TENNESSEE VALLEY AUTHORITY
CHATTANOOGA, TENNESSEE 37401
400 Chestnut Street Tower II

May 20, 1983

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Denton:

In the Matter of the	)	Docket Nos. 50-259
Tennessee Valley Authority	)	50-260
		50-296

Provided as enclosures to this letter is our response regarding environmental qualification of equipment required by 10 CFR 50.49(g) for the Browns Ferry Nuclear Plant. Included is a list of all equipment with qualification status (enclosure 1) and a schedule for qualifying deficient equipment (enclosure 2). Additional Justification for Continued Operation for equipment recently identified is provided in enclosure 3. Also enclosed is additional information requested by D. B. Vassallo's letter dated April 11, 1983 to H. G. Parris (enclosure 4).

The schedule provided in enclosure 2 does not comply fully with the March 31, 1985 goal of 10 CFR 50.49(g) because of problems in procuring qualified replacement equipment. This schedule for qualification of equipment is revised from that included in the latest Browns Ferry integrated modification schedule provided to you in L. M. Mills' letter dated January 14, 1983. The revised schedule will be included in the next update of the integrated schedule to be submitted by July 15, 1983.

In L. M. Mills' letter to D. B. Vassallo dated February 17, 1983, we stated that we would submit our final position on the proprietary nature of some TER items. As explained more fully in enclosure 4, we have been unable to obtain information from the vendor. We now expect to submit our response on this subject by July 29, 1983.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

D S Kammer

D. S. Kammer
Nuclear Engineer

Subscribed and sworn to before
me this 20th day of May 1983.

Paulette N. White
Notary Public
My Commission Expires 9-5-84

A048

Enclosures
cc: See page 2

cc (Enclosures):
U.S. Nuclear Regulatory Commission
Region II
ATTN: James P. O'Reilly, Regional Administrator
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30303

Mr. R. J. Clark
Browns Ferry Project Manager
U.S. Nuclear Regulatory Commission
7920 Norfolk Avenue
Bethesda, Maryland 20814

ENCLOSURE 1

EQUIPMENT QUALIFICATION STATUS TABLE
BROWNS FERRY NUCLEAR PLANT

The equipment qualification status table contains three columns entitled Plant ID Number, Status, and Testing/Replacement Date, respectively. The Plant ID Number column identifies, in most cases, the component type (e.g., Flow solenoid valve (FSV)), the system number (e.g., 1-Main steam system), and control loop in which the component operates. Additionally, the plant ID numbers are the same as used in the Critical Structures, Systems, and Component List as discussed in 10CFR50, Appendix B, Part II.

The Status column represents the current qualification status of the component which may be either I, II, III, or IV. These status divisions are defined as follows:

a. Status I - Components qualified to the DOR Guidelines or NUREG-0588 (as applicable).

b. Status II - Components that lack only an article of documentation to prove qualification to DOR Guidelines or NUREG 0588 (as applicable). (Such as a test report known to exist but must be obtained for use by TVA.)

c. Status III - Components that will be requalified by either analysis, type testing, or a combination of these methods.

d. Status IV - Components that will be replaced, relocated to a less harsh environment (to which it is qualified), relocated to a mild environment, shielded or protected rather than requalified to comply with the DOR guidelines.

Finally, the Testing/Replacement Date gives, for Status II and III components, the date by which qualification is expected to be completed. This qualification will be by testing or testing/analysis. The qualification date given in this column is TVA's best estimate of when the component will be qualified by testing, not considering possible failure of components under test. The qualification dates for Status IV components which will be qualified by replacement, relocation, or shielding, are contained in a separate enclosure.

The table lists the components and their status information on a system basis with the exception of items purchased in bulk quantities which are considered "generic." Generic items (cable, penetrations control stations, junction boxes, and terminal blocks) are listed once by type with their status at the end of this table.

All components are identical on all units except those identified as unit specific by the number in parenthesis after the component status.

EQUIPMENT QUALIFICATION STATUS TABLE

Plant ID Number	Status	Test/Replace Date
PSV - 1- 4	III	8/84
XE - 1- 4	I	
XT - 1- 4	IV	
PSV - 1- 5	III	8/84
XE - 1- 5	I	
XT - 1- 5	IV	
PDIS - 1- 13A	IV	
PDIS - 1- 13B	IV	
PDIS - 1- 13C	IV	
PDIS - 1- 13D	IV	
ZS - 1- 14	I	
FSV - 1- 14B	III	6/84
FSV - 1- 14C	III	6/84
ZS - 1- 15	I	
FSV - 1- 15B	III	6/84
FSV - 1- 15C	III	6/84
TS - 1- 17A	III	8/83
TS - 1- 17B	III	8/83
TS - 1- 17C	III	8/83
TS - 1- 17D	III	8/83
PSV - 1- 18	III	8/84
XE - 1- 18	I	
XT - 1- 18	IV	

EQUIPMENT QUALIFICATION STATUS TABLE

Plant ID Number	Status	Test/Replace Date
PSV - 1- 19	III	8/84
XE - 1- 19	I	
XT - 1- 19	IV	
PSV - 1- 22	III	8/84
XE - 1- 22	I	
XT - 1- 22	IV	
PSV - 1- 23	III	8/84
XE - 1- 23	I	
XT - 1- 23	IV	
PDIS - 1- 25A	IV	
PDIS - 1- 25B	IV	
PDIS - 1- 25C	IV	
PDIS - 1- 25D	IV	
ZS - 1- 26	I	
FSV - 1- 26B	III	6/84
FSV - 1- 26C	III	6/84
ZS - 1- 27	I	
FSV - 1- 27B	III	6/84
FSV - 1- 27C	III	6/84
PSV - 1- 30	III	8/84
XE - 1- 30	I	
XT - 1- 30	IV	
PSV - 1- 31	III	8/84

EQUIPMENT QUALIFICATION STATUS TABLE

Plant ID Number	Status	Test/Replace Date
XE - 1- 31	I	
XT - 1- 31	IV	
PSV - 1- 34	III	8/84
XE - 1- 34	I	
XT - 1- 34	IV	
PDIS - 1- 36A	IV	
PDIS - 1- 36B	IV	
PDIS - 1- 36C	IV	
PDIS - 1- 36D	IV	
ZS - 1- 37	I	
FSV - 1- 37B	III	6/84
FSV - 1- 37C	III	6/84
ZS - 1- 38	I	
FSV - 1- 38B	III	6/84
FSV - 1- 38C	III	6/84
PSV - 1- 41	III	8/84
XE - 1- 41	I	
XT - 1- 41	IV	
PSV - 1- 42	III	8/84
XE - 1- 42	I	
XT - 1- 42	IV	
PDIS - 1- 50A	IV	
PDIS - 1- 50B	IV	

EQUIPMENT QUALIFICATION STATUS TABLE

Plant ID Number	Status	Test/Replace Date
PDIS - 1- 50C	IV	
PDIS - 1- 50D	IV	
ZS - 1- 51	I	
FSV - 1- 51B	III	6/84
FSV - 1- 51C	III	6/84
ZS - 1- 52	I	
FSV - 1- 52B	III	6/84
FSV - 1- 52C	III	6/84
FCV - 1- 55	IV	
FCV - 1- 56	III	9/84
PSV - 1- 179	III	8/84
XE - 1- 179	I	
XT - 1- 179	IV	
PSV - 1- 180	III	8/84
XE - 1- 180	I	
XT - 1- 180	IV	
PT - 3 61	IV	
PS - 3- 22A	IV	
PS - 3- 22B	IV	
PS - 3- 22C	IV	
PS - 3- 22D	IV	
PNL - 3- 25-5	III	9/84
PNL - 3- 25-51	III	9/84
PNL - 3- 25-6	III	9/84

EQUIPMENT QUALIFICATION STATUS TABLE

Plant ID Number	Status	Test/Replace Date
LITS - 3- 46A	IV	
LITS - 3- 46B	IV	
LITS - 3- 52	IV	
PT - 3- 54	IV	
LIS - 3- 56A	IV	
LIS - 3- 56B	IV	
LIS - 3- 56C	IV	
LIS - 3- 56D	IV	
LIS - 3- 58A	IV	
LITS - 3- 58B	IV	
LIS - 3- 58C	IV	
LITS - 3- 58D	IV	
LITS - 3- 62	IV	
PS - 3- 74A	IV	
PS - 3- 74B	IV	
LIS - 3- 184	IV	
LIS - 3- 185	IV	
LIS - 3- 203A	IV	
LIS - 3- 203B	IV	
LIS - 3- 203C	IV	
LIS - 3- 203D	IV	
PS - 3- 204(A-D)	IV	
LIS - 3- 208A	IV	
LIS - 3- 208B	IV	

EQUIPMENT QUALIFICATION STATUS TABLE

Plant ID Number	Status	Test/Replace Date
LIS - 3- 208C	IV	
LIS - 3- 208D	IV	
GE - 7- 104(A-E)	IV	
FCV - 23- 34	I	
HS - 23- 34B	III	9/84
FCV - 23- 40	I	
HS - 23- 40B	III	9/84
FCV - 23- 46	I	
HS - 23- 46B	III	9/84
FCV - 23- 52	I	
HS - 23- 52B	III	9/84
HS - 23- 57B	III	9/84
PNL - 25- 59	III	9/84
PNL - 25- 340	I	
PNL - 25- 341	I	
FSV - 32- 62	IV	
FSV - 32- 63	IV	
FSV - 43- 13	IV	
HS - 43- 13B	III	9/84
FSV - 43- 14	I	

EQUIPMENT QUALIFICATION STATUS TABLE

Plant ID Number	Status	Test/Replace Date
HS - 43- 14B	III	9/84
MTR - 64- RHR Pump Mtr 1-A Cooler Fan Mtr	IV	
MTR - 64- RHR Pump Mtr 1-B Cooler Fan Mtr	IV	
MTR - 64- RHR Pump Mtr 1-C Cooler Fan Mtr	IV	
MTR - 64- RHR Pump Mtr 1-D Cooler Fan Mtr	IV	
MTR - 64- Core Spray Pump Mtr 1-A, 1-C Cooler Fan Mtr	IV	
MTR - 64- Core Spray Pump Mtr 1-B, 1-D Cooler Fan Mtr	IV	
MTR - 64- RHR Pump Mtr 2-A Cooler Fan Mtr	IV	
MTR - 64- RHR Pump Mtr 2-B Cooler Fan Mtr	IV	
MTR - 64- RHR Pump Mtr 2-C Cooler Fan Mtr	IV	
MTR - 64- RHR Pump Mtr 2-D Cooler Fan Mtr	IV	

EQUIPMENT QUALIFICATION STATUS TABLE

Plant ID Number	Status	Test/Replace Date
MTR - 64- & Core Spray Pump Mtr 2-A, 2-C Cooler Fan Mtr	IV	
MTR - 64- Core Spray Pump Mtr 2-B, 2-D Cooler Fan Mtr	IV	
MTR - 64- RHR Pump Mtr 3-A Cooler Fan Mtr	IV	
MTR - 64- RHR Pump Mtr 3-B Cooler Fan Mtr	IV	
MTR - 64- RHR Pump Mtr 3-C Cooler Fan Mtr	IV	
MTR - 64- RHR Pump Mtr 3-D Cooler Fan Mtr	IV	
MTR - 64- Core Spray Pump Mtr 3-A, 3-C Cooler Fan Mtr	IV	
MTR - 64- Core Spray Pump Mtr 3-B, 3-D Cooler Fan Mtr	IV	
PDS - 64- 7	IV (1)	
PDIC - 64- 8	IV (1)	
PDM - 64- 8	IV (1)	
PDT - 64- 8	IV (1)	
FSV - 64- 9	IV	

EQUIPMENT QUALIFICATION STATUS TABLE

Plant ID Number	Status	Test/Replace Date
FSV - 64- 10[illegible]	IV	
PDS - 64- 15	IV	
PDIC - 64- 16	IV	
PDM - 64- 16	IV	
PDT - 64- 16	IV	
FSV - 64- 17	IV (1,2)	
FSV - 64- 17	I (3)	
FSV - 64- 18	IV	
FSV - 64- 18	I (3)	
FSV - 64- 19	IV	
FSV - 64- 19	I (3)	
FSV - 64- 20	I	
PDIS - 64- 20	IV	
FSV - 64- 21	I	
PDIS - 64- 21	IV	
PNL - 64- 25-57	III	9/84
FCV - 64- 29	IV	
FSV - 64- 29	I (1,2)	
FSV - 64- 29	I(3)	
FSV - 64- 30	IV (1,2)	
FSV - 64- 30	I (3)	
FCV - 64- 31	IV	
FSV - 64- 31	IV	

EQUIPMENT QUALIFICATION STATUS TABLE

Plant ID Number	Status	Test/Replace Date
FSV - 64- 31	IV (3)	
FCV - 64- 32	IV	
FSV - 64- 32	IV (1,2)	
FSV - 64- 32	I (3)	
FSV - 64- 33	IV (1,2)	
FSV - 64- 33	I (3)	
FCV - 64- 34	IV	
FSV - 64- 34	IV	
FSV - 64- 40	IV	
FSV - 64- 41	IV	
FSV - 64- 42	IV	
FSV - 64- 43	IV	
FSV - 64- 44	IV (1)	
FSV - 64- 45	IV (1)	
IS - 64- 50	IV	
PS - 64- 50	IV	
PT - 64- 50	IV (2,3)	
PX - 64- 50	IV	
PT - 64- 51	III	9/84
PX - 64- 51	IV	
TE - 64- 52A	IV	
TE - 64- 52C	IV	
PX - 64- 54	IV	

EQUIPMENT QUALIFICATION STATUS TABLE

Plant ID Number			Status	Test/Replace Date
PS	- 64-	56A	IV	
PS	- 64-	56B	IV	
PS	- 64-	56C	IV	
PS	- 64-	56D	IV	
PS	- 64-	57A	IV	
PS	- 64-	57B	IV	
PS	- 64-	57C	IV	
PS	- 64-	57D	IV	
PS	- 64-	58A	IV	
PS	- 64-	58B	IV	
PS	- 64-	58C	IV	
PS	- 64-	58D	IV	
PDS	- 64-	61A/C	IV (1)	
PDS	- 64-	61B/D	IV (1)	
PDS	- 64-	62A/C	IV	
PDS	- 64-	62B/D	IV	
PDS	- 64-	63	IV (1)	
PDIC	- 64-	64	IV (1)	
PDM	- 64-	64	IV (1)	

EQUIPMENT QUALIFICATION STATUS TABLE

Plant ID Number	Status	Test/Replace Date
PDT - 64- 64	IV (1)	
FCO - 64- 65A-D	III	9/84
PT - 64- 67	I	
TS - 64- 68	IV	
TS - 64- 69	IV	
TS - 64- 70	IV	
TS - 64- 71	IV	
TS - 64- 72	IV	
TS - 64- 73	IV	
FSV - 64- 139	IV	
FSV - 64- 140	IV	
FSV - 64- 141	IV	
FCV - 64- 141(LS)	IV	
TE - 64- 161 A-H	I	
TE - 64- 162 A-H	I	
FCV - 67- 17	I (1)	
HS - 67- 17B	III	9/84
HS - 67- 17B	III	9/84
FCV - 67- 18	I (1)	
FCV - 67- 21	I (2)	
HS - 67- 21B	III	9/84
FCV - 67- 22	I (2)	
HS - 67- 22B	III	9/84
FCV - 67- 25	I (3)	

EQUIPMENT QUALIFICATION STATUS TABLE

Plant ID Number	Status	Test/Replace Date
HS - 67- 25B	III	9/84
FCV - 67- 26	I (3)	
HS - 67- 26B	III	9/84
HS - 67- 48B	III	9/84
HS - 67- 49B	III	9/84
FCV - 68- 3	IV	
PNL - 68- 25-52	III	9/84
FCV - 68- 79	IV	
PS - 68- 95	IV	
PS - 68- 96	IV	
FCV - 69- 2	III	9/84
HS - 69- 2B	III	9/84
HS - 69- 12B	III	9/84
TS - 69- 29J	III	8/83
TS - 69- 29K	III	8/83
TS - 69- 29L	III	8/83
TS - 69- 29M	III	8/83
TS - 69- 30A	III	8/83
TS - 69- 30B	III	8/83
TS - 69- 30C	III	8/83
TS - 69- 30D	III	8/83
TS - 69- 30E	III	8/83
TS - 69- 30F	III	8/83
TS - 69- 30G	III	8/83

EQUIPMENT QUALIFICATION STATUS TABLE

Plant ID Number	Status	Test/Replace Date
TS - 69- 30B	III	8/83
HS - 70- 47B	III	9/84
PDIS - 71- 1A	IV	
PS - 71- 1A	IV	
PDIS - 71- 1B	IV	
PS - 71- 1B	IV	
PS - 71- 1C	IV	
PS - 71- 1D	IV	
FCV - 71- 2	I (1,2)	
FCV - 71- 2	IV (3)	
TS - 71- 2A	III	8/83
TS - 71- 2B	III (2,3)	8/83
TS - 71- 2C	III (2,3)	8/83
TS - 71- 2D	III (2,3)	8/83
TS - 71- 2E	III	8/83
TS - 71- 2F	III	8/83
TS - 71- 2G	III	8/83
TS - 71- 2H	III	8/83
TS - 71- 2J	III	8/83
TS - 71- 2K	III	8/83
TS - 71- 2L	III	8/83
TS - 71- 2M	III	8/83
TS - 71- 2N	III	8/83

EQUIPMENT QUALIFICATION STATUS TABLE

Plant ID Number			Status	Test/Replace Date
TS	- 71-	2P	III	8/83
TS	- 71-	2R	III	8/83
TS	- 71-	2S	III	8/83
FCV	- 71-	3	III	9/84
PNL	- 71-	25-31	III	9/84
PNL	- 71-	25-7	III	9/84
PDIS	- 73-	1A	IV	
PS	- 73-	1A	IV	
PDIS	- 73-	1B	IV	
PS	- 73-	1B	IV	
PS	- 73-	1C	IV	
PS	- 73-	1D	IV	
FCV	- 73-	2	III	9/84
TS	- 73-	2A	III	8/83
TS	- 73-	2B	III	8/83
TS	- 73-	2C	III	8/83
TS	- 73-	2D	III	8/83
TS	- 73-	2E	III (1)	8/83
TS	- 73-	2E	III (2,3)	8/83
TS	- 73-	2F	III (1)	8/83

EQUIPMENT QUALIFICATION STATUS TABLE

Plant ID Number	Status	Test/Replace Date
TS - 73- 2F	III (2,3)	8/83
TS - 73- 2G	III (1)	8/83
TS - 73- 2G	III (2,3)	8/83
TS - 73- 2H	III (1)	8/83
TS - 73- 2H	III (2,3)	8/83
TS - 73- 2J	III	8/83
TS - 73- 2K	III	8/83
TS - 73- 2L	III	8/83
TS - 73- 2M	III	8/83
TS - 73- 2N	III	8/83
TS - 73- 2P	III	8/83
TS - 73- 2R	III	8/83
TS - 73- 2S	III	8/83
FCV - 73- 3	III	9/84
HS - 73- 3B	III	9/84
HS - 73- 16B	III	9/84
PS - 73- 20A	IV (1)	
PS - 73- 20A	IV (2,3)	
PS - 73- 20B	IV (1)	
PS - 73- 20B	IV (2,3)	
PS - 73- 20C	IV (1)	
PS - 73- 20C	IV (2,3)	
PS - 73- 20D	IV (1)	

EQUIPMENT QUALIFICATION STATUS TABLE

Plant ID Number	Status	Test/Replace Date
PS - 73- 20D	IV (2,3)	
PS - 73- 22A	IV (1)	
PS - 73- 22A	IV (2,3)	
PS - 73- 22B	IV (1)	
PS - 73- 22B	IV (2,3)	
PNL - 73- 25-63	III	9/84
FCV - 73- 26	III (1)	9/84
FCV - 73- 26	III (2)	9/84
FCV - 73- 26	III (3)	9/84
HS - 73- 26B	III	9/84
FCV - 73- 27	III	9/84
HS - 73- 27B	III	9/84
PS - 73- 29-1	IV (1)	
PS - 73- 29-1	IV (2,3)	
FCV - 73- 30	III	9/84
HS - 73- 30B	III	9/84
FS - 73- 33	IV (1)	
FT - 73- 33	IV (1)	
FT - 73- 33	IV (2,3)	
HS - 73- 34B	III	9/84
HS - 73- 35B	III	9/84
FCV - 73- 36	III (1)	9/84
FCV - 73- 36	III (2,3)	9/84

EQUIPMENT QUALIFICATION STATUS TABLE

Plant ID Number	Status	Test/Replace Date
HS - 73- 36B	III	9/84
HS - 73- 40B	III	9/84
HS - 73- 44B	III	9/84
LS - 73- 56A	IV	
LS - 73- 56B	IV	
LS - 73- 57A	IV	
LS - 73- 57B	IV	
MTR - 74- RHR Pump Motor 1A	I (1)	
MTR - 74- RHR Pump Motor 1B	I (1)	
MTR - 74- RHR Pump Motor 1C	I (1)	
MTR - 74- RHR Pump Motor 1D	I (1)	
MTR - 74- RHR Pump Motor 2A	I (2)	
MTR - 74- RHR Pump Motor 2B	I (2)	
MTR - 74- RHR Pump Motor 2C	I (2)	
MTR - 74- RHR Pump Motor 2D	I (2)	
MTR - 74- RHR Pump Motor 3A	I (3)	
MTR - 74- RHR PUmp Motor 3B	I (3)	

EQUIPMENT QUALIFICATION STATUS TABLE

Plant ID Number	Status	Test/Replace Date
MTR - 74- [redacted] RHR Pump Motor 3C	I (3)	
MTR - 74- RHR Pump Motor 3D	I (3)	
HS - 74- 1B	III	9/84
FCV - 74- 2	I	
HS - 74- 5B	III	9/84
FCV - 74- 7	I	
PS - 74- 8A	IV	
PS - 74- 8B	IV	
HS - 74- 12B	III	9/84
FCV - 74- 13	I	
HS - 74- 13B	III	9/84
HS - 74- 16B	III	9/84
PS - 74- 19A	IV	
PS - 74- 19B	IV	
HS - 74- 24B	III	9/84
FCV - 74- 25	I	
HS - 74- 25B	III	9/84
HS - 74- 28B	III	9/84
FCV - 74- 30	I	
PS - 74- 31A	IV	
PS - 74- 31B	IV	
FCV - 74- 35	I (2,3)	

EQUIPMENT QUALIFICATION STATUS TABLE

Plant ID Number	Status	Test/Replace Date
HS - 74- 35B	III	9/84
FCV - 74- 36	I	
HS - 74- 36B	III	9/84
HS - 74- 39B	III	9/84
PS - 74- 42A	IV	
PS - 74- 42B	IV	
HS - 74- 47B	III	9/84
FIS - 74- 50	IV	
FCV - 74- 52	I	
HS - 74- 52B	III	9/84
FCV - 74- 53	I	
HS - 74- 53B	III	9/84
FCV - 74- 57	IV	
HS - 74- 57B	III	9/84
FCV - 74- 58	IV	
HS - 74- 58B	III	9/84
FCV - 74- 59	IV	
HS - 74- 59B	III	9/84
FCV - 74- 60	I (1)	
FCV - 74- 60	I (2,3)	
HS - 74- 60B	III	9/84
FCV - 74- 61	I (1)	
FCV - 74- 61	I (2,3)	

EQUIPMENT QUALIFICATION STATUS TABLE

Plant ID Number	Status	Test/Replace Date
HS - 74- 61B	III	9/84
FIS - 74- 64	IV	
FCV - 74- 66	I	
HS - 74- 66B	III	9/84
FCV - 74- 67	I	
HS - 74- 67B	III	9/84
FCV - 74- 71	IV	
HS - 74- 71B	III	9/84
FCV - 74- 72	IV	
HS - 74- 72B	III	9/84
FCV - 74- 73	IV	
HS - 74- 73B	III	9/84
FCV - 74- 74	I (2,3)	
FCV - 74- 74	I (1)	
HS - 74- 74B	III	9/84
FCV - 74- 75	I (2)	
FCV - 74- 75	I (1)	
FCV - 74- 75	I (3)	
HS - 74- 75B	III	9/84
HS - 74- 77B	III	9/84
FCV - 74- 96	I (2,3)	
FCV - 74- 97	I (2,3)	
FCV - 74- 98	I (1,2)	

EQUIPMENT QUALIFICATION STATUS TABLF

Plant ID Number	Status	Test/Replace Date
FCV - 74- 100	I (2,3)	
HS - 74- 100B	III	9/84
FCV - 74- 101	I (1,2)	
HS - 74- 101B	III	9/84
MTR - 75- Core Spray Pmp Mtr 1A	I (1)	
MTR - 75- Core Spray Pmp Mtr 1B	I (1)	
MTR - 75- Core Spray Pmp Mtr 1C	I (1)	
MTR - 75- Core Spray Pmp Mtr 1D	I (1)	
MTR - 75- Core Spray Pmp Mtr 2A	I (2)	
MTR - 75- Core Spray Pmp Mtr 2B	I (2)	
MTR - 75- Core Spray Pmp Mtr 2C	I (2)	
MTR - 75- Core Spray Pmp Mtr 2D	I (2)	
MTR - 75- Core Spray Pmp Mtr 3A	I (3)	
MTR - 75- Core Spray Pmp Mtr 3B	I (3)	
MTR - 75- Core Spray Pmp Mtr 3C	I (3)	
MTR - 75- Core Spray Pmp Mtr 3D	I (3)	
HS - 75- 2B	III	9/84

EQUIPMENT QUALIFICATION STATUS TABLE

Plant ID Number	Status	Test/Replace Date
PS - 75- 7	IV	
FCV - 75- 9	I	
HS - 75- 9B	III	9/84
HS - 75- 11B	III	9/84
PS - 75- 16	IV	
FIS - 75- 21	IV	
FCV - 75- 22	I	
HS - 75- 22B	III	9/84
FCV - 75- 23	I	
FCV - 75- 25	I	
PNL - 75- 25-1	III	9/84
PNL - 75- 25-60	III	9/84
HS - 75- 30B	III	9/84
PS - 75- 35	IV	
FCV - 75- 37	I	
HS - 75- 37B	III	9/84
HS - 75- 39B	III	9/84
PS - 75- 44	IV	
FIS - 75- 49	IV	
FCV - 75- 50	I	
HS - 75- 50B	III	9/84
FCV - 75- 51	I	
FCV - 75- 53	I	

EQUIPMENT QUALIFICATION STATUS TABLE

Plant ID Number	Status	Test/Replace Date
FSV - 75- 57	IV	
FSV - 75- 58	IV (1,2)	
FSV - 75- 58	IV (3)	
FSV - 76- 17	I	
FSV - 76- 18	I	
FSV - 76- 19	I	
FSV - 76- 24	IV (1,2)	
FSV - 76- 24	I (3)	
FSV - 76- 49	I (1,2)	
FSV - 76- 49	I (3)	
FSV - 76- 50	I	
FSV - 76- 51	I (1,2)	
FSV - 76- 51	I (3)	
FSV - 76- 52	I	
FSV - 76- 53	I	
FSV - 76- 54	I	
FSV - 76- 55	I	
FSV - 76- 56	I (1,2)	
FSV - 76- 56	I (3)	
FSV - 76- 57	I	
FSV - 76- 58	I	
FSV - 76- 59	I (1,2)	
FSV - 76- 59	I (3)	

EQUIPMENT QUALIFICATION STATUS TABLE

Plant ID Number	Status	Test/Replace Date
FSV - 76- 60	I	
FSV - 76- 61	I (1,2)	
FSV - 76- 61	I (3)	
FSV - 76- 62	I	
FSV - 76- 63	I	
FSV - 76- 64	I	
FSV - 76- 65	I	
FSV - 76- 66	I	
FSV - 76- 67	I	
FSV - 76- 68	I	
FSV - 77- 2A	IV	
FSV - 77- 2B	IV	
FSV - 77- 15A	IV	
FSV - 77- 15B	IV	
FSV - 84- 8A	I	
FSV - 84- 8B	I	
FSV - 84- 8C	I	
FSV - 84- 8D	I	
FSV - 84- 19	IV (2,3)	
FSV - 84- 19	IV (1)	
FT - 84- 19	IV	
FM - 84- 19B	I	
FSV - 84- 20	IV	

EQUIPMENT QUALIFICATION STATUS TABLE

Plant ID Number	Status	Test/Replace Date
FT - 84- 20	IV	
FM - 84- 20B	I	
PS - 84- 21	IV	
PS - 84- 22	IV	
PNL - 85- 25-25	III	9/84
FSV - 85- 35A	IV	
FSV - 85- 35B	IV	
FSV - 85- 37A	I	
FSV - 85- 37B	I	
FSV - 85- 39A	I	
FSV - 85- 39B	I	
LS - 85- 45A	IV	
LS - 85- 45B	IV	
LS - 85- 45C	IV	
LS - 85- 45D	IV	
FSV - 85- 70A	IV	
FSV - 85- 70B	IV	
RE - 90- 132	IV	
RE - 90- 133	IV	
RE - 90- 134	IV	
RE - 90- 140	IV	
RE - 90- 141	IV	
RE - 90- 142	IV	

EQUIPMENT QUALIFICATION STATUS TABLE

Plant ID Number	Status	Test/Replace Date
RE - 90- 143	IV	
FCV - 90- 254A(ACTR)	I	
FCV - 90- 254B(ACTR)	I	
FCV - 90- 255(ACTR)	I	
FCV - 90- 257A(ACTR)	I	
FCV - 90- 257B(ACTR)	I	
-APS- TS1A (4160-480V)	I	
-APS- TS1E (4160-480V)	I	
-APS- TS1B (4160-480V)	I	
-APS- 480V Reactor MOV BD 1C	III (1)	10/84 (Note 1)
-APS- 480V Reactor MOV BD 1D	III (1)	10/84 (Note 1)
-APS- Motor-Generator Set 1DN	II (1)	8/83 (Note 2)
-APS- Motor-Generator Set 1DA	II (1)	8/83 (Note 2)
-APS- Motor-Generator Set 1EN	II (1)	8/83 (Note 2)
-APS- Motor-Generator Set 1EA	II (1)	8/83 (Note 2)
-APS- TS2A (4160-480V)	I (2)	
-APS- TS2E (4160-480V)	I (2)	

EQUIPMENT QUALIFICATION STATUS TABLE

Plant ID Number	Status	Test/Replace Date
-APS- TS2B (4160-480V)	I (2)	
-APS- 480V Reactor MOV BD 2C	III (2)	10/84 (Note 1)
-APS- 480V Reactor MOV BD 2D	III (2)	10/84 (Note 1)
-APS- 480V Reactor MOV BD 2E	III (2)	10/84 (Note 1)
-APS- Motor-Generator Set 2DN	II (2)	8/83 (Note 2)
-APS- Motor-Generator Set 2DA	II (2)	8/83 (Note 2)
-APS- Motor-Generator Set 2EN	II (2)	8/83 (Note 2)
-APS- Motor-Generator Set 2EA	II (2)	8/83 (Note 2)
-APS- 480V Reactor MOV BD 3C	III (3)	10/84 (Note 1)
-APS- 480V Reactor MOV BD 3D	III (3)	10/84 (Note 1)
-APS- Motor-Generator Set 3DN	II (3)	8/83 (Note 2)
-APS- Motor-Generator Set 3DA	II (3)	8/83 (Note 2)
-APS- Motor-Generator Set 3EN	II (3)	8/83 (Note 2)
-APS- Motor-Generator Set 3EA	II (3)	8/83 (Note 2)
-APS- 480V Reactor MOV BD 1E	III (1)	10/84 (Note 1)

EQUIPMENT QUALIFICATION STATUS TABLE

Plant ID Number	Status	Test/Replace Date
-APS- 480V Reactor MOV 3D 3E	III (3)	10/84 (Note 1)
-APS- TS3A (4160V-480V)	I (3)	
-APS- TS3B (4160V-480V)	I (3)	
-APS- TS3E (4160V-480V)	I ( )	
Cable (PNJ, PJJ)	I	
Cable (PN, PJ)	I	
Cable (PE Signal)	I	
Cable (PSJ)	I	
Cable (XLPE)	I	
Cable (Silicon Rubber)	I	
Control Switches	I	
Junction Boxes	I	
Terminal Blocks	I	

NOTE 1

After unsuccessful efforts, beginning in November 1980, to obtain General Electric Company support directly or through owners groups, TVA established a qualification test program with Wyle Laboratories. TVA is presently awaiting replacement parts from GE to release vintage parts from plant to test per an approved qualification plan. Expected completion of qualification is by October 1984.

NOTE 2

Final qualification awaits only radiation tolerance of diodes. Vendor is presently preparing documentation. Evaluation to be completed by August 1983.

ENCLOSURE 2
EQUIPMENT REPLACEMENT SCHEDULE
BROWNS FERRY NUCLEAR PLANT

Refer to the table entitled, "Browns Ferry Equipment Qualification Status Table" for a list of electric equipment within the scope of 10 CFR 50.59 (enclosure 1).

Unit 1

Unit 1 items requiring unit outage will be implemented during the unit 1, cycle 6 refueling outage which is currently scheduled to begin February 1, 1985 and end June 16, 1985. Those nonoutage items will be completed by March 31, 1985.

Unit 2

Unit 2 items requiring unit outage will be implemented during the unit 2, cycle 5 refueling outage which is currently scheduled to end November 7, 1984. Those nonoutage items will be completed by March 31, 1985.

Unit 3

Unit 3 items requiring unit outage will be implemented during the unit 3, cycle 5 refueling outage which is currently scheduled to end May 4, 1984. Those nonoutage items will be completed by March 31, 1985.

TVA is experiencing problems in procuring replacement equipment for some status IV items. These items and the implementation schedule are identified below.

Unit 2 items to be implemented during the unit 2, cycle 6 refueling outage which is currently scheduled to begin April 18, 1986, and end September 7, 1986.

FCV-1-55
LITS-3-46A
LITS-3-46B
PT-3-54
PT-3-61
GE-7-104 (A through E)
GE-7-106 (A through E)
GE-7-113
MTR-RHR-64-2 (A through D)
MTR-CS-64-2 (A through D)
FCV-71-25
FCV-71-34
RE-90-132
RE-90-133
RE-90-134

Unit 3 items to be implemented during the unit 3, cycle 6 refueling outage which is currently scheduled to begin September 3, 1985, and end January 16, 1986.

FCV-1-55
LITS-3-46A
LITS-3-46B
PT-3-54
PT-3-61
LIS-3-208 (A through D)
GE-7-104 (A through E)
GE-7-106 (A through E)
GE-7-113
MTR-RHR-64-3 (A through D)
MTR-CS-64-3 (A through D)
PDIS-64-20
PDIS-64-21
FCV-68-3
FCV-68-79
FCV-71-2
FCV-71-25
FCV-71-34
FIS-74-50
FIS-74-64
FCV-74-57
FCV-74-58
FCV-74-59
FCV-74-71
FCV-74-72
FCV-74-73
FIS-75-21
FIS-75-49
FSV-85-35A
FSV-85-35B
RE-90-132
RE-90-133
RE-90-134
RE-90-140
RE-90-141
RE-90-142
RE-90-143

ENCLOSURE 3

JUSTIFICATION FOR CONTINUED OPERATION
BROWNS FERRY NUCLEAR PLANT

NOTE: For the following handswitches, discussed in the enclosure, Manufacturer/Model Number:

a. GE/158B7071 G001
b. GE/158B7071 G002
c. GE/158B7071 G003
d. GE/158B7071 G004

The "Justification for Continued Operation or Environmental Analysis" states that these switches are local control stations which do not have to operate during the design basis event (LOCA/SLB or HELB). These switches, however, do perform passive safety functions and, therefore, will be qualified.

This NOTE is provided as clarification.

ADDITIONAL EQUIPMENT

TVA ID NO(s).

XT-1-4
XT-1-5
XT-1-18
XT-1-19
XT-1-22
XT-1-23
XT-1-30
XT-1-31
XT-1-34
XT-1-41
XT-1-42
XT-1-179
XT-1-180

Manufacturer/Model No.

Technology for Energy Corporation (TEC) Model 500/501 Charge Converters

Status IV

Justification for Continued Operation

The model 500/501 charge converters are part of the TEC valve flow monitoring system (VFMS). The VFMS monitors the status of the main steam safety relief valves and provides an alarm indication in the MCR if the valves are open.

The charge converters are located in the drywell, Room 0, Elevation 584. They are subject to LOCA/HELB conditions and must operate for 100 days following DBE initiation. The model 500/501 charge converters failed LOCA testing during environmental qualification by TEC.

Thermocouples are installed downstream of the main steam safety relief valves in the blowdown lines to the suppression pool and provide redundant indication of valve status. Therefore, failure of the VFMS does not eliminate all sources of annunciation which are indicative of valve opening following a main steam blowdown.

The above information shows justification for continued operation of Browns Ferry until these converters are replaced. TVA will replace them with qualified model 504A/504B charge converters during the first available outage following delivery of qualified charge converters.

BROWNS FERRY NUCLEAR PLANT
79-01B - ADDITIONAL EQUIPMENT

TVA ID No.

FCO-64-65A

FCO-64-65B

FCO-64-65C

FCO-64-65D

Manufacturer/Model No.

Honeywell Modutrol Motor
Model 445A

Justification for Continued Operation

1. The manufacturer's specifications for the motors are as follows

   Temperature: 125 degrees Fahrenheit maximum

   Pressure: Not specified

   Relative Humidity: Not specified

   Radiation: Not specified

2. The motors are subjected to the following conditions in the event of a loss of coolant accident (LOCA):

   Temperature: 117 degrees Fahrenheit maximum (increases linearly from 100 degrees Fahrenheit to 117 degrees Fahrenheit over 30 days)

   Pressure: Atmospheric

   Relative Humidity: 80 percent

   Radiation: 3×10^4 rads at 100 days

3. The motors are subjected to the following conditions in the event of a high energy line break (HELB):

   Temperature: 163 degrees Fahrenheit maximum (as a result of main steam pipe rupture; increases from 100 degrees Fahrenheit to 163 degrees Fahrenheit in 20 seconds and decreases down to 125 degrees Fahrenheit in 280 seconds)

Pressure: 14.7 maximum

Relative Humidity: 100 percent (decreasing to normal over a 24-hour period)

Radiation: N/A

4. The motors function is that of opening and closing low-leakage dampers. The dampers will assume the same position upon loss of electrical power (fail-safe). Qualification documentation does not exist for the motors; however, we believe they are qualifiable by materials analysis (see attachment).

It is our judgement that section 4.1.6 of 79-01B report is applicable and provides justification for continued operation. Due to the mass and shielding of the motor enclosure, the HELB temperature spike of 163 degrees Fahrenheit and the LOCA radiation dosage 3×10^4 rads at 100 days will have negligible effects on the motor.

References: Table 1 - Summary of Harsh Environmental Conditions for BFN

T1-ANL-73 HELB Conditions

INSTRUCTIONS

M445A,B,C and M845A,B MODUTROL* MOTORS

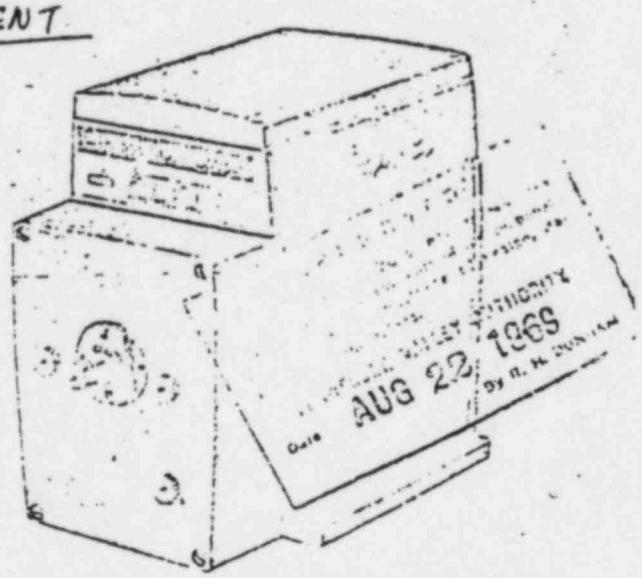
ATTACHMENT

APPLICATION

The M445 and M845 are two position spring return Modutrol Motors. They are used to operate dampers or valves in applications where it is necessary or desirable to have the controlled element return to the starting position in the event of power failure or interruption. The spring return mechanism is field-removable.

The M445 operates from line-voltage and the M845 from 24 volts ac. All models utilize a one minute gear train and have a 160 degree fixed stroke. They are equipped with an auxiliary switch for the control of other equipment as a function of motor position.

The M445C and M845B are equipped with internal thermostatically controlled heaters which allow them to be used in low temperature environments. The M445B is designed for normally opened valves.



FEATURES

- Sturdy die-cast aluminum case insures long life.
- Integral spring returns motor to starting position when power fails or is interrupted.
- Built-in spdt adjustable switch for operation of auxiliary equipment.
- Oil immersed gear train assures long life and quiet operation.
- Thermostatically controlled internal heater on some models permits use in ambient temperatures down to minus 40 F.
- Weatherproofing kit available.

SPECIFICATIONS

MODEL: The M445 and M845 are two position, spring return Modutrol Motors with one internal auxiliary switch. They are for use with dampers and normally closed valves (except M445B is for normally open valves).

M445A—Modutrol Motor as described above for line-voltage operation.

M445B—Modutrol Motor as described above for line-voltage operation with normally open valves.

M445C—Modutrol Motor as described above for line-voltage operation. Includes internal thermostatically controlled heater.

M845A—Modutrol Motor as described above for 24 volt operation.

M845B—Modutrol Motor as described above for 24 volt operation. Includes internal heater.

ELECTRICAL RATING: See Table I.

ELECTRICAL CONSUMPTION: See Table I.

TABLE I — ELECTRICAL CHARACTERISTICS

Model	Watts	Voltage, ac 50/60 Hz
M445A	16	120, 208, 220[b], 240
M445B	16	
M445C	48[a]	
M845A	20	24
M845B	50[a]	

[a] Including 30 watts for internal heater.

[b] 50 Hz only.

AUXILIARY SWITCH RATING (in amperes):

	120v. ac	240v. ac
Full Load	7.2	3.6
Locked Rotor	43.2	21.6

HEATER THERMOSTAT: Automatically "makes" at 20 F on temperature fall, "breaks" at 50 F on temperature rise.

*Trademark
9-68
J. C.

Form Number 95-6768

SHAFT: Double ended shaft, 3/8 inch square.

STROKE: 100 degrees

MAXIMUM OPERATING TORQUE: 50 pound-inches (may be divided between the two ends of motor if no more than 25 pound-inches is applied to auxiliary end).

BREAKAWAY TORQUE: (Maximum torque available to overcome occasional large loads such as seized damper or valve. MUST NOT BE USED CONTINUOUSLY AT THIS RATING): 200 pound-inches on power stroke.

DAMPER RATING: 40 square feet.

DEAD WEIGHT LOAD ON SHAFT:
Power end—200 pounds.
Auxiliary end—10 pounds.

AMBIENT TEMPERATURE RATING:
Maximum—125 F.
Minimum—15 F (minus 40 F with internal heater).

DIMENSIONS: See Figure 1.

COMMONLY USED ACCESSORIES:

Q607 Auxiliary Switch—Controls auxiliary equipment as a function of motor position.
Q605 Damper Linkage—Connects motor to damper. INCLUDES MOTOR CRANK ARM.
Cover-Transformer—(Part No. 130810A). Die-cast aluminum cover with built-in transformer. Not for use with motors having internal heater.
Q601 Linkage—Connects Modutrol Motor to water or steam valve.
Q455 Linkage—Connects Modutrol Motor to water or steam valve.
Q100 Linkage—Connects Modutrol Motor to butterfly valve.
Q104 Linkage—Connects Modutrol Motor to butterfly valve.
Weatherproofing Kits—(Part No. 7640JT). Weatherproofs the M445 and M845 Modutrol Motors.
Motor Crank Arm—(Part No. 7616BR). Included with Q605 but not with motor.

ORDERING INFORMATION:
Specify—
1. Model number.
2. Voltage and frequency.
3. Accessories.
4. Special features.

Order from—
1. Your usual source, or
2. Honeywell
1885 Douglas Drive, North
Minneapolis, Minnesota 55422
(In Canada—Honeywell Controls Limited
740 Ellesmere Road
Scarborough, Ontario)

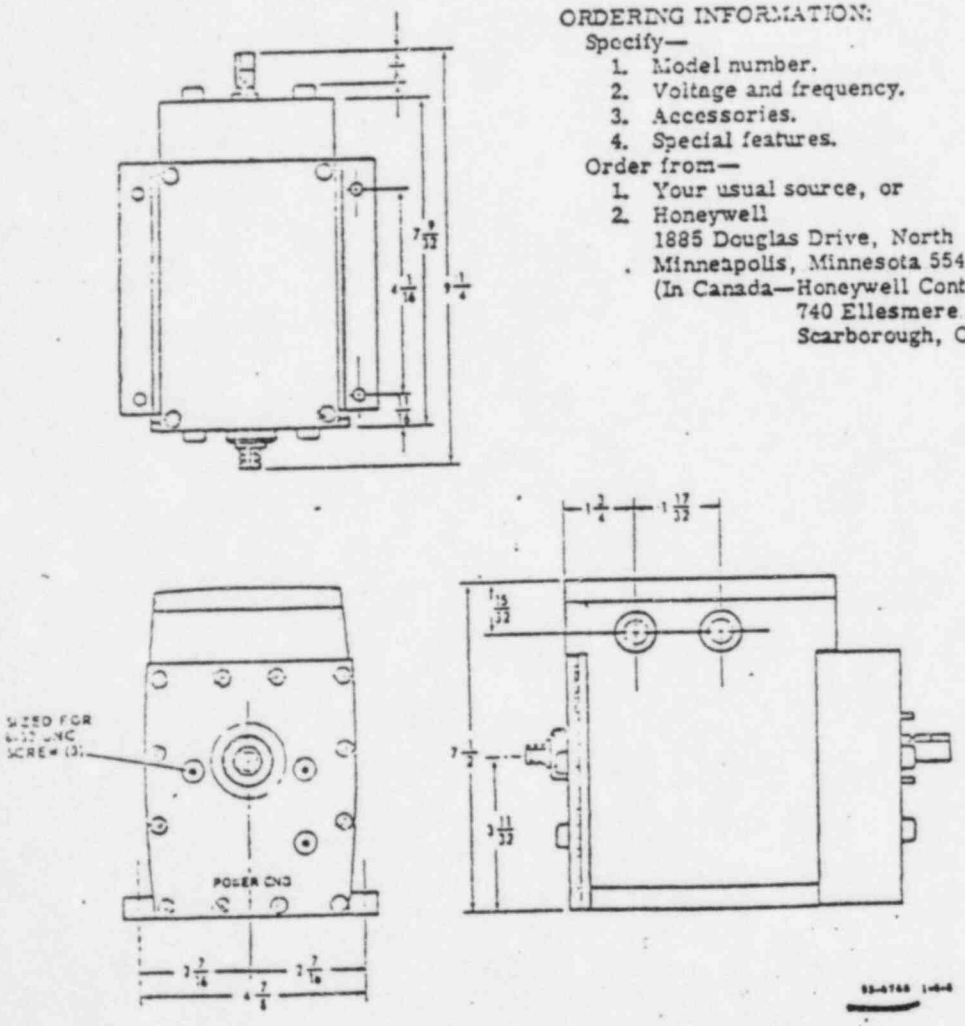


Fig. 1—M445 and M845 with dimensions in inches.

Honeywell

November 5, 1980

Tennessee Valley Authority
400 Commerce Avenue
Office # W10D 219
Knoxville, Tennessee

Attention: Mr. Larry Tummel

Dear Larry,

The information listed below will confirm our telephone conversation of November 4, 1980, concerning composition of Honeywell M445A Modutrol Motors.

A.	Motor Stator Insulation	-	ASTMD-619 & ASTMD-710
B.	Capacitor Composition	-	Cornell-Dublier # CRXL116XN or Aerovox # P21G3301 Y01
C.	Motor Lead Insulation	-	Thermoplastic insulation, 1/32" meeting UL & CSA requirements for 600V @ 105 degrees C, also plastic insulating meeting CSA 300V @ 80 degrees C
D.	Gear Oil Type	-	Amoco - L Industrial Oil # 5201
E.	Gears	-	Nylon
F.	Terminal Board	-	phenolic with paper base
G.	Grease	-	A mixture of: 1-1-1 Trichloroethane or Dow Chloroethane VG with one of the following: Vulcan solvent 1-1-1 or Texaco lowtemp EP or Royco 27A

I hope this helps

Best Regards,

Mack Lyell II

Mack Lyell

ML/jj

HONEYWELL INC., 2401 HILLSBORO ROAD, P.O. BOX 15285, NASHVILLE, TENNESSEE 37215, TELEPHONE 615/385-3400

BROWNS FERRY NUCLEAR PLANT
79-01B - ADDITIONAL EQUIPMENT
- NCR BFNMEB8209

TVA ID No.	Item No.	Unit No.
RHR Pump Motor 1-A Cooler Fan Motor	1	1
RHR Pump Motor 1-B Cooler Fan Motor	1	1
RHR Pump Motor 1-C Cooler Fan Motor	2	1
RHR Pump Motor 1-D Cooler Fan Motor	2	1
Core Spray Pump Motor 1-A,1-C Cooler Fan Motor	1	1
Core Spray Pump Motor 1-B,1-D Cooler Fan Motor	3	1
RHR Pump Motor 2-A Cooler Fan Motor	1	2
RHR Pump Motor 2-B Cooler Fan Motor	1	2
RHR Pump Motor 2-C Cooler Fan Motor	2	2
RHR Pump Motor 2-D Cooler Fan Motor	2	2
Core Spray Pump Motor 2-A,2-C Cooler Fan Motor	3	2
Core Spray Pump Motor 2-B,2-D Cooler Fan Motor	2	2
RHR Pump Motor 3-A Cooler Fan Motor	1	3
RHR Pump Motor 3-B Cooler Fan Motor	1	3
RHR Pump Motor 3-C Cooler Fan Motor	2	3

TVA ID No.	Item No.	Unit No.
RHR Pump Motor 3-D Cooler Fan Motor	2	3
Core Spray Pump Motor 3-A,3-C Cooler Fan Motor	1	3
Core Spray Pump Motor 3-B,3-D Cooler Fan Motor	3	3

Manufacturer/Model No.

Lincoln - 5 hp with 184T Frame Code TV-2523
Code T-SM-87 and T-S20-87

Justification for Continued Operation

Interim qualifications for the 5-hp Lincoln motors per attachment A show a continuous operation life expectancy of 10 years. Worst conditions show the RHR and core spray pumproom coolers for unit 1 have been operating since 1974. Normal conditions for the RHR and core spray pumprooms are 80 degrees Fahrenheit average temperature and 95 degrees Fahrenheit maximum temperature. The coolers operate when the temperature reaches an abnormal condition of 105 degrees Fahrenheit as a result of the pumps operating. The RHR and core spray pumps operate when there is a buildup of residual or decay heat, which occurs during a reactor shutdown, fuel outage, or for testing once a month. The worst case is for unit 1 which, based on conservative estimates, has accumulated 594 days for fuel outages (by October 15, 1983), 120 days for testing, and 75 days for reactor shutdown. This is a total of 789 days or 2.2 years that the coolers have been in actual operation; therefore the RHR and core spray pumproom cooler fan motors can continue to operate since their life expectancy exceeds their actual use by 7 years.

References: TVA Technical Specifications 4.5.A.1B and 4.5.B.1.B
NUC PR - Browns Ferry Outage Summary
Table 1 - Summary of Harsh Environmental Conditions for BFN (NEB 821001 252)
T1-ANL-73 HELB Conditions (NEB 820617 235)

TVA 488 (EN DES-3-77)

ATTACHMENT A SHEET 1 OF 5

BROWNS FERRY NUCLEAR PLANT
NCR BFNMEB 8209

COMPUTED JNP DATE 4-29-83
CHECKED DATE

INTRODUCTION

The approach which TVA used to establish that the motors listed in NCR BFNMEB 8209 are functionally operable and to determine aging effects for their given operating and accident environments, combined original contract data with verbal and sometimes written information on motor materials to support analytical assumptions and conclusions reached. The environments considered were, temperature, humidity, and radiation.

TEMPERATURE - Temperature rise data was not available for these motors. We, therefore, assumed a maximum temperature rise as specified in the original contract. Using this value and the most serere temperature condition the motor would experience, the maximum operating temperature was determined. This temperature was compared to a normal ambient of 40°C at which all motors are rated.
The 10°C rule (an approximation of Arrhenious' Law as applied to insulation materials) was used to establish the operating life of the motor. - We assumed, conservatively, a 20 year life for the motors. - The 10°C Rule states that for each 10°C rise in temperature above some reference temperature at which the material is able to operate without degradation (in our case, 40°C ambient plus the allowable temperature rise), the useful life of the material is halved. Therefore a 10°C temperature rise above the maximum allowable temperature would reduce the life of the motors to 10 years. Using this approach we can establish the motor aging due to temperature effect.

BROWNS FERRY NUCLEAR PLANT
NCR BFN MEB 8209

COMPUTED JNP DATE 5-2-83
CHECKED DATE

HUMIDITY - All motors listed on NCR 3209 operate in environments of 80% humidity or less. Years of motor operating experience attest to the fact that humidity at these low levels will not cause the TEFC motors to be functionally inoperable nor degrade motor performance. During a HELB (worst condition) accident the motors will be forced to operate at 100% humidity. Since the motors are of TEFC construction the 100% humidity will not affect the performance of the motors.

RADIATION - The materials for all motors in environments greater than 10^4 rads (considered negligible) were identified and their radiation damage threshold compared to the operating and accident environments. In all cases the radiation damage threshold of the materials was equal to or higher than the combined 40 year normal dose and the integrated accident dose. The motors were, therefore, considered acceptable for the radiation environments in which they were to operate.

NCR BFN MEB 8209

JUSTIFICATION FOR CONTINUED SAFE OPERATION OF THE MOTORS ON SUBJECT NCR COMPUTED JNP DATE 5-3-83

CHECKED DATE

PURPOSE

The following calculations support TVA's contention that the motors of the specified contract will operate in their respective ambient and accident environments as listed in Table 1 of EEEQR, Section 3 for BFN. This constitutes justification for continued safe operation.

ASSUMPTIONS - Are noted in each section.
Contract 70C35-92256 (a MEB contract)

DATA - RHR & CS Pump Room Cooler Fan Motors
Lincoln Electric frame 184T
5 HP, 230/460-Y, 60 Hz, 3 ph, 1745 RPM
1.15 SF, Insulation Class B, Max. Ambient 40°C
Max. Temperature Rise 80°C above ambient
TEFC enclosure

Operating environment: Temp. 35°C max.
Humidity 30-80%
Radiation 2×10^4 rads
↳ Total 40 yr. integrated and integrated accident dose.

CALCULATIONS

Radiation: The materials composing these motors* have a radiation damage threshold which exceeds the maximum 40 year normal and integrated accident dose. Minimum material threshold is 4.4×10^6 rads.
Therefore the motors are qualified for 20 years* as far as radiation exposure is concerned.

* Motor materials per vendor
Radiation Threshold per EPRI NP-2129, Project 1707-3, Final Report, November 1981.
↳ Continued on bottom of last page No. 5

NCR BFNMEB 8209

JUSTIFICATION FOR CONTINUED SAFE OPERATION OF THE MOTORS ON SUBJECT NCR COMPUTED JNP DATE 5-3-83

CHECKED DATE

TEMPERATURE : Motors were purchased to NEMA Standard MG 1-1967. For motors operating above a referenced 40°C ambient temperature MG1-1967 (as modified in Febr. 1971) allows a temperature rise in accordance with the formula:

$$\text{Temperature rise} = 0.9\,(T_{hs} - T_a)$$

where: T_a = ambient temperature = 35°C

T_{hs} = hot spot temperature = 130°C for class B ins.

$\therefore$ Max. allowable Temp. Rise = $0.9\,(130 - 35) = 85.5$°C

The allowable temp. rise, as stated in the contract, was 80°C at a SF 1.15 The motors can operate at an overall temperature of 85.5 + 35 = 120.5°C

Therefore, these motors can operate continuously in this environment (normal) without exceeding their maximum overall temperature limitation.

Accident Conditions (ambient)

a) LOCA : The maximum temperature reached during a LOCA is 117°F (47.2°C), per table 1 in EEEQR, Section 3. During this accident the motors will reach 127.2°C (80 + 47.2°C) in the first 3 days and then drop to below 120.5°C (40.5° ambient + 80° temp. rise). As a conclusion, the life of these motors, because of a possible LOCA will be reduced to 10 years.

b) HELB : The maximum temperature reached during a HELB accident is 200°F (93.3°C). This temperature (ambient) will be reached in 30 seconds after the accident, and will be reduced at the rate of approx. 25°F per minute thereafter. Motor manufacturer's testing information says that the motor, under the accident conditions, will reach 60% of its temperature rise in 15 minutes ($0.60 \times 80 = 48$°C). By that time the room temperature will be reduced to about 40°C.

BROWNS FERRY NUCLEAR PLANT
NCR BFN MEB 8209
JUSTIFICATION FOR CONTINUED SAFE OPERATION
OF THE MOTORS ON SUBJECT NCR COMPUTED JNP DATE 5-3-83
CHECKED DATE

CONTINUED FROM PAGE 4

Therefore, the total temperature that the motors will be subjected to, 15 minutes after the accident, will be

$48 + 40 = 88°C$

At the beginning of the accident we will assume that the ambient will be at 95°F (or 35°C). Thirty seconds later this ambient will be increased to 93.3°C. We will also assume the motor winding temp. is the same as the ambient at the start of the accident. Therefore the temperature that the motors will be exposed to will be $93.3 + 35 = 128.3°C$. The hot spot temperature of the winding, for class B insulation, is 130°C. Therefore, the motor life for this short period of time will not be effected

CONCLUSION

The motors bought on contract 70C35-92256 are considered adequate to operate in their normal and accident environments for a minimum period of 10 years (due to a LOCA accident). However, it should be noted that any normal maintenance as required by the manufacturer will need to be performed to ensure full motor life.

* CONTINUED FROM PAGE 3

Leadwire by GE - No other information available
Varnish by "W" - " " " " Threshold
Phase insulation - a. Aramid (Nomex) = 7×10^6 rads
- b. Polyethylene Terephthalate = 4.4×10^6 rad
Slot insulation - Not available

TVA ID Number

Local Control Panel 3-25-5

Manufacturer/ Model Number

GE/NA

Status

III

JUSTIFICATION FOR CONTINUED OPERATION OR ENVIRONMENTAL ANALYSIS

The environmental parameters for this panel are:

Parameter	Specification	Qualification
Operating Time	100 days	
Temperature	183° F	
Pressure	Atmospheric	
Relative Humidity	100%	
Chemical Spray (Demineralized Water)	N/A	
Radiation, RAD	2.1×10^7	
Aging	N/A	
Submergence	N/A	

Qualification to the specified environmental conditions has not been documented. However, all of the electrical components located on this panel that perform active safety-related functions have been identified separately on environmental work sheets with required justification for continued operation provided for each. The remaining components (e.g. wire, terminal boards, fuses, RC circuit protectors, etc.) all perform statically (i.e., performing their function does not involve mechanical motion). These components are panel mounted and perform passive safety functions. In TVA's engineering judgement these components will not fail in their specified environment.

TVA ID Number

Local Control Panel 3-25-6

Manufacturer/ Model Number

GE/NA

Status

III

JUSTIFICATION FOR CONTINUED OPERATION OR ENVIRONMENTAL ANALYSIS

The environmental parameters for this panel are:

Parameter	Specification	Qualification
Operating Time	100 days	
Temperature	183° F	
Pressure	Atmospheric	
Relative Humidity	100%	
Chemical Spray (Demineralized Water)	N/A	
Radiation, RAD	2.1×10^7	
Aging	N/A	
Submergence	N/A	

Qualification to the specified environmental conditions has not been documented. However, all of the electrical components located on this panel that perform active safety-related functions have been identified separately on environmental work sheets with required justification for continued operation provided for each. The remaining components (e.g. wire, terminal boards, fuses, RC circuit protectors, etc.) all perform statically (i.e., performing their function does not involve mechanical motion). These components are panel mounted and perform passive safety functions. In TVA's engineering judgement these components will not fail in their specified environment.

TVA ID Number

Local Control Panel 3-25-51

Manufacturer/ Model Number

GE/NA

Status

III

JUSTIFICATION FOR CONTINUED OPERATION OR ENVIRONMENTAL ANALYSIS

The environmental parameters for this panel are:

Parameter	Specification	Qualification
Operating Time	100 days	
Temperature	163° F	
Pressure	Atmospheric	
Relative Humidity	100%	
Chemical Spray (Demineralized Water)	N/A	
Radiation, RAD	2.1×10^7	
Aging	N/A	
Submergence	N/A	

Qualification to the specified environmental conditions has not been documented. However, all of the electrical components located on this panel that perform active safety-related functions have been identified separately on environmental work sheets with required justification for continued operation provided for each. The remaining components (e.g. wire, terminal boards, fuses, RC circuit protectors, etc.) all perform statically (i.e., performing their function does not involve mechanical motion). These components are panel mounted and perform passive safety functions. In TVA's engineering judgement these components will not fail in their specified environment.

TVA ID Number

PT-3-54

Manufacturer/ Model Number

GEMAC/551032GAAH1

Status

See Justification for Continued Operation below.

JUSTIFICATION FOR CONTINUED OPERATION OR ENVIRONMENTAL ANALYSIS

This item will be deleted from the BFN 79-01B Electrical Equipment List. The safety-related display function of this pressure transmitter has been transferred to environmentally qualified transmitters PT-3-22A through D.

TVA ID Number

PT-3-61

Manufacturer/ Model Number

GEMAC/551032GAAH1

Status

See Justification for Continued Operation below.

JUSTIFICATION FOR CONTINUED OPERATION OR ENVIRONMENTAL ANALYSIS

This item will be deleted from the BFN 79-01B Electrical Equipment List. The safety-related display function of this pressure transmitter has been transferred to environmentally qualified transmitters PT-3-22A through D.

TVA ID Number

PS-3-204 (A-D)

Manufacturer/ Model Number

Static-O-Ring/9N-AA45-(X9)-TT

Status

IV

JUSTIFICATION FOR CONTINUED OPERATION OR ENVIRONMENTAL ANALYSIS

The environment parameters for this device are:

Parameter	Specification	Qualification
Operating Time	1 day	*6 hours
Temperature	117^{o} F	*212^{o} F
Pressure	Atmospheric	*15 psi
Relative Humidity (%)	100%	*100%
Chemical Spray (Demineralized water)	N/A	N/A
Radiation, RAD	8.2×10^{5}	**1×10^{6}
Aging	N/A	———
Submergence	N/A	N/A

The only outstanding qualification parameter is operating time.

Based on the materials evaluation and the temperature and radiation doses encountered, aging effects will not adversely affect these devices. Similarly, the operating time of 1 day has been considered, and TVA has identified no adverse effects from temperature (or other parameters) on the functioning of these devices.

Notwithstanding these arguments, TVA has committed to replace these devices with fully qualified substitutes.

*Viking Lab Report 30203-2 (generic component)

**The radiation dose of 1×10^{6} rads is based upon a materials analysis of the pressure switch. The material in these devices which limits the allowable radiation dose are the seals (Buna-N) which, according to several studies including the guidelines furnished in bulletin 79-01B, are acceptable up to a dose of 1×10^{6} rads.

TVA ID Number

HS-23-34B, -40B, -46B, -52B, -57B

Manufacturer/ Model Number

GE/158B7071G002

Status

III

JUSTIFICATION FOR CONTINUED OPERATION OR ENVIRONMENTAL ANALYSIS

The switches are oiltight, dusttight, and moisture resistant. They are mounted on sealed junction boxes. For the General Electric type CR2940, there exists from the BWR owners group search by Wyle Laboratories (QSR-002-A-02) thermal aging tests to 131° C, 14 days; mechanical aging to 100,000 operations without load; electrical aging (full load) to 20,000 operations; and radiation aging of 1×10^6 rads.

The fact that these switches, being local control stations, do not have to operate during the design basis event, whether LOCA/SLB or HELB, and because these switches are qualified to the normal environments which have been defined for the areas in which they operate, no safety concerns are involved for interim operation.

Not withstanding the above arguments, TVA has committed to qualify this device by analysis and/or type testing.

TVA ID Number

Units 1 & 2: FSV-64-17, -18, -19, -29, -30, -31, -32, -33
Units 1, 2, & 3: FSV-64-34

Manufacturer/ Model Number

ASCO/WPHTX8300B45F

Status

IV

JUSTIFICATION FOR CONTINUED OPERATION OR ENVIRONMENTAL ANALYSIS

Refer to L. M. Mills (TVA) letter to D. B. Vassallo (USNRC) dated February 28, 1983, TER item No. 122.

TVA ID Number

FSV-64-31 (Unit 3)

Manufacturer/ Model Number

ASCO/HB830081F

Status

IV

JUSTIFICATION FOR CONTINUED OPERATION OR ENVIRONMENTAL ANALYSIS

Refer to L. M. Mills (TVA) letter to Domenic B. Vassallo (USNRC) dated February 28, 1983, TER item No. 122.

TVA ID Number

Local Control Panel 64-25-57

Manufacturer/ Model Number

GE/NA

Status

III

JUSTIFICATION FOR CONTINUED OPERATION OR ENVIRONMENTAL ANALYSIS

The environmental parameters for this panel are:

Parameter	Specification	Qualification
Operating Time	1 hour	
Temperature	110° F	
Pressure	Atmospheric	
Relative Humidity	100%	
Chemical Spray (Demineralized Water)	N/A	
Radiation, RAD	1.6×10^{5}	
Aging	N/A	
Submergence	N/A	

Qualification to the specified environmental conditions has not been documented. However, all of the electrical components located on this panel that perform active safety-related functions have been identified separately on environmental work sheets with required justification for continued operation provided for each. The remaining components (e.g. wire, terminal boards, fuses, RC circuit protectors, etc.) all perform statically (i.e., performing their function does not involve mechanical motion). These components are panel mounted and perform passive safety functions. In TVA's engineering judgement these components will not fail in their specified environment.

TVA ID Number

PS-64-50

Manufacturer/ Model Number

GE/560111AAAC1

Status

III

JUSTIFICATION FOR CONTINUED OPERATION OR ENVIRONMENTAL ANALYSIS

Qualification to the specified environmental conditions has not been documented. Therefore, this device is being relocated to panel 25-32 which is in a mild environment.

An environmental analysis shows that the specified conditions include:

Required Operating time	=	100 days
Pressure	=	Atmospheric
Temperature	=	126° F
Radiation	=	3.1×10^{4} rads
Relative Humidity	=	100%

In TVA's engineering judgement, this device would function without failure under the specified environmental conditions.

Additionally, a systems analysis shows that PS-64-50 functions to alert a control room operator that a drywell atmospheric temperature of 281° F has existed for 30 minutes after an incident begins (drywell pressure exceeds 2 psig).

Manual actuation of the containment spray by the operator is mandatory after an incident whenever either of the following criteria are met:

(1) the drywell pressure exceeds 35 psig, or
(2) a drywell atmospheric temperature of 281° F still exists 30 minutes after an incident begins (drywell pressure exceeds 2 psig).

Redundant drywell instrumentation is provided in the control room for the operator to observe and to determine when to actuate the containment spray. As a reminder to the operator, an alarm in the control room will annunciate if either criterion is met.

Therefore, operator initiation of containment spray can be accomplished by using only the redundant drywell instrumentation. Based on the above analysis, TVA concludes that this device is qualified for interim operation.

TVA ID Number

IS-64-50

Manufacturer/ Model Number

Eagle Signal Company/HP55A6

Status

III

JUSTIFICATION FOR CONTINUED OPERATION OR ENVIRONMENTAL ANALYSIS

Qualification to the specified environmental conditions has not been documented. However, manufacturer information states that the HP55A6 is a high quality instrument designed to operate in temperatures of $+32^{\circ}$ F to $+142^{\circ}$ F. Therefore, this device is being relocated to panel 25-32 which is in a mild environment.

An environmental analysis shows that the specified conditions include:

Required Operating time	=	100 days
Pressure	=	Atmospheric
Temperature	=	126° F
Radiation	=	3.1×10^{4} rads
Relative Humidity	=	100%

In TVA's engineering judgement, this device would function without failure under the specified environmental conditions.

Additionally, a systems analysis shows that IS-64-50 functions to alert a control room operator that a drywell atmospheric temperature of 281° F has existed for 30 minutes after an incident begins (drywell pressure exceeds 2 psig).

Manual actuation of the containment spray by the operator is mandatory after an incident whenever either of the following criteria are met:

(1) the drywell pressure exceeds 35 psig, or
(2) a drywell atmospheric temperature of 281° F still exists 30 minutes after an incident begins (drywell pressure exceeds 2 psig).

Redundant drywell instrumentation is provided in the control room for the operator to observe and to determine when to actuate the containment spray. As a reminder to the operator, an alarm in the control room will annunciate if either criterion is met.

Therefore, operator initiation of containment spray can be accomplished by using only the redundant drywell instrumentation. Based on the above analysis, TVA concludes that this device is qualified for interim operation.

TVA ID Number

PX-64-50

Manufacturer/ Model Number

GE/570012FAAC1

Status

IV

JUSTIFICATION FOR CONTINUED OPERATION OR ENVIRONMENTAL ANALYSIS

Qualification to the specified environmental conditions has not been documented. Therefore, this device is being relocated to panel 25-32 which is in a mild environment.

An environmental analysis shows that the specified conditions include:

Required Operating time	=	100 days
Pressure	=	Atmospheric
Temperature	=	126° F
Radiation	=	3.1×10^4 rads
Relative Humidity	=	100%

In TVA's engineering judgement, this device would function without failure under the specified environmental conditions.

Additionally, a systems analysis shows that PX-64-50 functions to alert a control room operator that a drywell atmospheric temperature of 281° F has existed for 30 minutes after an incident begins (drywell pressure exceeds 2 psig).

Manual actuation of the containment spray by the operator is mandatory after an incident whenever either of the following criteria are met:

(1) the drywell pressure exceeds 35 psig, or
(2) a drywell atmospheric temperature of 281° F still exists 30 minutes after an incident begins (drywell pressure exceeds 2 psig).

Redundant drywell instrumentation is provided in the control room for the operator to observe and to determine when to actuate the containment spray. As a reminder to the operator, an alarm in the control room will annunciate if either criterion is met.

Therefore, operator initiation of containment spray can be accomplished by using only the redundant drywell instrumentation. Based on the above analysis, TVA concludes that this device is qualified for interim operation.

TVA ID Number

PT-64-51

Manufacturer/ Model Number

GEMAC/50-551032CAAE1

Status

III

JUSTIFICATION FOR CONTINUED OPERATION OR ENVIRONMENTAL ANALYSIS

This pressure transmitter is required to operate in the environment specified below:

Parameter	Specification	Qualification
Operating Time	1 day	
Temperature	220° F	
Pressure	Atmospheric	
Relative Humidity (%)	100	
Chemical Spray (Demineralized Water)	N/A	
Radiation	3.1×10^7 rads	
Aging	N/A	

The manufacturer's specifications for the pressure transmitters are as follows:

Temperature	- 185° F
Pressure	- Atmospheric
Relative Humidity	- Not specified
Radiation	- Not specified

Material breakdown analysis reveals the presence of electronic gear such as diodes and transistors. The specifications for these components are not available. The components are susceptible to a threshold gamma radiation of 1×10^4 per Table C-1 of the DOR Guidelines - 79-01B.

The devices will function in the environment to which they are exposed due to a LOCA or HELB for at least one hour. FSAR analyses for the design basis accidents assume that the reactor is placed in a stable hot shutdown condition within one hour. Thus the devices are qualified to perform their safety function assumed for a stable hot shutdown condition.

Also, since the devices have a NEMA 4 case, relative humidity should have no effect on the operations. Therefore, in TVA's engineering judgement based on available information, the device should function adequately. However, due to lack of sufficient documentation, TVA will either type-test this device or replace it with a type-tested device.

TVA ID Number

PX-64-54

Manufacturer/ Model Number

GE/570012FAAC1

Status

IV

JUSTIFICATION FOR CONTINUED OPERATION OR ENVIRONMENTAL ANALYSIS

Qualification to the specified environmental conditions has not been documented. Therefore, this device is being relocated to panel 25-32 which is in a mild environment.

An environmental analysis shows that the specified conditions include:

Required Operating time	=	100 days
Pressure	=	Atmospheric
Temperature	=	126° F
Radiation	=	3.1×10^{4} rads
Relative Humidity	=	100%

In TVA's engineering judgement, this device would function without failure under the specified environmental conditions.

Additionally, a systems analysis shows that PX-64-54 functions to alert a control room operator that a drywell atmospheric temperature of 281° F has existed for 30 minutes after an incident begins (drywell pressure exceeds 2 psig).

Manual actuation of the containment spray by the operator is mandatory after an incident whenever either of the following criteria are met:

(1) the drywell pressure exceeds 35 psig, or
(2) a drywell atmospheric temperature of 281° F still exists 30 minutes after an incident begins (drywell pressure exceeds 2 psig).

Redundant drywell instrumentation is provided in the control room for the operator to observe and to determine when to actuate the containment spray. As a reminder to the operator, an alarm in the control room will annunciate if either criterion is met.

Therefore, operator initiation of containment spray can be accomplished by using only the redundant drywell instrumentation. Based on the above analysis, TVA concludes that this device is qualified for interim operation.

TVA ID Number

PX-64-51

Manufacturer/ Model Number

GE/583001AAGK1

Status

IV

JUSTIFICATION FOR CONTINUED OPERATION OR ENVIRONMENTAL ANALYSIS

Qualification to the specified environmental conditions has not been documented. Therefore, this device is being relocated to panel 25-32 which is in a mild environment.

An environmental analysis shows that the specified conditions include:

Required Operating time	=	100 days
Pressure	=	Atmospheric
Temperature	=	126° F
Radiation	=	3.1×10^{4} rads
Relative Humidity	=	100%

In TVA's engineering judgement, this device would function without failure under the specified environmental conditions.

Additionally, a systems analysis shows that PX-64-51 functions to alert a control room operator that a drywell atmospheric temperature of 281° F has existed for 30 minutes after an incident begins (drywell pressure exceeds 2 psig).

Manual actuation of the containment spray by the operator is mandatory after an incident whenever either of the following criteria are met:

(1) the drywell pressure exceeds 35 psig, or
(2) a drywell atmospheric temperature of 281° F still exists 30 minutes after an incident begins (drywell pressure exceeds 2 psig).

Redundant drywell instrumentation is provided in the control room for the operator to observe and to determine when to actuate the containment spray. As a reminder to the operator, an alarm in the control room will annunciate if either criterion is met.

Therefore, operator initiation of containment spray can be accomplished by using only the redundant drywell instrumentation. Based on the above analysis, TVA concludes that this device is qualified for interim operation.

TVA ID Number

HS-67-17B, 18B, 48B, 49B, -74-5B, 16B, 28B, 34B, -43-13B, 14B

Manufacturer/ Model Number

See justification for continued operation below.

Status

III

JUSTIFICATION FOR CONTINUED OPERATION OR ENVIRONMENTAL ANALYSIS

Specific manufacturer/model information has not been documented for these hand switches. However, TVA has provided acceptable justification for continued operation for all models of hand switches procured by TVA for the BOP and by General Electric Company (GE) for the NSSS. Therefore, no safety concern exists for these devices for interim operation until environmental qualification can be documented for all hand switch models by type test or analysis.

TVA ID Number

HS-67-21B

Manufacturer/ Model Number

GE/158B7071G002

Status

III

JUSTIFICATION FOR CONTINUED OPERATION OR ENVIRONMENTAL ANALYSIS

The switches are oiltight, dusttight, and moisture resistant. They are mounted on sealed junction boxes. For the General Electric type CR2940, there exists from the BWR owners group search by Wyle Laboratories (QSR-002-A-02) thermal aging tests to 131° C, 14 days; mechanical aging to 100,000 operations without load; electrical aging (full load) to 20,000 operations; and radiation aging of 1×10^6 rads.

The fact that these switches, being local control stations, do not have to operate during the design basis event, whether LOCA/SLB or HELB, and because these switches are qualified to the normal environments which have been defined for the areas in which they operate, no safety concerns are involved for interim operation.

Not withstanding the above arguments, TVA has committed to qualify this device by analysis and/or type testing.

TVA ID Number

HS-67-22B

Manufacturer/ Model Number

GE/158B7071G002

Status

III

JUSTIFICATION FOR CONTINUED OPERATION OR ENVIRONMENTAL ANALYSIS

The switches are oiltight, dusttight, and moisture resistant. They are mounted on sealed junction boxes. For the General Electric type CR2940, there exists from the BWR owners group search by Wyle Laboratories (QSR-002-A-02) thermal aging tests to 131° C, 14 days; mechanical aging to 100,000 operations without load; electrical aging (full load) to 20,000 operations; and radiation aging of 1×10^6 rads.

The fact that these switches, being local control stations, do not have to operate during the design basis event, whether LOCA/SLB or HELB, and because these switches are qualified to the normal environments which have been defined for the areas in which they operate, no safety concerns are involved for interim operation.

Not withstanding the above arguments, TVA has committed to qualify this device by analysis and/or type testing.

TVA ID Number

HS-67-25B

Manufacturer/ Model Number

GE/158B7071G002

Status

III

JUSTIFICATION FOR CONTINUED OPERATION OR ENVIRONMENTAL ANALYSIS

The switches are oiltight, dusttight, and moisture resistant. They are mounted on sealed junction boxes. For the General Electric type CR2940, there exists from the BWR owners group search by Wyle Laboratories (QSR-002-A-02) thermal aging tests to 131° C, 14 days; mechanical aging to 100,000 operations without load; electrical aging (full load) to 20,000 operations; and radiation aging of 1×10^6 rads.

The fact that these switches, being local control stations, do not have to operate during the design basis event, whether LOCA/SLB or HELB, and because these switches are qualified to the normal environments which have been defined for the areas in which they operate, no safety concerns are involved for interim operation.

Not withstanding the above arguments, TVA has committed to qualify this device by analysis and/or type testing.

TVA ID Number

HS-67-26B

Manufacturer/ Model Number

GE/158B7071G002

Status

III

JUSTIFICATION FOR CONTINUED OPERATION OR ENVIRONMENTAL ANALYSIS

The switches are oiltight, dusttight, and moisture resistant. They are mounted on sealed junction boxes. For the General Electric type CR2940, there exists from the BWR owners group search by Wyle Laboratories (QSR-002-A-02) thermal aging tests to 131° C, 14 days; mechanical aging to 100,000 operations without load; electrical aging (full load) to 20,000 operations; and radiation aging of 1×10^6 rads.

The fact that these switches, being local control stations, do not have to operate during the design basis event, whether LOCA/SLB or HELB, and because these switches are qualified to the normal environments which have been defined for the areas in which they operate, no safety concerns are involved for interim operation.

Not withstanding the above arguments, TVA has committed to qualify this device by analysis and/or type testing.

TVA ID Number

Local Control Panel 68-25-52

Manufacturer/ Model Number

GE/NA

Status

III

JUSTIFICATION FOR CONTINUED OPERATION OR ENVIRONMENTAL ANALYSIS

The environmental parameters for this panel are:

Parameter	Specification	Qualification
Operating Time	100 days	
Temperature	163° F	
Pressure	Atmospheric	
Relative Humidity	100%	
Chemical Spray (Demineralized Water)	N/A	
Radiation, RAD	2.1×10^{7}	
Aging	N/A	
Submergence	N/A	

Qualification to the specified environmental conditions has not been documented. However, all of the electrical components located on this panel that perform active safety-related functions have been identified separately on environmental work sheets with required justification for continued operation provided for each. The remaining components (e.g. wire, terminal boards, fuses, RC circuit protectors, etc.) all perform statically (i.e., performing their function does not involve mechanical motion). These components are panel mounted and perform passive safety functions. In TVA's engineering judgement these components will not fail in their specified environment.

TVA ID Number

HS-69-2B, -12B

Manufacturer/ Model Number

GE/158B7071G004

Status

III

JUSTIFICATION FOR CONTINUED OPERATION OR ENVIRONMENTAL ANALYSIS

The switches are oiltight, dusttight, and moisture resistant. They are mounted on sealed junction boxes. For the General Electric type CR2940, there exists from the BWR owners group search by Wyle Laboratories (QSR-002-A-02) thermal aging tests to 131° C, 14 days; mechanical aging to 100,000 operations without load; electrical aging (full load) to 20,000 operations; and radiation aging of 1×10^6 rads.

The fact that these switches, being local control stations, do not have to operate during the design basis event, whether LOCA/SLB or HELB, and because these switches are qualified to the normal environments which have been defined for the areas in which they operate, no safety concerns are involved for interim operation.

Not withstanding the above arguments, TVA has committed to qualify this device by analysis and/or type testing.

TVA ID Number

HS-70-47B

Manufacturer/ Model Number

GE/158B7071G002

Status

III

JUSTIFICATION FOR CONTINUED OPERATION OR ENVIRONMENTAL ANALYSIS

The switches are oiltight, dusttight, and moisture resistant. They are mounted on sealed junction boxes. For the General Electric type CR2940, there exists from the BWR owners group search by Wyle Laboratories (QSR-002-A-02) thermal aging tests to 131° C, 14 days; mechanical aging to 100,000 operations without load; electrical aging (full load) to 20,000 operations; and radiation aging of 1×10^6 rads.

The fact that these switches, being local control stations, do not have to operate during the design basis event, whether LOCA/SLB or HELB, and because these switches are qualified to the normal environments which have been defined for the areas in which they operate, no safety concerns are involved for interim operation.

Not withstanding the above arguments, TVA has committed to qualify this device by analysis and/or type testing.

TVA ID Number

Local Control Panel 71-25-7

Manufacturer/ Model Number

GE/NA

Status

III

JUSTIFICATION FOR CONTINUED OPERATION OR ENVIRONMENTAL ANALYSIS

The environmental parameters for this panel are:

Parameter	Specification	Qualification
Operating Time	100 days	
Temperature	183° F	
Pressure	Atmospheric	
Relative Humidity	100%	
Chemical Spray (Demineralized Water)	N/A	
Radiation, RAD	8.2×10^5	
Aging	N/A	
Submergence	N/A	

Qualification to the specified environmental conditions has not been documented. However, all of the electrical components located on this panel that perform active safety-related functions have been identified separately on environmental work sheets with required justification for continued operation provided for each. The remaining components (e.g. wire, terminal boards, fuses, RC circuit protectors, etc.) all perform statically (i.e., performing their function does not involve mechanical motion). These components are panel mounted and perform passive safety functions. In TVA's engineering judgement these components will not fail in their specified environment.

TVA ID Number

Local Control Panel 71-25-31

Manufacturer/ Model Number

GE/NA

Status

III

JUSTIFICATION FOR CONTINUED OPERATION OR ENVIRONMENTAL ANALYSIS

The environmental parameters for this panel are:

Parameter	Specification	Qualification
Operating Time	1 day	
Temperature	133° F	
Pressure	Atmospheric	
Relative Humidity	100%	
Chemical Spray (Demineralized Water)	N/A	
Radiation, RAD	3.1×10^4	
Aging	N/A	
Submergence	N/A	

Qualification to the specified environmental conditions has not been documented. However, all of the electrical components located on this panel that perform active safety-related functions have been identified separately on environmental work sheets with required justification for continued operation provided for each. The remaining components (e.g. wire, terminal boards, fuses, RC circuit protectors, relays, etc.) all perform statically (i.e., performing their safety function does not involve mechanical motion). These components are panel mounted (the relays are encased in addition to being panel mounted) and perform passive safety functions. In TVA's engineering judgement these components will not fail in their specified environment.

TVA ID Number

HS-71-3B

Manufacturer/ Model Number

GE/158B7071G001

Status

III

JUSTIFICATION FOR CONTINUED OPERATION OR ENVIRONMENTAL ANALYSIS

The switches are oiltight, dusttight, and moisture resistant. They are mounted on sealed junction boxes. For the General Electric type CR2940, there exists from the BWR owners group search by Wyle Laboratories (QSR-002-A-02) thermal aging tests to 131° C, 14 days; mechanical aging to 100,000 operations without load; electrical aging (full load) to 20,000 operations; and radiation aging of 1×10^6 rads.

The fact that these switches, being local control stations, do not have to operate during the design basis event, whether LOCA/SLB or HELB, and because these switches are qualified to the normal environments which have been defined for the areas in which they operate, no safety concerns are involved for interim operation.

Not withstanding the above arguments, TVA has committed to qualify this device by analysis and/or type testing.

TVA ID Number

FCV-73-2

Manufacturer/ Model Number

Limitorque/SMB-2

Status

III

JUSTIFICATION FOR CONTINUED OPERATION OR ENVIRONMENTAL ANALYSIS

Refer to L. M. Mills (TVA) letter to Domenic B. Vassallo (USNRC) dated February 28, 1983, TER item No. 147.

TVA ID Number

Local Control Panel 73-25-63

Manufacturer/ Model Number

GE/NA

Status

III

JUSTIFICATION FOR CONTINUED OPERATION OR ENVIRONMENTAL ANALYSIS

The environmental parameters for this panel are:

Parameter	Specification	Qualification
Operating Time	1 day	
Temperature	120° F	
Pressure	Atmospheric	
Relative Humidity	100%	
Chemical Spray (Demineralized Water)	N/A	
Radiation, RAD	2×10^4	
Aging	N/A	
Submergence	N/A	

Qualification to the specified environmental conditions has not been documented. However, all of the electrical components located on this panel that perform active safety-related functions have been identified separately on environmental work sheets with required justification for continued operation provided for each. The remaining components (e.g. wire, terminal boards, fuses, RC circuit protectors, etc.) all perform statically (i.e., performing their function does not involve mechanical motion). These components are panel mounted and perform passive safety functions. In TVA's engineering judgement these components will not fail in their specified environment.

TVA ID Number

HS-73-3B, -16B, -26B, -27B, -30B, -34B, -36B, -40B, -44B

Manufacturer/ Model Number

GE/158B7071G001

Status

III

JUSTIFICATION FOR CONTINUED OPERATION OR ENVIRONMENTAL ANALYSIS

The switches are oiltight, dusttight, and moisture resistant. They are mounted on sealed junction boxes. For the General Electric type CR2940, there exists from the BWR owners group search by Wyle Laboratories (QSR-002-A-02) thermal aging tests to 131° C, 14 days; mechanical aging to 100,000 operations without load; electrical aging (full load) to 20,000 operations; and radiation aging of 1×10^6 rads.

The fact that these switches, being local control stations, do not have to operate during the design basis event, whether LOCA/SLB or HELB, and because these switches are qualified to the normal environments which have been defined for the areas in which they operate, no safety concerns are involved for interim operation.

Not withstanding the above arguments, TVA has committed to qualify this device by analysis and/or type testing.

TVA ID Number

HS-73-35B

Manufacturer/ Model Number

GE/158B7071G003

Status

III

JUSTIFICATION FOR CONTINUED OPERATION OR ENVIRONMENTAL ANALYSIS

The switches are oiltight, dusttight, and moisture resistant. They are mounted on sealed junction boxes. For the General Electric type CR2940, there exists from the BWR owners group search by Wyle Laboratories (QSR-002-A-02) thermal aging tests to 131° C, 14 days; mechanical aging to 100,000 operations without load; electrical aging (full load) to 20,000 operations; and radiation aging of 1×10^6 rads.

The fact that these switches, being local control stations, do not have to operate during the design basis event, whether LOCA/SLB or HELB, and because these switches are qualified to the normal environments which have been defined for the areas in which they operate, no safety concerns are involved for interim operation.

Not withstanding the above arguments, TVA has committed to qualify this device by analysis and/or type testing.

TVA ID Number

Local Control Panel 74-25-59

Manufacturer/ Model Number

GE/NA

Status

III

JUSTIFICATION FOR CONTINUED OPERATION OR ENVIRONMENTAL ANALYSIS

The environmental parameters for this panel are:

Parameter	Specification	Qualification
Operating Time	100 days	
Temperature	183° F	
Pressure	Atmospheric	
Relative Humidity	100%	
Chemical Spray (Demineralized Water)	N/A	
Radiation, RAD	3×10^7	
Aging	N/A	
Submergence	N/A	

Qualification to the specified environmental conditions has not been documented. However, all of the electrical components located on this panel that perform active safety-related functions have been identified separately on environmental work sheets with required justification for continued operation provided for each. The remaining components (e.g. wire, terminal boards, fuses, RC circuit protectors, etc.) all perform statically (i.e., performing their function does not involve mechanical motion). These components are panel mounted and perform passive safety functions. In TVA's engineering judgement these components will not fail in their specified environment.

TVA ID Number

HS-74-47B, -77B

Manufacturer/ Model Number

GE/158B7071G001

Status

III

JUSTIFICATION FOR CONTINUED OPERATION OR ENVIRONMENTAL ANALYSIS

The switches are oiltight, dusttight, and moisture resistant. They are mounted on sealed junction boxes. For the General Electric type CR2940, there exists from the BWR owners group search by Wyle Laboratories (QSR-002-A-02) thermal aging tests to 131° C, 14 days; mechanical aging to 100,000 operations without load; electrical aging (full load) to 20,000 operations; and radiation aging of 1×10^6 rads.

The fact that these switches, being local control stations, do not have to operate during the design basis event, whether LOCA/SLB or HELB, and because these switches are qualified to the normal environments which have been defined for the areas in which they operate, no safety concerns are involved for interim operation.

Not withstanding the above arguments, TVA has committed to qualify this device by analysis and/or type testing.

TVA ID Number

HS-74-1B, -12B, -13B, -24B, -25B, -35B, -36B, -52B, -53B, -57B, -60B, -61B, -66B, -67B, -71B, -74B, -75B, -100B, -101B

Manufacturer/ Model Number

GE/ 158B7071G002

Status

III

JUSTIFICATION FOR CONTINUED OPERATION OR ENVIRONMENTAL ANALYSIS

The switches are oiltight, dusttight, and moisture resistant. They are mounted on sealed junction boxes. For the General Electric type CR2940, there exists from the BWR owners group search by Wyle Laboratories (QSR-002-A-02) thermal aging tests to 131° C, 14 days; mechanical aging to 100,000 operations without load; electrical aging (full load) to 20,000 operations; and radiation aging of 1×10^6 rads.

The fact that these switches, being local control stations, do not have to operate during the design basis event, whether LOCA/SLB or HELB, and because these switches are qualified to the normal environments which have been defined for the areas in which they operate, no safety concerns are involved for interim operation.

Not withstanding the above arguments, TVA has committed to qualify this device by analysis and/or type testing.

TVA ID Number

HS-74-58B , -59B, -72B, -73B

Manufacturer/ Model Number

GE/158B7071G004

Status

III

JUSTIFICATION FOR CONTINUED OPERATION OR ENVIRONMENTAL ANALYSIS

The switches are oiltight, dusttight, and moisture resistant. They are mounted on sealed junction boxes. For the General Electric type CR2940, there exists from the BWR owners group search by Wyle Laboratories (QSR-002-A-02) thermal aging tests to 131° C, 14 days; mechanical aging to 100,000 operations without load; electrical aging (full load) to 20,000 operations; and radiation aging of 1×10^6 rads.

The fact that these switches, being local control stations, do not have to operate during the design basis event, whether LOCA/SLB or HELB, and because these switches are qualified to the normal environments which have been defined for the areas in which they operate, no safety concerns are involved for interim operation.

Not withstanding the above arguments, TVA has committed to qualify this device by analysis and/or type testing.

TVA ID Number

Local Control Panel 75-25-1

Manufacturer/ Model Number

GE/NA

Status

III

JUSTIFICATION FOR CONTINUED OPERATION OR ENVIRONMENTAL ANALYSIS

The environmental parameters for this panel are:

Parameter	Specification	Qualification
Operating Time	100 days	
Temperature	200° F	
Pressure	Atmospheric	
Relative Humidity	100%	
Chemical Spray (Demineralized Water)	N/A	
Radiation, RAD	3×10^7	
Aging	N/A	
Submergence	N/A	

Qualification to the specified environmental conditions has not been documented. However, all of the electrical components located on this panel that perform active safety-related functions have been identified separately on environmental work sheets with required justification for continued operation provided for each. The remaining components (e.g. wire, terminal boards, fuses, RC circuit protectors, etc.) all perform statically (i.e., performing their function does not involve mechanical motion). These components are panel mounted and perform passive safety functions. In TVA's engineering judgement these components will not fail in their specified environment.

TVA ID Number

Local Control Panel 75-25-60

Manufacturer/ Model Number

GE/NA

Status

III

JUSTIFICATION FOR CONTINUED OPERATION OR ENVIRONMENTAL ANALYSIS

The environmental parameters for this panel are:

Parameter	Specification	Qualification
Operating Time	100 days	
Temperature	128° F	
Pressure	Atmospheric	
Relative Humidity	100%	
Chemical Spray (Demineralized Water)	N/A	
Radiation, RAD	3×10^7	
Aging	N/A	
Submergence	N/A	

Qualification to the specified environmental conditions has not been documented. However, all of the electrical components located on this panel that perform active safety-related functions have been identified separately on environmental work sheets with required justification for continued operation provided for each. The remaining components (e.g. wire, terminal boards, fuses, RC circuit protectors, etc.) all perform statically (i.e., performing their function does not involve mechanical motion). These components are panel mounted and perform passive safety functions. In TVA's engineering judgement these components will not fail in their specified environment.

TVA ID Number

HS-75-2B, -9B, -11B, -30B, -37B, -39B

Manufacturer/ Model Number

GE/158B7071G002

Status

III

JUSTIFICATION FOR CONTINUED OPERATION OR ENVIRONMENTAL ANALYSIS

The switches are oiltight, dusttight, and moisture resistant. They are mounted on sealed junction boxes. For the General Electric type CR2940, there exists from the BWR owners group search by Wyle Laboratories (QSR-002-A-02) thermal aging tests to 131° C, 14 days; mechanical aging to 100,000 operations without load; electrical aging (full load) to 20,000 operations; and radiation aging of 1×10^6 rads.

The fact that these switches, being local control stations, do not have to operate during the design basis event, whether LOCA/SLB or HELB, and because these switches are qualified to the normal environments which have been defined for the areas in which they operate, no safety concerns are involved for interim operation.

Not withstanding the above arguments, TVA has committed to qualify this device by analysis and/or type testing.

TVA ID Number

HS-75-22B, -50B

Manufacturer/ Model Number

GE/158B7071G004

Status

III

JUSTIFICATION FOR CONTINUED OPERATION OR ENVIRONMENTAL ANALYSIS

The switches are oiltight, dusttight, and moisture resistant. They are mounted on sealed junction boxes. For the General Electric type CR2940, there exists from the BWR owners group search by Wyle Laboratories (QSR-002-A-02) thermal aging tests to 131° C, 14 days; mechanical aging to 100,000 operations without load; electrical aging (full load) to 20,000 operations; and radiation aging of 1×10^6 rads.

The fact that these switches, being local control stations, do not have to operate during the design basis event, whether LOCA/SLB or HELB, and because these switches are qualified to the normal environments which have been defined for the areas in which they operate, no safety concerns are involved for interim operation.

Not withstanding the above arguments, TVA has committed to qualify this device by analysis and/or type testing.

TVA ID Number

FSV-76-24

Manufacturer/ Model Number

ASCO/Unit 1 8302C29E/Unit 1 8302C29F/Unit 3 WPHTX 8300B45G

Status

IV

JUSTIFICATION FOR CONTINUED OPERATION OR ENVIRONMENTAL ANALYSIS

Refer to L. M. Mills (TVA) letter to Domenic B. Vassallo (USNRC) dated February 28, 1983, TER item No. 119.

TVA ID Number

Local Control Panel 85-25-25

Manufacturer/ Model Number

GE/NA

Status

III

JUSTIFICATION FOR CONTINUED OPERATION OR ENVIRONMENTAL ANALYSIS

The environmental parameters for this panel are:

Parameter	Specification	Qualification
Operating Time	1 hour	
Temperature	105° F	
Pressure	Atmospheric	
Relative Humidity	100%	
Chemical Spray (Demineralized Water)	N/A	
Radiation, RAD	2.1×10^7	
Aging	N/A	
Submergence	N/A	

Qualification to the specified environmental conditions has not been documented. However, all of the electrical components located on this panel that perform active safety-related functions have been identified separately on environmental work sheets with required justification for continued operation provided for each. The remaining components (e.g. wire, terminal boards, fuses, RC circuit protectors, etc.) all perform statically (i.e., performing their function does not involve mechanical motion). These components are panel mounted and perform passive safety functions. In TVA's engineering judgement these components will not fail in their specified environment.

ENCLOSURE 4

ADDITIONAL INFORMATION REQUESTED BY NRC LETTER
D. B. VASSALLO TO H. G. PARRIS
DATED APRIL 11, 1983

1. Proprietary Information

In L. M. Mills' letter to D. B. Vassallo dated February 17, 1983, we stated that for TER Item No. 87 (units 1, 2, and 3) and Item No. 160 (unit 1) the information was considered proprietary and that TVA was working with the vendor to provide either a release or rationale for the proprietary classification. TVA has been unable to obtain either. However, we are continuing our efforts to obtain this information and expect to submit a response by July 29, 1983.

2. Compliance with 10 CFR 50.49 paragraphs (a) and (b)

NRC has requested in the previously referenced memorandum, in addition to the requirements of 10 CFR 50.49, that TVA specifically indicate whether our previous submittals comply with paragraph (a) and (b) of 10 CFR 50.49 and also that TVA describe the method(s) used to identify the equipment covered by paragraph 10 CFR 50.49(b)(2). TVA has complied with paragraph (a) and (b) of 10 CFR 50.49 for all our previous submittals of TVA's Electrical Equipment Environmental Qualification Report by our compliance with IE Bulletin 79-01B and its supplements with the exception of part (3) of paragraph (b) that requires certain post-accident monitoring equipment be covered by the rule with specific guidance coming from Regulatory Guide 1.97 (Rev. 2). TVA had not been previously requested to address compliance for Browns Ferry to any part of Regulatory Guide 1.97 (Rev. 2) until the issuance of Generic Letter 82-33. Equipment required to meet the requirements of Regulatory Guide 1.97 (Rev. 2) has been addressed in TVA's response to Generic Letter 82-33 from L. M. Mills (TVA) to H. R. Denton (USNRC) dated April 15, 1983. The table does, however, include display instrumentation required under NRC IE Bulletin 79-01B and its supplements which is required for accident mitigation and is located in areas of the plant covered by 10 CFR 50.49.

3. Description of Methods used to Identify Equipment Covered by 10 CFR 50.49(b)(2)

On September 17, 1979, H. R. Denton, Director of the Office of Nuclear Reactor Regulation, issued a letter to All Operating Light Water Reactors regarding a potential unreviewed safety question on interaction between nonsafety-grade systems and safety-grade systems due to the effects of postulated pipe breaks. TVA responded with the results of an evaluation of the Browns Ferry Nuclear Plant on October 9, 1979. This response described an analysis method for evaluating the effects of a high energy line break on nonsafety-related systems. To quote from this response:

> In analyzing the potential effects of a high-energy line break on nonsafety-related systems, the following general approach was used:
>
> (1) The location of the system was determined. Particular attention was given as to whether or not a system had portions inside or penetrating the primary containment or inside secondary containment.
>
> (2) The system was examined to determine if it had physical or electrical interfaces with components in a safety-related system.
>
> (3) If the system:
>
> (a) was inside or penetrated primary containment; or
> (b) was inside secondary containment; or
> (c) interfaced with a component in a safety-related system, then the system was examined to determine what control functions were in the zone of the influence of a high-energy line break.
>
> (4) If the system was determined to have control function in the zone of influence of a high-energy line break, then the potential effects of a malfunction of that control function were examined, especially with regard to affecting safety-related systems.
>
> (5) If a malfunction was determined to have a potentially adverse effect on a safety-related system, the environmental qualifications of the components postulated to fail were examined. The worst case environment was assumed to exist.

The evaluation concluded that there were no cases where a nonsafety-related system could malfunction so as to have an adverse effect on plant safety. This evaluation is applicable to paragraph 10 CFR 50.49(b)(2).