nonmetallic materials are exposed to the plant postulated accident temperature peak of 225°F for only two (2) minutes. The accident temperature then decreases to 125°F within three (3) hours of event initiation. With an expected life of 757 hours at 225°F, the level indicating switch nonmetallic materials are insensitive to thermal degradation for the required operating period.

Also, the lowest radiation damage threshold for the nonmetallic materials (1×10^6 Rads gamma) exceeds the postulated TID (1×10^5 Rads gamma) for these level switches (Reference: Patel Report PEI-TR-83-4-21).

BSEP personnel conduct periodic (every 18 months minimum, per PT 55.3PC and PT 56.4PC) calibration/maintenance checks of these level switches to ensure proper operation. Additionally, these indicating level switches have three (3) qualified backup instruments for reliability.

Therefore, continued operation is justified.

TER ITEM NUMBER 88

MAGNETROL LEVEL SWITCH MODEL 5.0-751

Plant ID Numbers:

C11-LSH-N013A	C12-LSH-N013A
C11-LSH-N013B	C12-LSH-N013B
C11-LSH-N013C	C12-LSH-N013C
C11-LSH-N013D	C12-LSH-N013D

Component materials of the Magnetrol Level Switch have been identified. These materials have been evaluated per DOR guidelines and by applying Arrhenius techniques. Results of this analysis indicate that the nonmetallic components have greater than 8.5×10^6 years of expected life at the maximum reactor building temperature of 104°F . The level switch nonmetallic materials are exposed to the plant postulated accident temperature peak of 298°F for only two (2) minutes. The accident temperature then decreases to 125°F within one (1) hour of event initiation. With an expected life of seven (7) years at 298°F , the level switch nonmetallic materials are insensitive to thermal degradation for the required operating period of 24 hours.

Additionally, similar switches have been thermally aged at 300°F for 160 hours, then successfully tested for 480 hours at 95-100 percent relative humidity with the temperature varying between ambient and 100°F .

Also, the lowest radiation damage threshold for the nonmetallic materials (1×10^7 rads gamma) exceeds the postulated TID (2.4×10^6 rads gamma) for these switches. (Reference: Patel Report Number PEI-TR-83-4-19.)

Therefore, continued operation is justified.

TER ITEM NUMBER 91

MAGNETROL FLOW SWITCH MODEL F-521

Plant ID Numbers:	B21-FS-F015A	B21-FS-F-43A	E41-FS-F024A
	B21-FS-F015B	B21-FS-F043B	E41-FS-F024B
	B21-FS-F015C	B21-FS-F045A	E41-FS-F024C
	B21-FS-F015D	B21-FS-F045B	E41-FS-F024D
	B21-FS-F015E	B21-FS-F047A	E51-FS-F044A
	B21-FS-F015F	B21-FS-F047B	E51-FS-F044B
	B21-FS-F015G	B21-FS-F049A	E51-FS-F044C
	B21-FS-F015H	B21-FS-F049B	E51-FS-F044D
	B21-FS-F015J	B21-FS-F051A	
	B21-FS-F015K	B21-FS-F051B	
	B21-FS-F015L	B21-FS-F055	
	B21-FS-F015M	B21-FS-1227F	
	B21-FS-F015N		
	B21-FS-F015P		
	B21-FS-F015R		
	B21-FS-F015S		

Component materials of the Magnetrol Flow Switch have been identified. These materials have been evaluated per DOR guidelines and by applying Arrhenius techniques. Results of the analysis indicate that the nonmetallic components have greater than 261 years of expected life at the maximum reactor building temperature of 104°F. The flow switch nonmetallic materials are exposed to the plant postulated accident temperature peak of 298°F for only two (2) minutes. The accident temperature then decreases to 125°F within one (1) hour of event initiation. With an expected life of 261 hours at 298°F, the flow switch nonmetallic materials are insensitive to thermal degradation for the required operating period. (Reference: Patel Report Number PEI-TR-83-4-20.)

Therefore, continued operation is justified.

TER ITEM NUMBERS 94 AND 122

CHERRY ELECTRICAL PRODUCTS MODEL E2360H

Plant ID Number: Reactor Instrument Penetration Isolation Valve
Position Indicator Switch (Various)

Component materials of the Cherry switch, Model E2360H, have been identified. These materials have been evaluated per DOR guidelines and by applying Arrhenius techniques. Results of this analysis indicate that each of the non-metallic materials (General Purpose Phenolic, acetal resin, and polybutylene terephthalate) has an expected life in excess of 660 years at the maximum reactor building temperature of 104°F. The switch nonmetallic materials are exposed to the plant postulated accident temperature peak of 298°F for only two (2) minutes. The accident temperature then decreases to 125°F within one (1) hour of event initiation. With an expected life of 732 hours at 298°F, the switch nonmetallic materials are insensitive to thermal degradation for the required operating period.

In addition, the Brunswick Cherry switches are located in sealed NEMA-4-like enclosures where the effects of direct steam impingement/humidity would be significantly reduced during the postulated accident. (Reference: Batel Report Number PEI-TR-83-4-15.)

Therefore, continued operation is justified.

TER ITEM NUMBERS 101 THROUGH 106

NECI THERMOCOUPLE

PLANT ID Numbers:

E51-TE-N021A,B	E41-TE-N030A,B	E51-TE-N025D
E51-TE-N022A,B	G31-TE-N016A-F	E51-TE-N026C,D
E51-TE-N023A,B	G31-TE-N022A-F	E51-TE-N027C,D
E51-TE-N025A	G31-TE-N023A-F	E51-TE-N026A
E51-TE-N027A	E51-TE-N025B	E51-TE-N026B
E51-TE-N025C		E51-TE-N027B

Component materials of the NECI 145C3224P1 thermocouple have been identified. These materials have been evaluated per DOR guidelines and by applying Arrhenius techniques. Results of this analysis indicate that the RTV-116 Potting Compound, SR 80 Varnish, Fiberglass Sleeving, and Nitrile-based rubber gasket (pending successful completion of the PYCO test program currently in progress) have greater than forty (40) years demonstrated qualified life at the maximum reactor building temperature of 104°F (Reference: PATEL Report Number PEI-TR-83-4-6).

In addition to the analysis performed on the NECI thermocouple using the parameters of the test program currently in progress, additional analysis were performed in the following area:

Time-Temperature Effects - Based on the expected life calculations performed on each material at the assumed baseline temperature of 104°F (40°C), all the nonmetallics have expected lives in excess of 2.9×10^6 years, except for the Nitrile gasket. The gasket has an expected life of 11 years at the 104°F baseline temperature. Since the cover of the thermocouple is intended only to be NEMA-1 "splash-proof," the gasket is not used as a moisture barrier and the thermocouple will continue to function in its absence.

Further testing on similar thermocouples with those gaskets showed that, even though the thermocouples were not completely sealed against the environment, they still functioned (reference excerpts from Qualification Test Report, Nuclear Power Plant Application, PYCO Document No. 770831, dated August 31, 1977, included as Appendix II of Patel Report No. PEI-TR-83-4-6).

Radiation Analysis - Excluding the Nitrile rubber gasket (which is not essential for operation), the lowest radiation threshold is 15 times greater than the worst case postulated total integrated dose in the reactor building.

Therefore, continued operation is justified.

TER ITEM NUMBER 115

NAMCO MODEL 2400XR POSITION SWITCH

Plant ID Numbers: A-BFIV-RB
 B-BFIV-RB
 C-BFIV-RB
 D-BFIV-RB

Component materials of the NAMCO 2400XR Position Switch have been identified. These materials have been evaluated per DOR guidelines and by applying Arrhenius techniques. Results of this analysis indicate that all materials, except for Buna-N rubber (used as a binder in the asbestos gasket), have greater than forty (40) years demonstrated qualified life at the maximum reactor building temperature of 104°F. The gasket, which is comprised of 20% Buna-N and 80% asbestos, is judged acceptable for continued operation since the Buna-N is used as a binder and once the gasket is properly installed and left undisturbed, no significant degradation would occur during the expected 40 year life.

The analysis performed on the D2400XR switch is based on testing conducted on NAMCO Series SL3 switches due to similarity in materials of construction. (Reference: Patel Report Number PEI-TR-83-4-12).

Therefore, continued operation is justified.

TER ITEM NUMBERS 116, 117 AND 118

BETTIS SWITCHES, Type RX-41 and RX-341

Plant ID Numbers: CAC-V49 CAC-V10 CAC-V15
 CAC-V50 CAC-V9

Component materials of the Bettis Limit Switches have been identified. These materials have been evaluated per DOR guidelines and by applying Arrhenius techniques. Results of this analysis indicate that the switch materials have greater than forty (40) years demonstrated qualified life at the maximum reactor building temperature of 104°F (Reference: Patel Report Number PEI-TR-83-4-24).

Therefore, continued operation is justified.

TER ITEM NUMBERS 130, 131, 133, 134 AND 135

HONEYWELL MICROSWITCH, Types: PTSEA202FB52, PTSHA201, PTKBC2221CCF9, PTKBC2221, and PTSHE202CB97

Plant ID Numbers:	DL8-RS1	DM7-RS1	DLO-RS1	B43-RS1
	DL9-RS1	DM8-RS1	DL1-RS1	DH3-RS1
	DM2-RS1	DN6-RS1	DL2-RS1	DH2-RS1
	DM4-RS1	DK8-RS1	DL7-RS1	B50-RS1
	DM5-RS1	DK9-RS1	DS4-RS1	B49-RS1
	B11-RS1	B41-RS1	B45-RS1	B46-RS1
	B47-RS1	B11-RS	B21-CS-3412	B21-CS-3327
	B21-CS-3329	and various valve control switches		

The above switches are installed on elevation 20' of the reactor building and used as isolation-selector switches in the remote shutdown system and are classified as essential passive.

According to Honeywell catalog #70 the PT series switch is a heavy duty, oiltight switch with differing configurations as below;

PTS - Knob or wing lever selector
PTK - Key operated selector
PTH - Lighted pushbutton
PTP - Unlighted pushbutton:

switch Part Numbers are developed;

<u>PTS</u>	-	<u>E</u>	-	<u>A2</u>	-	<u>O2</u>	-	<u>F</u>	-	<u>B52</u>
Switch		Selector		Cam Code		Knob or		Contact Block		Legend
Type		Action				Key Code		Configuration		Plate

since the contact blocks are interchangeable among all types of switches, all PT type switches are similar.

The switch assembly is made of high strength phenolic. Therefore, we have assumed the most conservative threshold value for the radiation damage of 10^6 rads TID (GP Phenolic P-4050, Appendix C, DOR guidelines). This value exceeds the LOCA TID of 10^5 rads for this area. This is upheld by the Microswitch Report "Nuclear Radiation and Switch Applications" which gives an "acceptable absorbed dose" for PT series switches of 5×10^6 rads TID.

Expected life calculations for General Purpose Phenolic gives greater than 3500 years life at the LOCA temperatures of 135°F. Additionally, these switches have been thermally aged at 185°F for 767 hours.

This aging temperature does not envelope the HELB peak temperature of 200°F, however, this peak is only above 185°F for 70 seconds. Since the switches are within enclosures, the temperature profile of the HELB would have returned below 185°F before the first signs of the peak manifests itself as a temperature rise within the switch.

Based upon the above, continued operation is justified.

RELIANCE ELECTRIC MODEL S-1000 NUCLEAR FAN MOTOR
(PUMP ROOM COOLER FAN DRIVE)

Plant ID Numbers: A-FCU-RB
B-FCU-RB
C-FCU-RB
D-FCU-RB

Component materials of the Reliance S-1000 Series Nuclear Fan Motors have been identified. These materials have been evaluated per DCR guidelines and by applying Arrhenius techniques. Results of this analysis indicate that the Class RH motor insulation system has greater than forty (40) years demonstrated qualified life at the maximum reactor building temperature of 104°F (Reference: Patel Report Number PEI-TR-83-4-11).

Therefore, continued operation is justified.

TER ITEM NUMBERS 138, 139, 140

GENERAL ELECTRIC MOTORS, Types 5K821161C11, 5K6346XC94A, and 5K6346XC95A

Plant ID Numbers: E11-C001 A Through D
 E11-C002 A Through D
 E21-C001 A and B

These motors are installed in the plant as the prime movers for:

Residual Heat Removal (RHR) Pumps - 5K6346XC95A
Core Spray (CS) Pumps - 5K6346XC94A
RHR Service Water (RHRSW) Booster Pumps - 5K821161C11

These are vertical or horizontal induction motors with Class B custom Polyseal insulation. Types 5K6346XC94A, 95A are designed as air cooled motors to run continuously at 65°C (149°F) ambient temperature. Type 5K821161C11 is a totally enclosed air/water cooled unit designed to run continuously at 90°C (194°F) ambient.

These continuous ambient temperature ratings are both greater than the Post-LOCA ambient high temperature of 140°F. The lists of non-metallic materials for both types of motors have been obtained from GE and analyzed by United Engineers our A/E and have been shown to suffer no significant degradation at the LOCA radiation levels (1×10^5 Rads TID for RHRSW, 1×10^7 Rads TID for RHR and CS).

During a high energy line break (HELB), the peak ambient temperature would be 290°F for approximately one (1) minute (200°F for the RHRSW motor) with a pressure pulse to 6.9 psig at one (1) second which falls to 0.4 psig at one (1) minute.

If the motors were running at design operating temperature before a HELB (worst case), the motor insulation would never experience the high peak temperature due to the thermal lag in the motor. In the absence of thermal lag, the insulation would experience a total temperature of 188°C (65°C ambient plus 45°C design rise plus 78°C accident peak) for only one (1) minute. This is less than the 198°C at which a similar motor was tested for 12 hours (NEDM-10672, "ENVIRONMENTAL QUALIFICATION TEST OF VERTICAL INDUCTION MOTOR FOR ECCS SERVICE IN NUCLEAR POWER PLANTS" by P. J. Thiemann, dated August 1972). Due to thermal lag, the temperature profile of the HELB would have returned to the motor design ambient temperature before the first signs of the peak manifests itself as a temperature rise in the insulation.

Additionally, since the RHRSW motor is water/air cooled, its temperature is more dependent on the cooling water supply temperature than the surrounding ambient.

Based upon the above, continued operation is justified.

TER ITEM NUMBER 142 AND 146

GENERAL ELECTRIC RELAY MODELS CR2810 AND CR2811

Plant ID Numbers:

DOO-RS	*DP5-936X
DA6-3	B49-BN7-RS
DA6-3-1	B50-B28-RX
DP5-3	B11-B09-RS
DP5-3-1	B43-B28-RS
DBO-TS-936X	B41-B28-RS
	B45-BN7-RS
	B46-B28-RS
	B47-B28-RS
	**B50-B28-RS

- * ITEM deleted from the List of safety-related equipment.
- ** Erroneously identified as a CR2810 relay and is, in fact, a HFA51 relay covered under TER Item Number 145.

Component materials of the General Electric Relays, Models CR2810 and CR2811, have been identified. These materials have been evaluated per DOR guidelines and by applying Arrhenius techniques. Results of this analysis indicate that each of the nonmetallic materials (wood flour filled phenolic, nylon, acetate film, and polyvinyl formal magnet wire insulation) has an expected life in excess of 79 years at the maximum reactor building temperature of 140°F (includes heat rise). The relay nonmetallic materials are exposed to the plant postulated accident temperature peak of 261°F (includes heat rise) for thirty-five (35) minutes. The accident temperature then decreases to 206°F (includes heat rise) within three (3) hours of event initiation. With an expected life of 2680 hours at 261°F, the relay nonmetallic materials are insensitive to thermal degradation for the operating period.

In addition, the BSEP relays are located inside cabinetry where the effects of direct steam impingement/humidity would be significantly reduced during the postulated accident. Further analysis indicates that all the nonmetallic materials have a radiation damage threshold significantly greater than the required level of 1×10^5 rads gamma (Reference: Patel Report Number PEI-TR-83-4-17).

Therefore, continued operation is justified.

TER ITEM NUMBER 145

GENERAL ELECTRIC RELAY MODEL HFA51A49H

Plant ID Numbers:

D00-RX
DLO-RX
DK9-RX
DL1-RX
DL2-RX
*B49-BN7-RS
*B50-B28-RX
B50-B28-RS
*B11-B09-RS
*B43-B28-RS
*B41-B28-RS
*B45-BN7-RS
*B46-B28-RS
*B47-B28-RS

*Items erroneously identified as a General Electric Model HFA51 Series relay, and is in fact a General Electric CR2811 Series relay covered under TER Item Numbers 142 and 146.

Component materials of the General Electric HFA51A Series relay have been identified. These materials have been evaluated per DOR guidelines and by applying Arrhenius techniques. Results of this analysis indicate that the plexiglass and general purpose phenolic have greater than forty (40) years expected life at a temperature of 259.8°F (includes heat rise) in the reactor building, and are, therefore, insensitive to thermal degradation for a period of 13 years.

The requirements of 1×10^5 rads gamma was enveloped for the relay by test. The lexan bobbin was not included in the test but has a radiation damage threshold of 4.3×10^6 rads gamma and, therefore, is insensitive to the radiation requirements of 1×10^5 rads gamma.

Carolina Power & Light personnel conduct a visual inspection for cracking and/or melting of the spool (bobbin) in the magnetic coil assembly of all safety-related HFA relays on a monthly basis per Inspection Procedure MI-22. This action was recommended by General Electric Service Information Letter (SIL) Number 44, Supplement Number 2. If degradation of any type is detected then CP&L replaces the magnetic coil assembly or entire relay, if required, with a General Electric Century Series Unit which is fully qualified to IEEE 323-1974 and to BSEP environmental parameters (Reference: Patel Report Number PEI-TR-83-04-16).

Therefore, continued operation is justified.

TER ITFM NUMBER 152

AMP MODEL PIDG KYNAR

Plant ID Number: Wire Terminations

Component materials of the AMP PIDG terminations have been identified. These materials have been evaluated per DOR guidelines and by applying Arrhenius techniques. Results of this analysis indicate that the KYNAR insulated terminations have greater than forty (40) years demonstrated qualified life at the maximum drywell temperature of 150°F (Reference: PATEL Report Number PEI-TR-83-4-5).

Therefore, continued operation is justified.

TERRY STEAM TURBINE HPCI PUMP DRIVE MODEL CCS

Plant ID Number: E41-C002

An operational analysis has been performed on the Terry Steam Turbine Model CCS HPCI Pump Drive. Results of this analysis indicate that the HPCI turbine and auxiliaries could be subjected to a harsh temperature environment after a HPCI steam supply line break. However, no credit is taken for the operation of the HPCI turbine following a rupture of its own steam supply line. Therefore, safe reactor shutdown does not depend on the operation of this device for a HPCI steam supply line break.

In the event of a small high energy line break (HELB), one for which the HPCI system can maintain the reactor primary vessel water level, the core is never exposed and hence core cooling is maintained and no significant radiation exposure is experienced by the HPCI system. This small break will cause a short duration accident temperature peak of 180°F approximately 35 minutes after accident initiation, decreasing to 125°F in less than three (3) hours. The HPCI system may be called upon to operate intermittently for a maximum duration of 24 hours after accident initiation.

In the event of a large LOCA, one for which the HPCI system cannot maintain the reactor primary vessel water level, the HPCI system may be subjected to high radiation exposure. However, in this case, the HPCI system is not required since the primary vessel will be depressurized by either the break or the actuation of the Automatic Depressurization System (ADS). Adequate core cooling is then provided by the low pressure Emergency Core Cooling Systems (ECCS) acting in the place of the HPCI system.

In the event of a small break LOCA for which the HPCI can maintain reactor primary vessel water level, the core never uncovers and hence core cooling is maintained and the radiation environment is not present. In this case, the temperature environment is limited to self-generated heat.

No common mode failures to date have been reported on the Terry Steam Turbine HPCI system, even after many years of operational experience throughout the nuclear power industry.

In addition, a General Electric-lead Owners Group has recently completed a successful environmental qualification program on the Terry Steam Turbine Model CCS HPCI system.

Therefore, continued operation is justified.

TER ITEM NUMBER 156

SBGT MOTOR CONTROL, FARR COMPANY MODEL NUMBER D51423

Plant ID Number: SGT-FILT-2A-RB SGT-FILT-1A-RB
 SGT-FILT-2B-RB SGT-FILT-1B-RB

This item is located on the 50-foot elevation of the reactor building. The post-LOCA temperature profile in this area is a gradual increase from normal (maximum 104°F) to equilibrium at 128°F in approximately 100 hours. The total integrated radiation dose is 10^5 rads for the 40 year life plus the accident.

This item was constructed in the early 1970's of high quality, heavy-duty components. Typically, such components will continue to operate in the thermal environment described above.

The DOR Guidelines, Appendix C, gives a value of 10^5 rads TID for the majority of electrical components.

It can be concluded, based upon the above information, that these items will continue to operate during and after a LOCA event.

The SBGT cannot, due to the lack of directly applicable qualification data, be assumed to remain operable in the more severe post-HELB environment, but as discussed below its operation is not necessary for this event.

The radioactive release from a HELB in the reactor building is substantially less than that assumed for the main steam line break which is released directly to the atmosphere and results in much less site boundary dose than that permitted by 10 CFR 100.

Since the inventory loss prior to isolation for a HELB is less than the main steam line break, the offsite HELB dose is also correspondingly low even if the SBGT is not immediately operable. The HELB analyses for BSEP have shown that no fuel damage is expected as a result of the event. Therefore, there will be no excessive radiation levels in the reactor coolant when long term recovery from the event is underway. Thus, there is no need for the SBGT system to maintain a negative pressure in the reactor building during recovery.

Therefore, continued operation is justified.

TER ITEM NUMBER 157

BOSTON INSULATED WIRE THERMOCOUPLE CABLE

Plant ID Number: TC16, XA16

Component materials of the Boston Insulated Wire thermocouple cable have been identified. These materials have been evaluated per DOR guidelines and by Arrhenius techniques. Results of this analysis indicate that the cross-linked polyethylene insulation/neoprene jacket system used on these cables has greater than forty (40) years demonstrated qualified life at the maximum drywell temperature of 150°F (Reference: Patel Report Number PEI-TR-83-4-13).

Therefore, continued operation is justified.

TER ITEM NUMBER 158, 159

BOSTON INSULATED WIRE THERMOCOUPLE AND INSTRUMENTATION CABLE

Plant ID Number: MA16, MC16, XA16, XE16, YL20

Component materials of the Boston Insulated Wire thermocouple and instrumentation cable have been identified. These materials have been evaluated per DOR guidelines and by applying Arrhenius techniques. Results of this analysis indicate that the cross-linked polyethylene insulation/neoprene jacket system used on these cables has greater than forty (40) years demonstrated qualified life at the maximum reactor building temperature of 104°F (Reference: Patel Report Number PEI-TR-83-4-13).

Therefore, continued operation is justified.

TER ITEM NUMBER 160

CERRO WIRE AND CABLE MODEL PYRO-TROLL III AND FIREWALL-EP

(POWER CABLE AND SPECIAL CABLE)

Plant ID Numbers: BD10, BD06, VD16, JG16, Panel Wire

Component materials of the Cerro cable have been identified. These materials have been evaluated per DOR guidelines and by applying Arrhenius techniques. Results of this analysis indicate that the ethylene propylene rubber insulation and cross-linked polyethylene insulation have greater than forty (40) years demonstrated qualified life at 154°F (67.7°C), including heat rise, for locations within the reactor building. This analysis is based on the primary conductor insulation used on the Cerro cables. There are no known synergisms between the cross-linked polyethylene or EPR insulation and the neoprene jacket (Reference: Patel Report Number PEI-TR-83-4-9).

Therefore, continued operation is justified.

TER ITEM NUMBERS 162, 163

OKONITE POWER CABLE

Plant ID Numbers:	AC41	BB08
	LA41	BD10
	BD06	HC25
	JC25	JC50

Component materials of the Okonite Power Cable have been identified. These materials have been evaluated per DOR guidelines and by applying Arrhenius techniques. Results of this analysis indicate that the ethylene propylene rubber insulation has greater than forty (40) years demonstrated qualified life at 170°F (76.8°C), including heat rise, for locations within the reactor building. This analysis is based on the EPR insulation used on the Okonite cable. There are no known synergisms between the Okonite insulation and the Okoprene jacket. (Reference: Patel Report Number PEI-TR-83-4-7).

Therefore, continued operation is justified.

TER ITEM NUMBER 165

RAYCHEM FLAMTROL INSTRUMENT CABLE (600V)

Plant ID Number: NA16, RC16, FA26, GA22, IA22

Component materials of the RAYCHEM FLAMTROL INSTRUMENT cable have been identified. These materials have been evaluated per DOR guidelines and by applying Arrhenius techniques. Results of this analysis indicate that the insulation and jacket materials (alkane-imide and crosslinked polyolefin) have greater than forty (40) years demonstrated qualified life at the maximum drywell temperature of 150°F (Reference: PATEL Report Number PEI-TR-83-4-8).

Therefore, continued operation is justified.

TER ITEM NUMBER 167

SAMUAL MOORE MODEL DEKORON ECI WIRE (THERMOCOUPLE CABLE)

Plant ID Number: YA16, YC16, YE16, XA16, XC16, XE16

Component materials of the Samual Moore thermocouple cable have been identified. These materials have been evaluated per DOR guidelines and by applying Arrhenius techniques. Results of this analysis indicate that the EPDM insulation, hypalon conductor jacket, and overall hypalon cable jacket materials have greater than forty (40) years demonstrated qualified life at the maximum reactor building temperature of 104°F (Reference: Patel Report Number PEI-TR-83-4-10).

Therefore, continued operation is justified.

TER ITEM NUMBER 172

BURNDY HYLUG WITH OKONITE OKONEX AND NUMBER 35 TAPE

Plant ID Number: Electrical Termination in the Reactor Building

The Burndy Hylug is an uninsulated terminal lug made of pure copper and as such is insensitive to thermal or radiation degradation.

The Okonite Okonex tape is a butyl rubber tape which has an expected life in excess of 150 years at the maximum normal reactor building temperature of 104°F. The butyl rubber tape is exposed to the plant postulated accident temperature peak of 298°F for only two (2) minutes. The accident temperature then decreases to 125°F within one (1) hour of event initiation. With an expected life of 100 hours at 298°F, the tape is insensitive to thermal degradation for the required operating period.

The Okonite Number 35 tape is a jacketing tape and was qualified as such by Okonite Test Report NQRN-3.

Therefore, continued operation is justified.

TER ITEM NUMBERS 173 and 174

WESTINGHOUSE PENETRATIONS (CLASS B, C, E AND F)

Component materials of the Westinghouse Class B, C, E and F penetrations have been identified. These materials have been evaluated per DOR guidelines and by applying Arrhenius techniques. Results of this analysis indicate that the materials (silicone rubber-covered fiberglass, Sylgard 185, PVC, fiberglass-filled polyester, KYNAR, epoxy, cross-linked polyethylene) have greater than forty (40) years demonstrated qualified life at the maximum drywell temperature of 150°F.

This analysis is based on comparison of the postulated normal and accident conditions to the testing performed on prototype models of the Class B, C, E and F Westinghouse penetrations designed specifically for use in the Brunswick plants. (Reference: Patel Report Number PEI-TR-83-4-14.)

Therefore, continued operation is justified.

TER ITEM NUMBER 176, 177 AND 178

THOMAS AND BETTS TERMINALS MODEL 54108, G971 and C1010

Plant ID Number: Wire Termination

Component materials of the Thomas and Betts KYNAR (Reference: Print Number FP-9527-3407 and 3408) insulated STA-KON terminals have been identified. These materials have been evaluated per DOR guidelines and by applying Arrhenius techniques. Results of this analysis indicate that the KYNAR insulated STA-KON terminals have greater than forty (40) years demonstrated qualified life at the maximum drywell temperature of 150°F (Reference: Patel Report Number PEI-TR-83-4-4).

Therefore, continued operation is justified.