



Tennessee Valley Authority, Post Office Box 2000, Soddy-Daisy, Tennessee 37379-2000

April 15, 1993

Robert A. Fenech  
Vice President, Sequoyah Nuclear Plant

U.S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, D.C. 20555

Gentlemen:

In the Matter of  
Tennessee Valley Authority

)  
)

Docket Nos. 50-327  
50-328

SEQUOYAH NUCLEAR PLANT (SQN) - GENERIC LETTER (GL) 92-08 -- THERMO-LAG 330-1  
FIRE BARRIERS

The purpose of this letter is to provide TVA's response for SQN to the subject GL. Enclosure 1 provides a detailed response to each requested item. A list of commitments made as a result of this submittal is provided in Enclosure 2.

Please direct questions concerning this issue to W. C. Ludwig at  
(615) 843-7460.

Sincerely,

Robert A. Fenech

Sworn to and subscribed before me  
this 15th day of April, 1993

Notary Public  
My Commission Expires 2/8/97

19006

9304190236 930415  
PDR ADOCK 05000327  
P PDR

A029  
111

U. S. Nuclear Regulatory Commission  
Page 2  
April 15, 1993

Enclosures

cc (Enclosures):

Mr. D. E. LaBarge, Project Manager  
U.S. Nuclear Regulatory Commission  
One White Flint, North  
11555 Rockville Pike  
Rockville, Maryland 20852-2739

NRC Resident Inspector  
Sequoyah Nuclear Plant  
2600 Igou Ferry Road  
Soddy-Daisy, Tennessee 37379-3624

Regional Administrator  
U.S. Nuclear Regulatory Commission  
Region II  
101 Marietta Street, NW, Suite 2900  
Atlanta, Georgia 30323-0199

ENCLOSURE 1

SEQUOYAH NUCLEAR PLANT (SQN) UNITS 1 AND 2  
RESPONSE TO NRC GENERIC LETTER (GL) 92-08,  
THERMO-LAG 330-1 FIRE BARRIERS

The following is a direct response to each reporting requirement listed in NRC GL 92-08.

Reporting Requirement:

"1. State whether Thermo-Lag 330-1 barriers are relied upon (a) to meet 10 CFR 50.48, to achieve physical independence of electrical systems, (b) to meet a condition of a plant's operating license, or (c) to satisfy a licensing commitment. If applicable, state that Thermo-Lag 330-1 is not used at the facility. This generic letter applies to all 1-hour and all 3-hour Thermo-Lag 330-1 materials and barrier systems assembled by any assembly method such as by assembling preformed panels and conduit shapes, as well as spray, trowel and brush-on applications."

Response:

Item 1.(a)

Thermo-Lag 330-1, 1-hour barriers have been installed at SQN Units 1 and 2 and are relied upon to meet nuclear power plant fire-protection requirements for electrical systems as specified in 10 CFR 50.48. The material has been used to achieve compliance with 10 CFR 50, Appendix R, Section III.G requirements for SQN Units 1 and 2. No 3-hour-rated, Thermo-Lag fire barriers have been installed at SQN.

Item 1.(b)

Thermo-Lag 330-1 fire barriers are utilized to meet License Condition 2.C (13) c of SQN Unit 2 operating license. License Condition 2.C (13) c requires compliance with Sections III.G, III.J, III.L, and III.O of Appendix R of 10 CFR 50, except where the NRC has approved deviations, on a schedule consistent with that required for other operating reactors. This condition was not included in the Unit 1 operating license.

Item 1.(c)

TVA is committed in Reference 3 to comply with the same 10 CFR 50, Appendix R, sections and conditions as described above in the Item 1.(b) response. This commitment applies to both Units 1 and 2.

Reporting Requirement:

"2. If Thermo-Lag 330-1 barriers are used at the facility,

- (a) State whether or not the licensee has qualified the Thermo-Lag 330-1 fire barriers by conducting fire endurance tests in accordance with the NRC's requirements and guidance or licensing commitments."

Response:

Item 2.(a)

TVA has not qualified the Thermo-Lag 330-1 fire barriers installed at SQN by conducting fire endurance tests in accordance with NRC's requirements and guidance or licensing commitments. Instead, TVA procured, reviewed, and relied upon the vendor's acceptance tests supplied by Thermal Science Incorporated (TSI) and training for TVA insulators as part of the Thermo-Lag contract. At the time of procurement and installation, this practice was considered acceptable, and TVA believed that the barriers had been qualified to existing NRC guidance.

References 1 and 2 provided TVA responses to NRC Bulletin 92-01 and NRC Bulletin 92-01, Supplement 1, respectively. These responses affirmed the installation of Thermo-Lag 330-1 fire barriers. Included in the referenced responses was information on the development of an industry program being coordinated by NUMARC to verify or restore fire barrier operability. The industry program will establish a test data base, develop generic installation guidance, and coordinate additional testing as appropriate. The option of TVA developing its own program for resolution of the Thermo-Lag issue was mentioned in the referenced responses. In these bulletin responses, TVA committed to apply the results of the TVA-developed program or the industry program being coordinated by NUMARC to the Thermo-Lag installations.

TVA is currently conducting fire endurance testing of Thermo-Lag 330-1 fire barriers at Omega Point Laboratories in San Antonio, Texas. This testing is being performed in accordance with Watts Bar Nuclear Plant's (WBN) position on electrical fire barrier testing as previously presented to NRC. Testing to this point has included WBN's configurations of 1-hour fire barriers; where it is determined to be appropriate, TVA will apply the results of this testing at SQN. Preliminary test results indicate that the acceptance criteria were satisfied for the 1-hour, Thermo-Lag fire barriers installed on 4-inch and 5-inch conduits. Additionally, testing on fire barriers for smaller conduit sizes with barrier configurations consisting of additional 3/8-inch-thick, preshaped sections over 5/8-inch sections has indicated positive results.

Reporting Requirement:

"2. (b) State (1) whether or not the fire barrier configurations installed in the plant represent the materials, workmanship, methods of assembly, dimensions, and configurations of the qualification test assembly configurations; and (2) whether or not the licensee has evaluated any deviations from the tested configurations."

Response:

Item 2.(b)(1)

The Thermo-Lag 330-1 fire barriers installed at SQN represent the materials, workmanship, method of assembly, dimensions, and configurations of the qualification test assembly configurations provided in TSI Technical Note 20684, "Thermo-Lag 330 Fire Barrier System Installation Procedures Manual Power Generating Plant Applications, Revision V, November 1985." Deviations to TSI Technical Note 20684 are addressed in the response to Item 2.(b)(2).

Fire barrier installation work relied exclusively on this TSI instruction manual for fire barrier configuration, assembly methods, and material requirements. These modifications were required to achieve Appendix R general compliance at SQN.

Materials purchased by TVA included 1-hour-rated, Thermo-Lag 330-1 preformed conduit shapes; preformed panels; and subliming trowel grade material. TSI fire barrier materials and installation methods have been used exclusively for fabrication of 1-hour-rated conduit and cable tray fire barrier systems at SQN.

Additionally, the purchase contract for the aforementioned material included the requirement for furnishing the services of a TSI engineer to supervise and/or train field personnel in the installation of TSI Thermo-Lag fire barriers. TVA installation and inspection personnel were provided certification training on proper installation techniques by the TSI engineer. TVA personnel that installed the Thermo-Lag 330-1 fire barrier systems were trained and certified by TSI.

Response:

Item 2.(b)(2)

TVA has not evaluated deviations from the tested fire barrier configurations and installation methods provided by TSI. When deviations from the configurations detailed in the TSI instruction manual were required during installation, they were transmitted to TSI for evaluation. Results of these evaluations were documented by TSI, addressing the particular deviation requested by TVA.

Reporting Requirement:

"2. (c) State (1) whether or not the as-built Thermo-Lag 330-1 barrier configurations are consistent with the barrier configurations used during the ampacity derating tests relied upon by the licensee for the ampacity derating factors used for all raceways protected by Thermo-Lag 330-1 (for fire protection of safe shutdown capability or to achieve physical independence of electrical systems) and (2) whether or not the ampacity derating test results relied upon by the licensee are correct and applicable to the plant design."

Response:

Item 2.(c)(1)

The as-built, 1-hour, Thermo-Lag 330-1 conduit fire barrier configurations at SQN are similar to the barrier configuration used during the ampacity derating test documentation provided by TSI to TVA in the original purchase contract. This ampacity test report supplied by TSI is Technical Note 111781, "Engineering Report on Ampacity Test for 600 Volt Power Cables Installed In A Five Foot Length of Two Inch Conduit Protected With Thermo-Lag 330-1 Subliming Coating Envelope System." The conduit in the above test was coated with 1/2-inch-minimum dry film thickness of Thermo-Lag 330-1 subliming coating. Whereas, the SQN conduits are protected with 1-hour-rated, preformed conduit shapes or 1/2-inch-thick preformed panels. Based on TSI Technical Note 20684, the trowel coating used in the test is identical to the preformed shapes after it has cured.

Item 2.(c)(2)

At the time of procurement and installation, TVA believed the ampacity derating test results were correct and applicable to the plant design. The results of these tests were supplied by TSI and documented in TSI Technical Note 111891. Since the receipt of Thermo-Lag ampacity derating factors and subsequent test results, concerns have been raised and TVA has initiated in-house testing to independently verify the adequacy of Thermo-Lag installations in regard to cable ampacity. Preliminary test results indicate cable ampacities are consistent with industry guidance, however, a final determination has not been made at this time.

Reporting Requirement:

"3. With respect to any answer to items 2(a), 2(b), or 2(c) above in the negative, (a) describe all corrective actions needed and include a schedule by which such actions shall be completed and (b) describe all compensatory measures taken in accordance with the technical specifications or administrative controls. When corrective actions have been completed, confirm in writing their completion."

Response:

Item 3.(a)

As stated in response to Item 2(a), TVA has not independently qualified the 1-hour-rated, Thermo-Lag fire barriers installed at SQN. Originally, fire endurance test reports supplied by TSI were reviewed and relied upon for qualification of the fire barriers.

The corrective actions needed to qualify Thermo-Lag installations at SQN have not been determined at this time. However, information obtained from the industry program being coordinated by NUMARC and independent testing being conducted on the WBN Thermo-Lag installations will be utilized as appropriate to verify or restore operability to the installed Thermo-Lag 330-1 fire barrier systems at SQN.



TVA will evaluate the results of the independent testing at WBN and the NUMARC industry-generic testing programs for fire testing and cable ampacity and will provide a corrective action schedule for SQN within 120 days following receipt of the NUMARC test results.

Item 3.(b)

As previously reported in TVA's responses to NRC Bulletin 92-01 and Supplement 1 to that bulletin, TVA has an hourly, fire watch patrol program in place that includes the required conduits and cable trays protected by Thermo-Lag.

Reporting Requirement:

- "4. List all Thermo-Lag 330-1 barriers for which answers to item 2 cannot be provided in the response due within 120 days from the date of this generic letter, and include a schedule by which answers shall be provided."

Response:

Item 4

A detailed listing of the installed Thermo-Lag 330-1 fire barrier systems at SQN is attached as part of this enclosure. As previously discussed in the response to 3.(a), TVA will provide a corrective action schedule within 120 days following receipt of the NUMARC test results.

References:

1. TVA letter to NRC dated September 30, 1992, "Response to NRC Bulletin 92-01, Supplement 1, Failure of Thermo-Lag Fire Barrier System to Perform Its Specified Fire Endurance Function, Sequoyah Nuclear Plant (SQN) and Browns Ferry Nuclear Plant (BFN)"
2. TVA letter to NRC dated July 31, 1992, "Response to NRC Bulletin 92-01, 'Failure of Thermo-Lag 330 Fire Barrier System to Maintain Cabling in Wide Cable Trays and Small Conduits Free From Fire Damage' - Sequoyah Nuclear Plant (SQN) and Browns Ferry Nuclear Plant (BFN)"
3. Letter from L. M. Mills, TVA, to H. R. Denton, NRC, dated May 26, 1981



CONDUIT	SIZE	SAFE SHUTDOWN CABLES	ROOMS	KEYS	APPENDIX R NO.
4A-1PL 4982 B	4	Same	749-A7	38/39	091-1
4A-1PL 4985 B	4	Same	749-A7	38/39	091-1
4I-1PP 750 A	4	Same	749-A7& A8A	38/39	091-1
4I-IPP 759 A	4	Same	749-A7& A8A	38/39	091-1
4A-1PL 4982 B	4	Same	759-A1	38/39	091-2
4A-1PL 4985 B	4	Same	759-A1	38/39	091-2
4A-2PL 4978 A	4	Same	749-A10	38/39	091-3
4A-2PL 4975 A	4	Same	749-A10	38/39	091-3
4A-PP 590 B	4	Same	749-A16	38/39	091-3
4A-PP 591 B	4	Same	749-A16	38/39	091-3
4A-2PL 4975 A	4	Same	759-A3	38/39	091-4
4A-2PL 4978 A	4	Same	759-A3	38/39	091-4
PN-A, PO-A, PM-A	4X18 Tray	B774	734-A1	38/39	092-1
4A-1PP 762 B	4	Same	734-A2	38/39	092-1
4A-1PP 753 B	4	Same	734-A2	38/39	092-1
4A-1PP 765 B	4	Same	734-A2	38/39	092-1
2.5A-1B 29 II	2.5	1B 25II/1B 30II	734-A4	38/39	092-1
4A-2PP 759 A	4	Same	734-A24	38/39	092-3
4A-2PP 750 A	4	Same	734-A24	38/39	092-3
4A-2PP 756 A	4	Same	743-A24	38/39	092-3
2.5I-2B 20 III	2.5	2B11 III/ 2B16 III	734-A22	38/39	092-3
PO-A		B77A	734-A1	38/39	092-3
3A-MC 1130 A	3	PP302A, PP304A, PP306A, PP310A, PP312A, PP328A	714-A1	38/39	093-1
4I-2PP 785 B	4	Same	690-A1	38/39	094-1
4I-1PP 785 B	4	Same	690-A1	38/39	094-1
1I-1V 4005 B	1	IV2100B	734-A2	1,2,4, 5,6&9	102-1
1I-1V 4009 B	2	1V2101B, 1V2103B 1V2771B, 1V2774B	734-A2	1,2,4, 5,6&9	102-1

CONDUIT	SIZE	SAFE SHUTDOWN CABLES	ROOMS	KEYS	APPENDIX R NO.
PN-A PM-A		1V207-5A,2763A, 1PL6127A	734-A1	1,2,4, 5,6&9	102-1
3A-2PL 4734 B	3	Same	734-A9	1,2,4, 5,6&9	102-1
3A-2P 4733 B	3	Same	734-A9	1,2,4, 5,6&9	102-1
2I-1PV 150 II	2	1PV135II	714-A1	1,2,4, 5,6&9	103-1
2I-1PV 30 I	2	1PV16I	714-A1	1,2,4, 5,6&9	103-1
1.5I-1V 4008 B	1.5	1V2103B 1V2771B	714-A1	1,2,4, 5,6&9	103-1
1I-1V 4005 B	1	1V2100B	714-A1	1,2,4, 5,6&9	103-1
1V 4009 B	2	1V2101B,1V2103B 1V2774B	714-A1	1,2,4, 5,6&9	103-1
2I-1V 4007 B	2	1V2101B,1V2774B	714-A1	1,2,4, 5,6&9	103-1
2I-1V 4007 B	2	1V2101B,1V2774B	714-A1	1,2,4, 5,6&9	103-1
1I-1PL 3011 B	1	Same	714-A1	1,2,4, 5,6&9	103-1
1I-1PL 3013 B	1	Same	714-A1	1,2,4, 5,6&9	103-1
1I-1PV 255 III	1	Same	714-A1	1,2,4, 5,6&9	103-3
1I-1PL 3011 B	1	Same	690-A26,A24 A1	1,2,4, 5,6&9	104-1
1I-1PL 3013 B	1	Same	690-A26,A24 A1	1,2,4, 5,6&9	104-1
1I-1V 4003 A	1	1V4001A	690-A1,A2 A9	1,2,4, 5,6&9	104-1 & 104-2
1.5I-1PP 564 B	1.5	Same	690-A1	1,2,4, 5,6&9	104-1
4I-1PP 562 B	4	Same	690-A1, 669-A1	1,2,4, 5,6&9	104-1 & 105-1
1.5I-1PL 3018 B	1.5	1PL3013B 1PP564B	690-A1	1,2,4, 5,6&9	104-1

CONDUIT	SIZE	SAFE SHUTDOWN CABLES	ROOMS	KEYS	APPENDIX R NO.
2.5A-1PL 4725 A	2.5	Same	690-A1	1,2,4, 5,6&9	104-1
2.5A-1PL 4726 A	2.5	Same	690-A1	1,2,4, 5,6&9	104-1
1A-1PL 4731 A	1	Same	690-A1	1,2,4, 5,6&9	104-1
1I-1V 4002 B	1	1V4000B	690-A1 & A7	1,2,4, 5,6&9	104-1 & 104-2
1I-1V 4004 B	1	1V2774B	690-A1	1,2,4, 5,6&9	104-1 & 104-2
3I-1PL 3130 B	1	1V2774B	690-A1 &A6	1,2,4, 5,6&9	104-1 & 104-2
1.5I-1V 2045 B	1.5	1V2101B 1V2777B	690-A1 &A6	1,2,4, 5,6&9	104-1 & 104-2
2I-1V 2009 B	2	1V2100B	690-A1 &A6	1,2,4, 5,6&9	104-1 & 104-2
1I-1V 2774 B	1	Same	690-A6 & A9	1,2,4, 5,6&9	104-2
1.5I-1PL 3018 B	1.5	1PL3013B 1PP564B	669-A1	1,2,4, 5,6&9	105-1
1I-1PL 3011 B	1	Same	669-A1	1,2,4, 5,6&9	105-1
PO-A*	4X18 Tray	2V2075A 2V2763A 2PL6127A	734-A1	1,2,3, 4,5,6& 9	112-1
3A-2PL 4734 B	3	Same	734-A9	1,2,3, 4,5,6& 9	112-1
3A-2PL 4733 B	3	Same	734-A9	1,2,3, 4,5,6& 9	112-1
PO-A*	4X18 Tray	2V2075A 2V2763A 2PL627A	734-A1	1,2,3, 4,5,6& 9	112-3
1I-2V 4014 A	1	2V2070A	734-A24	1,2,3, 4,5,6& 9	112-3
2V 4016 A	3	2V203A 2V2073A 2V2761A 2V2764A	734-A25	1,2,3, 4,5,6& 9	112-3

CONDUIT	SIZE	SAFE SHUTDOWN CABLES	ROOMS	KEYS	APPENDIX R NO.
PO-A*	4x18 Tray	2V2075A 2V2763A 2PL6127A	734-A27	1,2,3, 4,5,6& 9	112-3
2PV 150 II	2	2PV135II	714-A1	1,2,3, 4,5,6& 9	113-1
2PV 30 I	2	2PV16I	714-A1	1,2,3, 4,5,6& 9	113-1
2V 4015 A	2	2V2073A 2V2761A	714-A1	1,2,3, 4,5,6& 9	113-3
1I-2V 4014 A	1	2V2070A	714-A1	1,2,3, 4,5,6& 9	113-3
2I-2V 4012 A	2	2V2071A 2V2704A	714-A1	1,2,3, 4,5,6& 9	113-3
3I-2V 4016 A	3	2V2073A 2V2761A 2V2071A 2V2764A	714-A1	1,2,3, 4,5,6& 9	113-3
1I-2PL 3001A	1	Same	714-A1	1,2,3, 4,5,6& 9	113-3
1I-2PL 3003 A	1	Same	714-A1	1,2,3, 4,5,6& 9	113-3
2PV 255 III		Same	714-A1	1,2,3, 4,5,6& 9	113-3
4I-2PP 550 A	4	Same	690-A1	1,2,4, 5,6&9	114-1
1.5I-2PP 552 A	1.5	Same	690-A1	1,2,4, 5,6&9	114-1
3A-2PM 2094 III	3	2PM1086 III	690-A1	1,2,4, 5,6&9	114-3

CONDUIT	SIZE	SAFE SHUTDOWN CABLES	ROOMS	KEYS	APPENDIX R NO.
3A-2PM 2080 III	3	2PM1041I	690-A1	1,2,4, 5,6&9	114-3
3A-2PM 2087 II	3	2PM1071II	690-A1	1,2,4, 5,6&9	114-3
4I-2PP 550 A	4	Same	690-A1 (A18)	1,2,4, 5,6&9	114-3
1.5I-2PP 552 A	1.5	Same	690-A1 (A18)	1,2,4, 5,6&9	114-3
1I-2V 4006 B	1	2V2774B	690-A1 (A18)	1,2,4, 5,6&9	114-3
1.5I-2V 4004 B	1.5	2V2774B 2V4000B	690-A1 (A18)	1,2,4, 5,6&9	114-3
1I-2PL 3003 A	1	2PL3008A	690-A1 (A18)	1,2,4, 5,6&9	114-3
1.5I-2PL 3008 A	1.5	2PL3003A 2PP552A	690-A1 (A18)	1,2,4, 5,6&9	114-3
1I-2PL 3001 A	1	Same	690-A1 (A18)	1,2,4, 5,6&9	114-3
2I-2V 4012 A	2	2V2071A 2V2764A	690-A1 (A18)	1,2,4, 5,6&9	114-3
2I-2V 4011 A	2	2V2071A 2V2764A 2V4001A	690-A1	1,2,4, 5,6&9	114-3
1.5I-2V 4009 A	1.5	2V4001A 2V2764A	690-A1	1,2,4, 5,6&9	114-3
2V 4010 A	2	2V2071A	690-A1	1,2,4, 5,6&9	114-3
1I-2V 4013 A	1	2V4001A	690-A1	1,2,4, 5,6&9	114-3
3A-2V 2034 A	3	2V2071A 2V2767A	690-A19	1,2,4, 5,6&9	114-4
1.5I-2V 1995 A	1.5	2V2070A	690-A19	1,2,4, 5,6&9	114-4
1.5I-2V 4009 A	1.5	2V4001A 2V2764A	690-A20	1,2,4, 5,6&9	114-4
1.5I-2V 4004 B	1.5	2V2774B 2V4000B	690-A20	1,2,4, 5,6&9	114-4

CONDUIT	SIZE	SAFE SHUTDOWN CABLES	ROOMS	KEYS	APPENDIX R NO.
PO-A PN-A PM-A			734-A1	4 & 5	122-1
1I-1V 4005 B	1	1V2100B	734-A2	4 & 5	122-1
1V 4009 B		1V2101B 1V2103B 1V2771B 1V2774B	734-A2	4 & 5	122-1
PO-A			734-A1	4 & 5	122-3
1.5I-1V 4008 B	1.5	1V2103B 1V2771V	714-A1	4 & 5	123-1
1V 4009 B		1V2101B 1V2103B 1V2771B 1V2774B	714-A1	4 & 5	123-1
1I-1V 4005 B	1	1V2100B	714-A1	4 & 5	123-1
2I-1V 4007 B	2	1V2101B 1V2774B	714-A1	4 & 5	123-1
1I-1V 4003 A	1	1V4001A	690-A1 & A9	4 & 5	124-1
2I-1V 2009 B	2	1V2100B	690-A1	4 & 5	124-1
1.5I-1V 2045 B	1.5	1V2101B 1V2777B	690-A1	4 & 5	124-1
1I-1V 4002 B	1	1V4000B	690-A1	4 & 5	124-1
1I-1V 4004 B	1	1V2774B	690-A1	4 & 5	124-1
3I-1PL 3130 B	3	1V2774B	690-A1	4 & 5	124-1
1I-1V 4002 B	1	1V4000B	690-A6 & A7	4 & 5	124-2
1.5I-1V 2045 B	1.5	1V2101B 1V2777B	690-A6	4 & 5	124-2
2I-1V 2009 B	2	1V2100B	690-A6	4 & 5	124-2
3I-1PL 3130 B	3	1V2774B	690-A6	4 & 5	124-2
1I-1V 2774 B	1	Same	690-A6	4 & 5	124-2
PO-A	4X18 Tray	2V2763A 2V2075A	734-A1	4 & 5	132-1
PO-A	4X18 Tray	2V2763A 2V2075A	734-A1	4 & 5	132-3
1I-2V 4014 A	1	2V2070A	734-A24	4 & 5	132-3



CONDUIT	SIZE	SAFE SHUTDOWN CABLES	ROOMS	KEYS	APPENDIX R NO.
3I-2V 4016 A	3	2V2071A 2V2761A 2V2073A 2V2764A	734-A24	4 & 5	132-3
2V 4015 A	2	2V2073A 2V2761A	714-A1	4 & 5	133-3
1I-2V 4014 A	1	2V2070A	714-A1	4 & 5	133-3
2I-2V 4012 A	2	2V2071A 2V2764A	714-A1	4 & 5	133-3
3I-2V 4016 A	3	2V2073A 2V2761A 2V2071A 2V2764A	714-A1	4 & 5	133-3
2I-2V 4012 A	2	2V2071A 2V2764A	690-A1 & A18	4 & 5	134-3
1I-2V 4006 B	1	2V2774B	690-A1 & A18	4 & 5	134-3
1I-2V 4013 A	1	2V4001A	690-A1	4 & 5	134-3
2I-2V 4011 A	2	2V2071A 2V2764A 2V4001A	690-A1	4 & 5	134-3
1.5I-2V 4004 B	1.5	2V2774B 2V4000B	690-A1	4 & 5	134-3
3A-2V 2034 A	3	2V2071A 2V2767A	690-A19	4 & 5	134-4
1.5I-2V 1995 A.	1.5	2V2070A	690-A19	4 & 5	134-4
1.5I-2V 4009 A	1.5	2V4001A 2V2764A	690-A19 & A20	4 & 5	134-4
1.5I-2V 4004 B	1.5	2V2774B 2V4000B	690-A19 & A20	4 & 5	134-4
PO-A PN-A PM-A			734-A1	7 & 8	142-1
PO-A			734-A1	7 & 8	142-3
PO-A	4X18 Tray	2V4425A 2V4437A 2V4477A 2V4492A 2V4507A	734-A1	7 & 8	152-1



CONDUIT	SIZE	SAFE SHUTDOWN CABLES	ROOMS	KEYS	APPENDIX R NO.
Same	Same	Same	Same	Same	152-3
PO-A	4X18 Tray	1V1020A 1V1028A 1V1050A 1V1058A 1PV107A	734-A1	11 thru 16	202-1
Same	Same	Same	Same	Same	202-3
2I-1PV 150 II	2	1PV135II	714-A1	11 thru 16	203-1
2I-1PV 30 I	2	1PV16I	714-A1	11 thru 16	203-1
2I-1PV 259 III	2	1PV254III	714-A1	11 thru 16	203-3
PO-A	4X18 Tray	2V1056A, 2V1082A 2V1062A, 2M811A 2V1085A, 2V1084A 2V1065A, 2V1064A 2V1063A, 2PV107A 2V1026A, 2V1051A 2V1083A	734-A1	11 thru 16	212-1
PM-A	4X18 Tray	Same	734-A1	11 thru 16	212-1
PO-A	4X18 Tray	Same	734-A1	11 thru 16	212-3
2PV 150 II	2	2PV135II	714-A1	11 thru 17	213-1
2PV 30 I	2	2PV16I	714-A1	11 thru 17	213-1
2PV 267 III	2	2PV268III	714-A1	11 thru 17	213-3
2I-1PV 150 II	2	1PV147II	714-A1	25&26	303-1
2I-1PV 30 I	2	1PV28I	714-A1	25&26	303-1

CONDUIT	SIZE	SAFE SHUTDOWN CABLES	ROOMS	KEYS	APPENDIX R NO.
2I-1PV 259 III	2	1PV254III	714-A1	25&26	303-3
2PV 150 II	2	2PV147II	714-A1	25&26	313-1
2PV 30 I	2	2PV28I	714-A1	25&26	313-1
2PV 267 III	2	2PV268III	714-A1	25&26	313-3
2PM 2084 I	2	2PM1335I 2PM1474I 2PM1595I 2PM1715I	690-A1	26	314-3
Box			749-A16	28	401-3
PM-A	4X18 Tray	1PP802A 1V5612A	734-A1	28	402-1
PN-A	4X18 Tray	1PP802A	734-A1	28	402-1
PO-A			734-A1	28	402-3
1I-1V 5596 B	1	Same	714-A1	28	403-1
2I-1PV 150 II	2	1PV135II	714-A1	28	403-1
2I-1PV 30 I	2	1PV16I 1PV28I	714-A1	28	403-1
3I-1PM 4996 II	3	1PM481II 1PM480I	714-A1	28	403-1
Conduit Bank Wrapped			749-A16	28	411-3
PO-A	4X18 Tray	2PP802A 2V5612A	734-A1	28	412-1
PM-A	4X18 Tray	2PP802A 2V5612A	734-A1	28	412-1
PO-A	4X18 Tray	2PP802A 2V5612A	734-A1	28	412-3
2PV 30 I		2PV16I, 2PV28I	714-A1	28	412-1
2PV 150 II	2	2PV135II	714-A1	28	413-1
1I-2V 5610 A	1	Same	714-A1	28	413-3
3A-2PM 2087 II	3	2PM595II 2PM691II 2PM784II 2PM876II	690-A1	28	414-3
3A-2PM 2080 I	3	2PM591I, 2PM686I 2PM778I, 2PM871I	690-A1	28	414-3

CONDUIT	SIZE	SAFE SHUTDOWN CABLES	ROOMS	KEYS	APPENDIX R NO.
PO-A PN-A PM-A			734-A1	20 Thru 24	502-1
PO-A PN-A PM-A			734-A1	20 Thru 24	502-3
PO-A		2B40A, 2V7601A 2V7611A, 2V7621A 2V7631A, 2V7603A 2V7623A, 2V7633A 2V7613A	734-A1	20 Thru 24	512-1
PN-A	4X18 Tray		734-A1	20 Thru 24	512-1
PM-A	4X18 Tray		734-A1	20 Thru 24	512-1
PO-A	4X18 Tray	2B40A, 2V7601A 2V7611A, 2V7621A 2V7631A, 2V7603A 2V7623A, 2V7633A 2V7612A	734-A1	20 Thru 24	512-3
PN-A	4X18 Tray		734-A1	20 Thru 24	512-3
PM-A	4X18 Tray		734-A1	20 Thru 24	512-3
1.5I-1NM 155 I	1.5	1NM1413I 1NM1414I 1NM1415I	734-A1	29	692-1
1I-2NM 199 II	1	2NM1395II	734-A2	29	692-1
3I-1NM 38 I	3	1NM1416I	734-A10	29	692-2
2A-MC 1309	II	2PV131II 1PV133II	714-A1	29	693-1
2A-MC 1289 II	2	1PV131II 1PV133II	714-A1	29	693-1
2.5A-MC 2546 II	2.5	1PV131II 1PV133II	714-A1	29	693-1
2A-MC 1309 II	2	2PV131II 2PV133II	714-A1	29	693-3

CONDUIT	SIZE	SAFE SHUTDOWN CABLES	ROOMS	KEYS	APPENDIX R NO.
1I-1NM 199 II	1	1NM1395II	690-A1	29	694-1
1.5I-1NM 345 II	1.5	1NM1390II 1NM1391II 1NM1392II	690-A1	29	694-1
PO-A	4X18 Tray	B77A	734-A1	1,3,19	792-1
PO-A	4X18 Tray	B77A	734-A1	1,3,19	792-3
3A-MC 1130 A	3	PP328A	714-A1	1,3,19	793-1
4I-1PP 700 B	4	Same	690-A1	1,3,19	794-1
4I-1PP 712 B	4	Same	690-A1	1,3,19	794-1
4I-2PP 700 B	4	Same	690-A1	1,3,19	794-1
4I-2PP 712 B	4	Same	690-A1	1,3,19	794-1
V 1246 A		1PL4527A	734-A5	37A & 370	892-1
1PL 3258 A		1PL4501A	734-A5	37A & 370	892-1
1PL 4500 A		1PL4900A	734-A5	37A & 370	892-1

ENCLOSURE 2

COMMITMENT

TVA will evaluate the results of the independent testing at Watts Bar Nuclear Plant, the NUMARC industry generic fire testing and cable ampacity testing programs, and also provide a corrective action schedule within 120 days following receipt of the NUMARC test results.