TENNESSEE VALLEY AUTHORITY
CHATTANOOGA, TENNESSEE 37401

400 Chestnut Street Tower II

July 24, 1985

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. 50-327
Tennessee Valley Authority	)	50-328

By my July 9, 1985 letter to you, a status was provided of TVA's efforts at our Sequoyah Nuclear Plant (SQN) to comply with 10 CFR 50.49 regulations for environmental qualification of electrical equipment. For SQN, we have now completed replacement or qualification of all electrical equipment previously identified to NRC as being unqualified. As stated in the July 9 letter, we are evaluating the environmental qualification status of two categories of components; cables and terminal blocks. These components are considered to be operable even though the qualification status of these components is indeterminate as a result of information contained in nonconformance reports. Enclosed is a report which provides a plan for resolving the status of these components, a schedule for completion, and a justification for continued operation (JCO) which supports our determination of operability of the components. The reportability of these components has been evaluated per 10 CFR 50.72 and 50.73, and at the present time, these items have been determined not reportable.

If you have any questions concerning this matter, please get in touch with Jerry Wills at FTS 858-2683.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

J. A. Domer

J. A. Domer, Chief
Nuclear Licensing Branch

Sworn to and subscribed before me
this 24th day of July 1985

Paulette D. White
Notary Public
My Commission Expires 8-24-88

Enclosure

A048
1/1

cc (Enclosure):
U.S. Nuclear Regulatory Commission
Region II
Attn: Dr. J. Nelson Grace, Regional Administrator
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30323

Mr. Carl Stahle
Sequoyah Project Manager
U.S.Nuclear Regulatory Commission
7920 Norfolk Avenue
Bethesda, Maryland 20814

ENCLOSURE
SEQUOYAH NUCLEAR PLANT

This report has been prepared and submitted to provide information on two environmental qualification issues being evaluated for Sequoyah (SQN). Without conclusions from testing and research presently underway, no determination of exact reportability of these issues can be made at this time.

In SQN's original response to 10 CFR 50.49, cables were listed as being qualified on a generic basis (a particular cable type was qualified independent of the manufacturer). During the Watts Bar Nuclear Plant (WBN) licensing process, TVA was informed by a telephone conversation with NRC reviewers that this method of cable qualification would be unacceptable for WBN because TVA failed to prove similarity of chemical composition and manufacturing processes of the same cable types furnished by different manufacturers. NRC's concern on cable similarity qualification is apparently based on test results from Sandia Laboratory (NUREG/CR-3588). As a result of the WBN cable qualification discussions, Nonconformance Report (NCR) SQNEEB8501 was written when an investigation of SQN cables failed to produce proof of similarity.

A testing program was initiated to confirm the qualifications of the cables. Testing is presently scheduled to be completed in October 1985. The test program consists of radiation exposure, thermal aging, and simulated accident exposure. Radiation exposure and post-radiation functional tests have been completed for the equipment, and thermal aging has begun and is scheduled to be completed by the end of August. Accident testing is scheduled to be completed by mid-October, with a test report submitted six weeks after test completion. However, certification of test results should be completed by the end of October 1985. Attachment 1 contains an interim justification for continued operation until resolution of this issue.

As a result of an IE Information Notice 84-47 review, some terminal blocks at SQN have been discovered to have insufficient documentation to prove qualification. SQN NCR SQNEEB8502 was written since test documentation was unavailable to substantiate satisfactory performance for the class 1E terminal blocks inside containment in a potential chemical spray environment and class 1E terminal blocks in circuits less than 120 volts outside containment in harsh environment.

A testing program was initiated to confirm the qualification of the terminal blocks. Testing is presently scheduled to be completed by November 1985. Attachment 2 contains justification for continued operation until resolution of this issue.

JUSTIFICATION FOR CONTINUED OPERATION (JCO)
FOR CABLE QUALIFICATION
ATTACHMENT 1

CP Family (CPJ, CPJJ, and CPSJ)

The CP family of cables consist of cross-linked polyethylene insulation and polyvinyl-chloride jacketing. All cable of this type was constructed, tested, and accepted for use in accordance with TVA Standard Specification 25.016 - Standard Specification for Cross-linked Polyethylene Insulated Wire and Cable. TVA Standard 25.016 invokes the applicable portions of IPCEA Standards (such as physical properties, and methods of testing for tensile strength and elongation of the insulation and jacket materials). The TVA Specification included provisions for source inspection of factory testing and required submittal of certified test reports to ensure compliance with the specification. Cable manufactured since 1971 was controlled by a TVA approved QA program.

The following LOCA/SLB tests are representative for the CP family of cables which are presently installed:

Wyle Laboratory Test Report 43854-3 dated April 26, 1978, "Qualification Test on Eight Cable Splice Assemblies" (Cable assemblies comprised of CPJ cable)

Wyle Laboratory Test Report 17513-1 dated January 24, 1984, "Containment Accident Test Program on Electrical Cabling and Splices"

The test reports show a baseline functional test was first performed and passed. Then functional tests were performed and passed after the radiation test, after the temperature aging test, and after the LOCA/SLB test.

The tests included radiation at 1.13×10^8 rads.

The tests included temperature aging at $130^{\circ}C$ for 2576 hours.

The tests included a LOCA/SLB at $325^{\circ}F$, 55 psig, 100 percent humidity.

NOTE: One sample of CPJJ (Plastic Wire and Cable) received 1.68×10^8 rads and temperature aging at $130^{\circ}C$ for 5152 hours.

The tests included cable samples from General Electric, Okonite Company, and Plastic Wire and Cable. This cross section of cable manufacturers represented in the tests adequately demonstrated that the CP family of cables will perform similarly in the given DBE. The variety of vendors used also proved that successful completion of the test is a function of the chemical properties of the insulation and jacketing compound and is not dependant on the manufacturer. Consistency in the chemical properties

has been demonstrated by successfully completing the requirements of TVA Standard Specification 25.016. This approach to generic cable qualification follows the general guidelines for type testing as outlined by IEEE 383-1974.

All cables of the CP family met or exceeded the construction, testing, and acceptance requirements of TVA Standard Specification 25.016. In addition representative samples of the CP family of cables supplied to TVA by different manufacturers successfully passed LOCA/SLB testing. In view of the above, we conclude that the results show that the CP family of cables will perform their safety functions satisfactorily until the NRC's final compliance date for equipment qualification. At that time they will either be deemed qualified by virtue to testing by Wyle Laboratories or replaced with fully qualified cables.

EPS Family (EPS, EPSJ, EPSMJ)

The tests included cable samples from the Okonite Company and Collyer Insulated Wire. The results of these tests adequately demonstrate that EPS cable manufactured by different vendors in accordance with the same specifications will perform similarly in the given DBE and that successful completion of the test is a function of the chemical properties of the insulation and jacketing compound and is not dependent on the manufacturer. Consistency in the chemical properties has been demonstrated by successfully completing the requirements of TVA Standard Specification 25.016 if manufactured prior to January 1980 or TVA Standard Specification 25.015 if manufactured after January 1980. This approach to generic cable qualification follows the general guidelines for type testing as outlined by IEEE 383-1974.

All EPS cables met or exceeded the construction, testing, and acceptance requirements of TVA Standard Specification 25.016 or 25.015. In addition, representative samples of the EPS family of cables supplied to TVA by different manufacturers successfully passed LOCA/SLB.

In view of the above, we conclude that the results show that the EPS family of cables will perform their safety functions satisfactorily until the NRC's final compliance date for equipment qualification. At that time they will either be deemed qualified by virtue of testing by Wyle Laboratories of replaced with fully qualified cables.

Belden Corporation (contract 85259)

This cable is XLPE insulated with a CPE jacket. The qualification report that applies is Isomedix (Component Test Division) test report dated February 1976, "Qualification Test of Electric Cables Under a Simulated LOCA/DBE by Sequential Exposure to Environments of Radiation, Steam, and Chemical-Spray." The test showed that the cable is qualified for the following conditions:

a. Temperature: $346^{\circ}F$
b. Pressure: 113 psig
c. Radiation: 2×10^{8} rads gamma
d. Humidity: 100%
e. Chemical Spray: 3000 ppm boron, pH 9.0-11.0
f. Qualified Life: 40 years

Although no thermal aging was performed on the cable samples prior to the test, the XLPE was required via TVA's specification to meet certain physical and electrical requirements for this type material. Since it met or exceeded those requirements, the material can be expected to perform adequately in an accident qualification test after thermal aging, as other tests on XLPE inslulation has proven. The above conditions envelop all areas of the plant in which the cables are located and perform safety-related functions.

Time Wire and Cable Company (contract 74C7-85574)

This cable is insulated with thermoplastic rubber and jacketed with polyether polyurethane. The test report that applies is Times Wire and Cable Company's test report dated April 14, 1975, "Qualification Test Report for Class 1E Shielded Instrument Cable." The test results showed that the cable is qualified for the following conditions:

a. Temperature: $300^{o}F$
b. Pressure: 25 $psig_{8}$
c. Radiation: 2×10^{8} rads gamma
d. Humidity: 100%
e. Chemical Spray: Boric acid in water, pH 8.5
f. Qualified Life: 40 years

The tested conditions envelop all areas of the plant in which the cables are located and perform safety-related functions. Thermal aging was not performed prior to the test. However, tensile and elongation measurements taken on the insluation on other samples of the cable which were thermally aged ($121^{o}C$ for 168 hours) showed that heat aging has little or no effect on the cable.

Okonite Company (contract 72C7-74910-2)

This cable is insulated with cross-linked polyethylene and jacketed with chlorosulfonated-polyethylene. The following test report is representative of the insluation material of the cable: The Okonite Company Engineering Report No. 355 dated September 17, 1981, "Main Steam Line Break Qulification Test on Okonite, Okonite-FMR, X-Olene-FMR, and Okoguard Insulators." The test results showed that the cable is qualified for the following conditions:

a. Temperature: $470^{o}F$
b. Pressure: 75 psia
c. Humidity: 100%
d. Chemical Spray: Yes
e. Radiation: 5.5×10^{5} rads gamma
f. Qualified Life: 40 years

Based on the above, we conclude that the above cables will perform their safety functions satisfactorily until the NRC's final compliance date for equipment qualification. At that time they will either be deemed qualified by virtue of testing by Wyle Laboratories or replaced with fully qualified cables.

TVA PN, PJ, PNJ, PJJ, Cable Types

These cables have polyethylene insluation. All cable of this type was constructed, tested, and accepted for use in accordance with TVA Standard Specification 25.013 - Standard Specification for Ployethylene - Insulated

Wire and Cable. TVA Standard Specification 25.013 invokes the applicable portions of IPCEA Standards (such as physical properties and methods of testing for tensile strength and elongation of the insulation and jacket materials). The TVA specification included provisions of source inspection of factory testing and required submittal of certified test reports to ensure compliance with the specification.

The following qualification tests are representative for the polyethylene cables which are presently installed:

Wyle Laboratory Test Report 17503-1 dated January 6, 1984, "Nuclear Environmental Qaualification Test Program on Sequoyah Nuclear Power Station Control Equipment and Cables." The test included cable manufactured by Plastic Wire and Cable Corporation.

Wyle Laboratory Test Report 17501-1 dated March 12, 1982, "Nuclear Environmental Qualification Test Program on Four Sets of Polyethylene/ Polyvinyl-Chloride Insulated Control Cable." The test included cable manufactured by Plastic Wire and Cable Corporation.

Wyle Laboratory Test Report 17508-1 dated November 22, 1982, "High Energy Line Break Test Program on Two Control Equipment/Cable Assembly Test Sets." The test included cables manufactured by Plastic Wire and Cable Corporation and Cerro-Rockbestos.

The test reports show a baseline functional test was first performed and passed. Then fucntional tests were performed and passed after the radiation test, after the temperature aging test, and after LOCA/SLB test.

The tests include radiation at 1×10^8 rads.

The tests include temperature aging at $110^{\circ}C$ for 31 hours, then temperature was increased to $120^{\circ}C$ for 1019.5 hours. This represents aging equivalent to 40-year life with an ambient temperature of $120^{\circ}F$. The aging time and temperatures were based on Arrhenius techniques.

The tests include LOCA/SLB at $330^{\circ}F$, 9.5 psig.

The cross section of cable manufacturers represented in these tests adequately demonstrated that the cables will perform similarly in the given DBE. The variety of vendors used also proved that successful completion of the tests is a function of the chemical properties of the insulation and jacketing compound and is not dependent on the manufacturer.

Consistency in the chemical properties has been demonstrated by successfully completing the requirements of TVA Standard Specification 25.013. This approach to generic cable qualification follows the general guidelines for type testing as outlined by IEEE 383-1974.

All of the polyethylene insulated cables met or exceeded the construction, testing, and acceptance requirements of TVA Standard Specification 25.013. In addition, representative samples of cables supplied to TVA by different manufacturers successfully passed LOCA/SLB testing. In view of the above,

we conclude that the results show that these cables will perform their safety functions satisfactorily until the NRC's final compliance date for equipment qualification. At that time they will either be deemed qualified by virtue of testing by Wyle Laboratories or replaced with fully qualified cables.

PX Family (PXJ and PXMJ)

The PX family of cables consist of cross-linked polyethylene or ethylene-propylene rubber, and the jacket is chlorosulfonated-polyethylene or chlorinated-polyethylene. All cable of this type was constructed, tested, and accepted for use in accordance with TVA Standard Specification 25.016 - Standard Specification for Low-Voltage Wire and Cable with Flame-Retardant, Cross-Linked Polyethylene or Ethylene-Propylene Rubber insulation. TVA Standard Specification 25.016 invokes the applicable portions of IPCEA Standards, such as, physical properties, and methods of testing for tensile strength and elongation of the insulation and jacketing materials. The TVA specification included provisions for source inspection of factory testing and required submittal of certified test reports to ensure compliance with the specification. Manufacture of all installed cable was controlled by a TVA approved QA program.

The following LOCA/SLB tests are representative of the PX family of cables which are presently installed:

Franklin Institute Test Report F-C4113 dated May 1975 (Brand-Rex Company)

Rockbestos Company Test Report dated July 1977 and revised November 26, 1977, "Qualification of Firewall III Class 1E Electric Cables" (Chemically Cross-linked Insulation)

Franklin Institute Test Report No. F-C5120-1 dated August 19, 1980, (Brand-Rex Company) "Qualification Test of Electrical Cables in a Simulated Steam Line Break (SLB) and Loss-of-Collant-Accident (LOCA) Environment"

Essex Project Report Number PE-53 dated May 7, 1980, "Main Steam Line Break (MSLB) Test on Aged and Irradiated Cable Specimens"

Franklin Institute Test Report F-C4997-1 dated December 1978 "Qualification Tests of Electrical Cables in a Simulated Steam Line Break and Loss-of-Coolant-Accident Environment" (American Insulated Wire Corporation)

The Okonite Company Test Report N-1 dated July 3, 1978, "Qualification of Okonite Ethylene-Propylene Rubber Insulation for Nuclear Plant Service"

The Okonite Company Test Report FN-2 dated October 28, 1980, "Qualification of Okonite-FMR Flame-Retardant Ethylene-Propylene Rubber Insulation for Nuclear Plant Service"

The Okonite Company Engineering Report No. 355 dated September 17, 1981, "Main Steam Line Break Qualification Test on Okonite, Okonite-FMR, X-Olene-FMR and Okoguard Insulations"

Franklin Institute Report F-C4836-2 dated January 1978 "Qualification Tests of Flame-Guard FR-EP Instrumentation and Control Class 1E Electric Cables in a Simulated Steam Line Break and Loss-of-Coolant-Accident Environment" (Anaconda Company)

The test reports demonstrate that PXJ and PXMJ cables manufactured to meet the requirements of TVA Standard Specification 25.016 are suitable for Class 1E service in accordance with appropriate guidelines presented in IEEE Standards 323-1974 and 383-1974.

The tests included radiation at 2×10^8 rads except the Okonite MSLB Engineering Report 355 included radiation at 5.5×10^7 rads.

The tests included a LOCA/SLB at 346°F, 113 psig, 100 percent humidity and MSLB's at 455°F, 32 psig (Okonite) and at 440°F (Essex).

These tests included cable samples from Brand-Rex Company, Rockbestos Company, Essex International, Inc., American Insulated Wire Corp., and Anaconda Company. This cross section of cable manufacturers represented in the tests adequately demonstrated that the PS family of cables will perform similarly in the given DBE. The variety of vendors used also proved that successful completion of the test is a function of the chemical properties of the insulation and jacketing compound and is not dependent on the manufacturer. Consistency in the chemical properties has been demonstrated by successfully completing the requirements of TVA Standard Specification 25.016. This approach to generic cable qualification follows the general guidelines for type testing as outlined by IEEE 383-1974.

All cables of the PX family met or exceeded the construction, testing, and acceptance requirements of TVA Standard Specification 25.016. In addition representative samples of the PX family of cables supplied to TVA by different manufacturers successfully passed LOCA/SLB testing. In view of the above, we conclude that the results show that the PX family of cables will perform their safety functions satisfactorily until the NRC's final compliance date for equipment qualification. At that time they will either be deemed qualified by virtue of testing by Wyle Laboratories or replaced with fully qualified cables.

ITT Surprenant Division - Contract No. 73C7-84595

1. The triaxial cable consists of cross-linked polyethylene for the primary insulation and cross-linked polyolefin for the inner and outer jackets.

2. Cable is located outside the Reactor Building and outside the steam valve vault rooms where it is subject to the following possible environmental conditions:

	Normal/Abnormal	HELB
Temperature:	104°F/110°F	325°F
Relative Humidity:	80%/90%	100%
Pressure:	Atm	15.9 psia
Radiation:	1×10^4 rads	1×10^7 rads
Chemical Spray:	NA	NA

3. The manufacturer tested samples of the cable in an autoclave to the following conditions:

Temperature	- $300^{\circ}F$
Pressure	- 67 psia
Relative Humidity	- 100%
Radiation	- 2×10^{8} rads prior to autoclave test (at rate of 1 megarad/hour to simulate 40-year life)
Chemical Spray	- Borated water, pH 8.0-8.5

The cable samples performed successfully in operational tests after the autoclave exposure.

4. Based on the above tests and our knowledge of the successful performance of other cables of this type construction after aging and environmental tests, we conclude that the results show that this cable will perform its safety function satisfactorily until the NRC's final compliance date for equipment qualification. At that time it will either be deemed qualified by virtue of testing by Wyle Laboratories or replaced with fully qualified cables.

EPS Family (EPS, EPSJ, EPSMJ)

The EPS cables consist of ethylene-propylene rubber insulation with a chlorosulfonated-polyethylene jacket (EPSJ, EPSMJ). This cable was constructed, tested, and accepted in accordance with TVA Standard Specification 25.016 - Flame-Retardant, Cross-Linked Polyethylene-Insulation, Low Voltage Wire and Cable and Ethylene-Propylene Rubber-Insulated, 5-15kV cable prior to January 1980 or TVA Standard Specification 25.015 - Ethylene-Propylene Rubber or Nonchlorinated, Mineral-Filled, Cross-Linked, Polyethylene-Insulated, 5-15kV Cable after January 1980. TVA Standards 25.015 and 25.016 invoke the applicable portions of IPCEA Standards S-68-516 and S-19-81 (such as physical properties, and methods of testing for tensile strength and elongation of the insulation and jacket materials). The TVA specification included provisions for source inspection of factory testing and required submittal of certified test reports to ensure compliance with the specification. The manufacture of all this cable was controlled by a TVA-approved vendor QA program.

The following LOCA/SLB tests are representative of the EPSJ cables which are presently installed:

The Okonite Company Test Report Form G-3 dated September 7, 1977, "Qualification of Okoguard Ethylene-Propylene Rubber Insulation for Nuclear Plant Service"

The Okonite Company Test Report Form G-2 dated May 2, 1977, "Qualification of Okoguard Ethylene-Propylene Rubber Insulation for Nuclear Plant Service"

Franklin Research Center Test Report F-C5160-1 dated May 21, 1980, "Qualification Tests of Electrical Cables in a Simulated Loss-of-Coolant-Accident (LOCA) Environment, Prepared for Collyer Insulated Wire"

The Okonite Company Engineering Report No. 355 dated September 17, 1981, "Main Steam Line Break Qualification Test on Okonite, Okonite-FMR, X-Olene-FMR and Okoguard Insulations"

The test reports demonstrate that the EPSJ cables are suitable for Class 1E service in nuclear power generating stations in accordance with appropriate guidelines presented in IEEE Standards 323-1974 and 383-1974.

The LOCA/SLB tests included radiation at 2×10^8 rads for the LOCA tests and 5.5×10^7 rads for MSLB tests.

The tests included a LOCA at $346^{\circ}F$, 113 psig, 100 percent humidity and a MSLB at $455^{\circ}F$, 32 psig.

JUSTIFICATION FOR CONTINUED OPERATION (JCO)
FOR TERMINAL BLOCKS
ATTACHMENT 2

The terminal blocks are of the follwoing types: General Electric Company types EB-5, EB-25, and CR-151B; Westinghouse Style No. 805430 Series; and Cutler-Hammer type 10987. They are comprised of single piece molded, phenolic material with washer head binding screws for circuit wire connections and rated for 30 amps and 600 volts (7500V breakdown voltage). All terminal blocks are mounted in gasketed enclosures that provide protection from the adverse conditions of the surrounding environment (moisture, dust, etc.).

The EB-25, EB-5, and CR-151B blocks are composed of cellulose-filled phenolic material.(1) The Westinghouse 805430 series block is composed of cellulose-filled phenolic material.(2) The Cutler-Hammer type 10987 block is also composed of cellulose-filled phenolic.(4) For purposes of conservatism, all these blocks are assumed to be composed of paper-filled phenolic material which is the least radiation resistant type of wood product filled phenolics.(3) This material retains at least 50 percent of its physical properties (elongations, tensil strength, etc.) at gamma radiation doses of 1×10^8 rads.(3) In addition, an EB-5 terminal block passed a LOCA qualification test performed by the Limitorque Corporation after a gamma radiation exposure of 204 megarads.(7)

Samples of the CR-151B and 10987 terminal blocks have passed an environmental qualification test performed by Wyle Laboratories in the sequence indicated below:(4)

a. Radiation aging to 2.75×10^5 rads gamma at a maximum dose rate of 1.0×10^4 rads per hour to simulate a 10-year life

b. Thermal aging at $110^{\circ}C$ for 1000 hours to simulate a 445-year life(6)

c. Seismic qualification

d. Accident qualification at the following conditions: $240^{\circ}F$, 16.4 psia, 100 percent relative humidity; energized at 120V ac

Also referenced in the Wyle report was the failure of the CR-151B and 10987 terminal blocks at the following conditions:

a. Radiation aging to 1.1×10^6 rads gamma at a maximum dose rate of 1.0×10^4 rads per hour to simulate a 40-year life

b. Thermal aging at $110^{\circ}C$ for 4000 hours to simulate a 1,780-year life(6)

c. Seismic qualification

d. Accident qualification testing at the following conditions: $330^{\circ}F$, 26.8 psia, 100 percent relative humidity, energized at 120V ac

The failure mode of the blocks was terminal to terminal or terminal to ground breakdown. This occurrence was attributed to extreme corrosion buildup on the terminals during the thermal aging process, which created a conductive path for short circuits when contact with moisture (steam) occurred during the test. We attribute the buildup of corrosion on the terminals to thermal aging, since gamma radiation has no effect on metallic materials.

Tests performed by Wyle[(5)] in September 1982 demonstrated that unaged (and uncorroded) specimens of the EB-25 blocks were capable of passing a similar profile to the one that the 1780-year thermally aged blocks failed. Since the 445-year thermally aged specimens, which passed the less extreme profile, exhibited only a mild discoloration and not the extreme corrosion seen on the 1780-year blocks, we conclude that the failure mechanism will not be on the equipment at all during their required 40-year service life, and they are capable of passing the higher profile.

Although no qualification testing has been done for terminal block voltages less than 120 volts, and no testing has been performed on them in a chemical spray environment, we believe that the blocks are acceptable for use until NRC's final compliance date for equipment qualification for the following reasons:

1. All the terminal blocks in safety-related circuits are enclosed in gasketed enclosures to prevent exposure to steam or chemical spray.

2. Based on qualification tests performed by Wyle Laboratories, and the fact that the terminal blocks have been in operation at Sequoyah less than five years, the failure mechanism (buildup of corrosion on terminals) should not be present on the blocks.

Because of the lack of documentation for qualification of the blocks for chemical spray environments and for voltages less than 120V, TVA has initiated Nonconformance Report (NCR) No. SQNEEB8502. TVA will have the blocks tested, and any corrective action necessary will be completed by November 30, 1985.

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(1) Letter dated February 24, 1978, from General Electric Company to D. A. Ross, Jersey Central Power and Light Company.

(2) Letter dated March 9, 1978, from Westinghouse Electric Corporation to F. W. Chandler, TVA.

(3) Radiation data from the Battelle Memorial Institute Radiation Effects Information Center Report No. 21, dated September 1, 1961, "The Effect of Nuclear Radiation on Elastomeric and Plastic Components and Materials," by R. W. King, N. J. Broadway, and S. Palinchak.

(4) Wyle Laboratories Test Report No. 17503-1, dated January 6, 1984, "Nuclear Environmental Qualification Test Program on Sequoyah Nuclear Power Station Control Equipment and Cables."

(5) Wyle Laboratories Test Report No. 17508-1, dated November 22, 1982, "High Energy Line Break (HELB) Test Program on Two (2) Control Equipment/Cable Assembly Test Sets."

(6) TVA Design Calculation dated May 21, 1984 (EEB850522 921).

(7) Limitorque Corporation Test Report No. B0119, dated July 1, 1982, "Qualification Type Test Report of Multi-Point Terminal Strips for Use in Limitorque Valve Actuators for PWR Service."