



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION II  
101 MARIETTA STREET, N.W.  
ATLANTA, GEORGIA 30323

Report Nos.: 50-424/88-12

Licensee: Georgia Power Company  
P. O. Box 4545  
Atlanta, GA 30302

Docket No.: 50-424

License No.: NPF-68

Facility Name: Vogtle 1

Inspection Conducted: March 21-25, 1988

Inspector: N. Merriweather  
N. Merriweather, Team Leader

June 8, 1988  
Date Signed

Team Members: W. R. Carpenter, Consultant Engineer,  
Idaho National Engineering  
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Approved by: T. E. Conlon  
T. E. Conlon, Chief  
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6-8-88  
Date Signed

### SUMMARY

Scope: This special, announced inspection was in the area of Environmental Qualification (EQ) of Electrical Equipment and included a review of Georgia Power Company's (GPC) implementation of a program to meet the requirements of 10 CFR 50.45 for Category b(1), b(2) and b(3) Safety-related equipment. The inspection included: walkdowns of selected EQ equipment; examination of EQ files; review of corrective and preventative maintenance on EQ equipment; EQ Procurement; QA/EQ Interfaces; EQ Training; and EQ Engineering Support. Due to the fact that Unit 1 was operating, the walkdown of equipment was limited to components outside containment. Therefore, a future inspection may be performed to examine equipment inside containment. However, the controls and procedures which implement the EQ program at Vogtle were considered adequate.

Results: No violations or deviations were identified.

## REPORT DETAILS

### 1. Persons Contacted

#### Licensee Emplcyees

- \*T. G. Arlotta, Nuclear Engineer
- \*G. Bockhold, General Manager
- \*S. D. Driver, Plant Training Superintendent
- \*G. R. Frederick, QA Site Manager - Operations
- \*W. C. Gabbard, Senior Reguiatory Specialist
- \*J. N. Herbst, Engineer I
- \*M. B. Lackey, Superintendent Work Planning
- \*A. L. Mosbaugh, Assistant Plant Support Manager
- \*W. E. Mundy, QA Representative
- \*T. Penland, Senior Nuclear Engineer
- \*K. Pointer, Senior Plant Engineer
- \*K. V. Ramaswamy, Senior Plant Engineer
- \*C. Stinespringe, Manager, General Support
- \*J. Styslinger, Procurement Review Group Supervisor
- \*J. E. Swartzwelder, Nuclear Safety and Compliance Manager
- W. P. Wagner, QC Superintendent
- R. C. Walker, Senior QA Field Representative

#### Other Organizations

- J. Bailey, Engineer, Bechtel Engineering
- \*N. Lambha, Engineering Supervisor, Impell Corporation
- \*K. V. Panchal, EQ Engineer, Bechtel Engineering
- \*R. V. Walker, EQ Engineer, Souther Company Services
- J. Wheless, EQ Group Supervisor, Southerr. Company Services

#### NRC Resident Inspectors

- \*J. Rogge, Senior Resident Inspector
- \*C. Burger, Resident Inspector

\*Attended exit interview

### 2. Exit Interview

The inspection scope and findings were summarized on March 25, 1988, with those persons indicated in paragraph 1 above. The inspector described the areas inspected and discussed in detail the inspection findings. No dissenting comments were received from the licensee. However, the licensee did make certain commitments which are discussed in Paragraphs 6. a, 6. d, 6. h. 9, 21, 22 and 25, and Paragraph 6. i.

Item Number	Description/Reference Paragraph
50-424/88-12-01	Unresolved Item, the licensee had 38 Limitorque Motor operated valves located outside containment with dual voltage motor windings that have been spliced using blind barrel crimped connectors (nylon insulated wire joint) which are not qualified by the test reports included in their EQ files, see Paragraph 6.h.18.

The licensee did identify some material as proprietary during this inspection, but this material is not included in this inspection report.

### 3. Licensee Action on Previous Enforcement Matters

This subject was not addressed in the inspection.

### 4. Unresolved Items

Unresolved items are matters about which more information is required to determine whether they are acceptable or may involve violations or deviations. One unresolved item identified during this inspection is discussed in Paragraph 6.h.18.

### 5. Background

Equipment that is used to perform a necessary safety function must be demonstrated to be capable of maintaining functional operability under all service conditions postulated to occur during its installed life for the time it is required to operate. This requirement which is embodied in GDC 1 and 4 of Appendix A to 10 CFR 50 and is applicable to equipment both inside and outside containment subject to a harsh environment. The detail requirements and guidance relating to the methods and procedures for demonstrating this capability for electrical equipment have been delineated in 10 CFR 50.49, "Environmental Qualification of Electric Equipment Important to Safety for Nuclear Power Plants", NUREG-0588, "Interim Staff Position on Environmental Qualification of Safety-related Electrical Equipment", and various NRC regulatory guides and industry standards.

Safety-related electric equipment located in a harsh environment at Vogtle Electric Generating Plant (VEGP) is required to be qualified to NUREG-0588, Category I.

Three categories of electrical equipment that must be qualified in accordance with the provisions of 10 CFR 50.49 are:

- a. Safety-related electrical equipment (equipment relied on to remain functional during and following design-basis events).
- b. Non-safety related electrical equipment whose failure under the postulated environmental conditions could prevent satisfactory accomplishment of the safety functions by the safety-related equipment.
- c. Certain post-accident monitoring equipment (RG 1.97 Category 1 and 2 post-accident monitoring equipment).

To document the degree to which the environmental qualification program complies with the NRC EQ requirements and criteria, the licensee provided equipment qualification information by letters dated September 13, 1985, May 30, July 31, August 22, September 19, October 31, November 13, 14 and 26, and December 4 and 5, 1986, and January 2, 1987, to supplement the information in FSAR Section 3.11. The staff reviewed the licensee's EQ program at Vogtle and concluded that the licensee had demonstrated full conformance with the requirements for environmental qualification as detailed in 10 CFR 50.49, the relevant parts of GDC 1 and 4, Sections III, XI, and XVII of Appendix B to 10 CFR 50, and with the criteria specified in NUREG-0588 (Category I). The detail results of the staff's evaluations were documented in Safety Evaluation Report NUREG-1137, Supplement 5, Section 3.11, "Environmental Qualification of Electrical Equipment." The status of the licensee's compliance to Regulatory Guide 1.97 for post-accident monitoring equipment (Category b(3) equipment in 10 CFR 50.49) is addressed in Supplement 2, Section 7.5.2.1 to the Safety Evaluation Report (NUREG-1137).

The purpose of this inspection was to determine if the licensee had established an EQ program to identify electrical equipment covered by the EQ rule (10 CFR 50.49) and had reviewed and analyzed qualification data to establish qualification files that demonstrated the electrical safety-related equipment on the EQ master list was qualified. Additionally, the inspection was to confirm that adequate procedures and controls were in place to maintain the qualified status of equipment during its qualified life, to assure the EQ requirements are considered during procurement and plant modifications and to verify that the licensee had established training programs to make personnel knowledgeable of the requirements of 10 CFR 50.49.

## 6. Findings

The NRC inspectors examined the licensee's program for establishing the environmental qualification of electric equipment within the scope of 10 CFR 50.49. The program was evaluated by: (1) physical inspection of EQ equipment, (2) examination of EQ files and basis for qualification, (3) interviews of personnel involved in EQ Activities, (4) review of the EQ Master List, (5) review of EQ training, (6) review of licensee's

handling of new and emerging EQ issues in NRC Notices and Vendor data, and (7) examination of the licensee's maintenance program for maintaining the qualified status of the covered electrical equipment. The inspection results indicate that the licensee has implemented a program which meets the requirements of 10 CFR 50.49 in all areas. Only one unresolved item was identified regarding the use of potentially unqualified crimped type connectors in dual voltage limiter torque motor operators.

A more detail discussion of the licensee's EQ programs for specific areas such as maintenance, IE Notices and Bulletins, procurement, master list of EQ equipment, EQ files and walkdown results are in the paragraphs that follow:

a. Maintenance

During August 1987, a review of the EQ maintenance requirements was undertaken by the maintenance section. The review was performed under Procedure 20009-C and was to identify any required maintenance that was not covered at that time in the Preventative Maintenance (PM) program. In November 1987, an effort was undertaken to combine the same maintenance that was being performed by several procedures into one procedure. This entailed re-numbering and re-scheduling many PMs.

The review programs created some problems for the licensee. When items were identified during the August review that required changing the qualified life of some components, wrong dates were incorrectly placed in the qualification packages. Although, this error did not cause any equipment to become unqualified. The licensee committed to performing a review of all EQ packages that were revised after the baseline review was completed in September 1987. Additionally, the licensee committed to review EQ related maintenance and update Section G of the EQDPs, to include both recommended and required maintenance.

The PM Data Base was reviewed with the assistance of a maintenance engineer and the PM coordinator. The data base was reviewed for required EQ maintenance being specified and performed and also for the replacement at end of life.

During the review, it was observed that the lubrication change out for Westinghouse large motors was scheduled every six months; however, this was not being accomplished in all cases. An oil sample was being taken instead and an evaluation performed to justify not replacing all the oil. This evaluation did not, however, take into account EQ. Further discussion on the lubrication of Westinghouse large motors is in Section 6.h.

EQ maintenance at Plant Vogtle is governed by many procedures. Some of the procedures reviewed were: 20009-C, Rev. 4, Equipment Qualification implementation; 00420-C, Rev. 2, Equipment Qualification Program; 20411-C, Rev. 2, Control of Lubricants; and 20015-C, Rev. 8, Planned Maintenance.

Overall, the EQ maintenance program implemented at Plant Vogtle is in compliance with the requirements of 10 CFR 50.49 and while being above average is still evolving and improving.

b. Inspection and Enforcement Notices (IENs) and Bulletins (IEBs)

Review of the Procedure 00414-C, Operating Experience Program, used for handling Information Notices (IENs) and Bulletins (IEBs) and discussions with licensee representatives provided assurance that Vogtle's EQ program was procedurally prepared to handle IENs and IEBs. To verify that the procedure was working, several IENs were reviewed and no discrepancies were noted. The IENs that were reviewed were 84-68, 84-90, 85-17, 85-47, 86-02, 86-03, 85-53 and 87-66.

c. Environmental Qualification Master Equipment List

10 CFR 50.49(d) requires that each licensee prepare a list of electrical equipment important to safety as defined in 10 CFR 50.49 paragraphs (b)(1), (b)(2) and (b)(3). Implicit with this requirement is that the list be controlled and updated as necessary. This Master List for Vogtle Electric Generating Station is contained in Section III of Environmental Qualification of Safety-related Equipment located in a Harsh Environment, Revision 6. The methodology for development of the list is contained in Section II of this same document. The safety-related components of each system were reviewed on the basis of location and required safety function. Those equipment items located in a harsh environment and required to mitigate the accident causing the harsh environment were included on the Master List. The licensee also reviewed all non-safety-related electrical equipment directly or indirectly associated with electrical equipment identified on the Master List as required by 10 CFR 50.49(b)(2). They determined that no (b)(2) equipment existed as proper separation as described in Reg. Guide 1.75 and IEN 79-22 was maintained. In addition, Post Accident Monitoring instrumentation, 10 CFR 50.49(b)(3) equipment, was also included on the Master List if it was located in a harsh environment and was classified as a Reg. Guide 1.97 Category 1 or 2 variable. The Master List is maintained as a controlled document and is updated in accordance with the annual design control process.

To assess the completeness of the Master List the Residual Heat Removal System (RHR) was reviewed. Specifically, the following

documents were reviewed to determine which RHR and ancillary support system components; such as Motor Operated valves (MOVs), solenoid valves (SOVs), Motors or instrumentation were required to mitigate the consequences of design basis events and/or allow the operators to achieve and maintain safe shutdown conditions:

- ° P&I Diagram, Residual Heat Removal  
Drawing 1X4DB122, R24
- ° P&I Diagram, Nuclear Service Cooling Water System  
Drawing 1X4DB134, R18
- ° P&I Diagram, Component Cooling Water System  
Drawing 1X4DB137, R15
- ° P&I Diagram, Engineered Safety Feature Room Coolers  
Drawing 1X4DB228, R10
- ° Elementary Diagram, ESF Room Coolers  
Drawing 1X3D-BG-D05H, R8

All items that were noted as requiring qualification were included on the Master List.

d. EQ Equipment Replacement and Spare parts Procurement

The VEGP Project Reference Manual, Part C, Engineering, Section 13, specifies the safety classification designation that are assigned to equipment, component and structures to ensure that applicable quality and technical requirements are imposed during the procurement process. Equipment within the scope of 10 CFR 50.49 are procured as safety classification 11E. The baseline equipment qualification as determined by the plant's original design-engineering is NUREC-0588 Category 1 which includes 10 CFR 50.49(b)(1) and 10 CFR 50.49(b)(3) equipment. Licensee management has determined that there are no 10 CFR 50.49(b)(2) equipment within the scope of the EQ Program.

Procedure Number 00800-C, Requisition of Materials and Services, Paragraph 4.1, states that procurement of materials, equipment, and services designated as safety-related are divided into three categories. These are (1) new design items; (2) identical replacement and; (3) like items or replacement-in-kind. The above categorization is consistent with the secondary procurement level classifications, which are A, B, and C respectively, that are used in the procurement process.

Environmentally qualified equipment are always procured as procurement Level 3 which imposes the requirements of 10 CFR 50.49 in addition to 10 CFR 21. Depending on the nature of the procurement

action, e.g., new equipment or replacement and spare parts, the secondary procurement level is applied. New equipment to be added to the EQML are procured within the controls of the design-engineering program and are added via a Design Change Package (DCP). Identical replacement items are procured and used in the application for which the item being replaced was procured. An existing engineering procurement specification provides the basis for quality and technical requirements for such Level 3 procurement activities. Additionally, a documentation review is performed by the Procurement Review Group - Nuclear Operations, upon receipt of a material inspection report (MIR), to verify the adequacy of vendor QA records required by the procurement documents.

The baseline equipment qualification is NUREG-0588 Category .. The procurement program therefore does not require procurement activities in accordance with the requirements of 10 CFR 50.49(1). However, provisions have been made for like kind, or replacement-in-kind purchases for situations when the original identical equipment is no longer available. An engineering evaluation is required to determine equivalency of the replacement in accordance with Procedure 50020-C. Pursuant to review of Procedure 00420-C and discussions with licensee management, inadequacies were identified in the equivalency determination process. Licensee management was already aware of this programmatic weakness and corrective actions were in progress. A commitment date of April 15, 1988, was given for implementation of revised Procedure 00420-C to correct and more clearly specify the methodology for "Equivalency Determination."

Commercial grade items are procured at procurement Levels 4 or 5. Procedure 00203-C specifies the process for performing an applicability or end-use determination of commercial grade items. Programmatic weaknesses were identified in this process in that the methodology for dedication of commercially procured equipment was not clearly defined. Licensee management concurred with this inspection finding and committed to revise Procedure 00203-C by May 30, 1988, to more clearly specify the methodology for dedication of commercial grade items.

A review of the procurement documents for various equipment types was performed. No EQ related deficiencies were identified in this performance area.

e. QA Environmental Qualification Interface

Pursuant to discussions with onsite QA organization personnel, it was determined that several audits of the Equipment Qualification (EQ) Program had been conducted under administrative controls of the construction QA Program. Audits of Bechtel Power Corporation were conducted to assess the adequacy of Bechtel's engineering and



procurement activities with regard to both seismic and environmental qualification of selected equipment. Additionally, audits were conducted to assess the adequacy of Plant Vogtle's engineering, procurement, and maintenance activities with regard to both seismic and environmental qualification of Balance-of-Plant (BOP) equipment. Reviews were conducted of audit Report Numbers SP01-85/63 and OP24/SP01-86/10 to assess the nature of the identified EQ deficiencies, and the adequacy of the developed corrective action plans. Documentation verifying completion of corrective action and closeout of the audit report findings were reviewed for select deficiencies.

The site QA organization has performed one audit of the EQ program as it is presently being implemented within the administrative controls of the Operational QA Program (FSAR Section 17.2). The scope of the audit included (1) audibility of the central files; (2) update of Equipment Qualification Data Package (EQDP) and procedures; (3) planned maintenance; (4) corrective maintenance; (5) configuration control; and (6) trending of failures.

Deficiencies documented in audit Report Number OP24-87/28 were reviewed and developed corrective action plans discussed with licensee management. No environmental qualification related deficiencies were identified in this area.

f. EQ Modification Program

Southern Company Services Procedure 010604.2-0, Engineering Organizations, assigns responsibilities to the Nuclear Plant Support - Vogtle (NPSV), and the Nuclear Plant Field Support Group (NPFSG) for engineering design support to the operating unit. Procedures have been established which specifies design controls that ensure applicable regulatory requirements and design bases are correctly translated into specifications, drawings, procedures, and instructions to form a DCP. Considerations of the environmental qualification requirements of equipment within the scope of a design change package are included as design inputs to the design process.

Procedure 0106044-100, specifies the design controls applicable to the processing of Design Change Requests (DCRs) and the development of a DCP. It requires that design inputs be established in accordance with Procedure 010604.4-1. Section E.35 of this procedure mandates that equipment environmental qualification requirements shall be included as a design input. Specific guidance for performing EQ evaluation is provided in Procedure 106404.4-52. Additionally, all nuclear safety-related DCPs are reviewed by the Equipment Qualification Group to ensure that the requirement of 10 CFR 50.49 have been incorporated in the design process. Completion of this review is documented on the Equipment Qualification Checklist.

The design process further provides for the update of Equipment Qualification Data Packages (EQDPs) and vendor technical manuals, upon implementation of a nuclear station modification. Maintenance of the environmental qualification status of equipment installed via a design change is assured through update of Section G of the EQDPs.

Prior to implementation of a DCP an engineering review is performed by a responsible engineer from the Engineering Support Superintendent's organization. This review is performed in accordance with the requirements of Procedure Number 50007-C. The DCP review ensures that data sheet 13 is completed if materials or equipment are located in a harsh environment. Data sheet 13 documents the performance of a review to assess the impact of the design change on environmentally qualified equipment, and the need for additional EQ reviews.

A review was performed of DCP 87-V1E0394-1-1, which provided design changes to eliminate operational problems associated with instrument IPT-405. Equipment qualification data for the instruments involved is included in EQDP X6AA15. Based on Discussions with licensee management and review of the DCP no EQ related deficiencies were identified.

g. EQ Personnel Training

Discussions with the Plant Training Superintendent revealed that various training courses had been given to the electrical and Instrumentation and Control (I&C) craft which addressed some aspects of 10 CFR 50.49. Specific references were made by licensee management to the Maintenance Operation QA Program, Lesson Plan GE-LP-27101-03-C, and Mitigating Core Damage Lesson Plan IC-LP-07001. Licensee management presented attendance sheets and course descriptions to verify presentation of these training courses. The inspector concurred that presentation of these courses did provide some EQ awareness training to maintenance personnel involved in implementation of the environmental qualification program,

Licensee management further stated that a formal EQ training program had been developed in early March 1988 by an outside consultant. Objective evidence to verify that this training program had been given to the maintenance craft was not presented to the inspector. Additionally, only a preliminary copy, dated February 1988, of the lesson plan to be used during presentation of the EQ training course was given to the inspector for review. Discussions with other licensee personnel in the QA, QC, and design-engineering organizations revealed that existing training programs did not provide for indoctrination in the requirements of Vogtle's EQ Program. Prior to completion of the inspection, licensee management presented an attendance list which provided objective evidence that EQ training had been given to the QA organization staff.

Based on discussions with licensee management, it was determined that EQ awareness training had been provided in the past to maintenance personnel. Also, a formalized EQ training program had been developed in early March. Review of objective evidence, however, failed to establish the extent to which this training had been given to licensee personnel at the time of the inspection. No EQ related deficiencies were identified in this area.

h. EQ Documentation Files and Walkdown Items

The EQ documentation at the Vogtle site is composed of a Master List of Environmentally qualified electrical equipment, Environmental Profiles (FSAR Section 3.11) and the EQ Data packages which make up the central file. The central file contains EQ test reports; report evaluation checklists, summaries and qualification statements; system component evaluation worksheets (SCEW); EQ component lists; maintenance and procurement requirements; vendor data; and administrative procedures.

The NRC inspectors examined files for approximately 25 equipment items, where an item is defined as a specific type of electrical equipment, designated by manufacturer and model, which is representative of all identical equipment in a plant area exposed to the same environmental service conditions. In addition to comparing plant service conditions with qualification test conditions and verifying the bases for these conditions, the inspector selectively reviewed areas such as (1) required post-accident operating time compared to the duration of time the equipment has been demonstrated to be qualified, (2) similarity of tested equipment to that installed in the plant (e.g., insulation class, materials of components of the equipment, test configuration compared to installed configuration, and documentation of both), (3) evaluation of adequacy of test conditions, (4) aging calculations for qualified life and replacement interval determination, (5) effects of decreased insulation resistance on equipment performance, (6) adequacy of demonstrated accuracy, (7) evaluation of test anomalies, and (8) applicability of EQ problems reported in IEBs/IENs and their resolution. Although some minor deficiencies were identified with EQ component data Packages, which the licensee committed to take prompt corrective action, overall, a majority of the EQ files were auditable and documented qualification of the equipment. The following comments on both EQ records and walkdown items are considered the most significant findings.

File Reviews/Walkdown Items:

(1) GEMS Level Switches, EQDP No. X5AF05

The inspector reviewed Equipment Qualification Data Package (EQDP) X5AF05, Rev. 3, March 9, 1988, for the GEMS level switch,

Model LS41740. These switches are used for leak detection purposes in various areas in the Auxiliary Building. The System Component Evaluation Worksheets (SCEW's) located in Section B of the EQDP state that the switches are qualified for the following parameters:

Operating Time - 1 year  
Temperature - 160°F  
Pressure - 77 psig  
Relative Humidity - 100%  
Radiation -  $1.16 \times 10^8$  Rads  
Submergence - Yes

Qualification was based on type testing of a similar model as documented in Wyle Lab Report 45700-1, dated December 8, 1982. The inspector noted in Paragraph 1.5 of Section XII of this report that the submergence test duration was 30 minutes. In addition, as explained in Paragraph 2.2 of Section I the conduit box was filled with Dow 710 silicone fluid. The presence of this fluid prevented the moisture from entering the conduit box and submerging the switch termination. During the field walkdown portion of the inspection the team looked at Level Switch 1LSH 9826 located in the "A" Charging Pump Room. The inspection revealed that no silicone fluid was present in the termination box and that the field cable terminating at the switch would also be directly exposed to submergence conditions. Based on these findings and a comparison to the tested specimen the inspector concluded that the switches were not qualified for one year submerged operating conditions as noted on the SCEW sheets. To resolve this concern the licensee examined the operating requirements for the GEMS level switches. The licensee determined that these devices were for leak detection purposes only, would perform their function (alarm in the control room) prior to becoming submerged, and that subsequent failure of the switches would not degrade any other safety systems or potentially mislead the operator. The licensee also committed to revising the SCEW sheets to reflect that fact. The licensee's response and commitment to revise the SCEW sheets resolved the inspector's concern.

(2) Okonite 600V Power and Control Cable, EQDP No. X3AJ02-7

The inspector reviewed the EQ file for Okonite 600 Volt power and control cable. The qualification basis is NUREG-0588, Category I. The tested cable was identical to the installed cable and the test environments enveloped the plant accident profile. These cables were used both inside and outside containment. No findings were identified.

- (3) Rockbestos Coaxial and Triaxial Cable, EQDP No. X3AJ04-69-3

The inspector reviewed the file for Rockbestos coaxial and triaxial cables used for instrumentation, including cable types RSS-6-104/LE, RSS-6-100/LE, and RSS-6-109/LE. Both second and third generation cables are used inside of the reactor containment. The qualification basis for these cables is NUREG-0588, Category I. The new Rockbestos test report was included in the file along with LD/LE similarity analysis. The test profile enveloped the plant conditions. No findings were identified.

- (4) Rockbestos Firewall III Cable, EQDP No. X3AJ04A-63-2

The inspector reviewed the file for the Rockbestos 600 V Firewall III control and power cable. The file is used to qualify both irradiation and chemically cross-linked polyethylene (XLPE) Cables. The qualification basis was NUREG-0588, Category I.

The package included the current Rockbestos test reports as well as a similarity analysis of various chemically XLPE insulations. The test parameters enveloped the plant profile. No findings were identified.

- (5) Kulka Terminal Blocks, EQDP No. X3AB03

The inspector reviewed the qualification for the Kulka terminal blocks. The qualification basis was NUREG-0588, Category I. These terminal blocks are supplied with the Conax penetrations. However, they were tested separate from the Conax penetrations. The tested specimens were identical to the ones used with the penetrations. All plant conditions were enveloped by the test profile.

The insulation resistance varied from a low of  $2 \times 10^3$  ohms to a high of 10,000 ohms at 10 volts. After the DBE exposure, all of the terminal blocks were tested for continuity, insulation resistance, and dielectric strength. The Kulka 7TB series terminal blocks met all the necessary requirements for this test. Because of the low insulation resistance reading of  $2 \times 10^3$  ohms, the terminal blocks are only allowed to be used in specified control circuits. There were no findings identified.

- (6) Kerite 5KV HVK DPS Insulated Cable, EQDP No. 3XJ01B-132

The qualification basis for this cable was NUREG-0588, Category I. The tested cable was similar to the installed cable as established by analysis. The cables are used both inside and

outside of containment. The cables used inside of containment are installed in conduit and provide protection against beta radiation.

The reviewer identified one concern with the file. The SCEW sheets indicated that the cables were to be used in submergence applications. The test report did not qualify the cable for submergence. Georgia Power Company did provide documentation to show that, in the majority of cases, submerged cables would not be energized and/or required to be functional for the event that could cause the flooding. In the remaining cases, it was shown that the component would perform its required function prior to the time it would become submerged. The files will be revised to show that the submergence is not a concern. There were no findings identified.

- (7) Eaton 600 V Instrument and Special Cable, EQDP No. A3AJ04-50, 80 and 41

The inspector reviewed the qualification package for all of the different types of Eaton cable used on Class 1E electrical equipment. The qualification basis is NUREG-0588, Category I. The SCEW sheets of these cables indicated that they would be below flood level. The files did not show that the cables were qualified for submergence. However, Georgia Power Company did provide documentation to show that in the majority of cases, submerged cables would not be energized and/or required to be functional for the event that could cause the flooding. In the remaining cases, it was shown that the component would perform its required function prior to the time it would become submerged. The SCEW sheets will be revised to show that submergence of the cables is not a concern. No findings were identified.

- (8) High Range Containment Monitors, EQDP No. 2X6AA10-E70A

The inspector reviewed the package for the Westinghouse high range containment monitors. These monitors were tested by Westinghouse Electrical System Division (WESD). The system tested and installed consisted of 1) high range area monitor detector assembly 6092D96GP1, Rev. B, 2) mineral insulated cable assembly 8460A9A, and 3) preamplifier enclosure assembly 6094D 20G P1, Rev. F. The detector and hardline cables (MI) are located within the reactor containment. Rockbestos coax cable is used to connect the MI cable to the preamplifier assembly which is located in the control building. The qualification basis for this equipment is NUREG-0588, Category I.

The connector and penetration assembly was not qualified by the report referenced on the SCEW sheets. This concern was

successfully resolved after discussions with plant personnel and reviewing documentation provided by WESD. The SCEW sheets will be revised and reference made to the proper documents. No findings were identified.

(9) Westinghouse Large Motors, EQDP No. AE-2

The review of this file revealed that the licensee did not identify oil replacement as required EQ maintenance. This resulted in lubrication being performed as normal maintenance with a grace period being allowed. There was no evaluation in the EQDP to support exceeding the frequency nor a justification to show continued qualification of the equipment, however, the licensee was performing an oil sampling program on the Westinghouse large motors as well as other motors.

In response to this concern, the licensee provided an analysis along with a letter from Westinghouse to show that the qualification of the motors was never compromised and that the sampling program was adequate to exceed the six month required frequency. The licensee committed to revise the EQDP summary binder for Westinghouse large motors to address the requirements of the test reports with regard to periodic lubricant inspection/replacement. Specifically, Section G will include a maintenance requirement for replacement of the oil upon determination that its physical properties have degraded. Additionally, Section I will incorporate Westinghouse Letter GP 13366.

(10) Rosemount Transmitters Model 1153B EQDP Nos. X5AD04 and X4AJ0Y

The licensee claims qualification to the 10 CFR 50.49 requirements by Rosemount Reports 108025 Revision D and 108026 Revision A.

These transmitters are primarily used outside of containment. The transmitters that are in containment are not required to operate in an accident environment.

Maintenance and replacement information is provided in the file.

During the plant walkdown, Transmitters 1PT 1956 and 1PT 1957 were inspected. No anomalies were noted.

The inspector concluded the transmitters covered by this file meet the 10 CFR 50.49 requirements.

(11) ITT Barton Transmitters, Model 763-351, 764-352, and 764, EQDP No. X5AD07

The licensee claims qualification to the 10 CFR 50.49 requirements by ITT Barton Test Reports R3-763-6, R3-764-20, and R3-764-9.

The transmitters under review are used to monitor pressure, level, and flow. The component identification numbers for these transmitters are:

1PT 15214	1PT 10942	1FT 15212D
1PT 15215	1PT 10943	1FT 15216A
1LT 7777	1FT 15212A	1FT 15216B
1LT 7778	1FT 15212B	1FT 16216C
1LT 7779	1FT 15212C	1FT 15216D

There were no transmitters covered by this file accessible for inspection during the plant walkdown.

The inspector concluded the transmitters covered by this file meet the 10 CFR 50.49 requirements.

- (12) ITT Barton Transmitters, Model 752 and Veritrak Transmitters, Model 76DP1, EQDP No. ESE-4

The licensee claims qualification to the 10 CFR 50.49 requirements by using the methodology of WCAP-8587.

The transmitters under review are used to monitor reactor vessel level, boric acid tank level, containment pressure, reactor coolant flow, feedwater flow, the refueling water storage tank level, and the condensate storage tank level. As qualified, the Barton and Veritrak transmitters are interchangeable between these locations. The component identification numbers for these transmitters are:

1LT 102	1FT 434	1LT 1310
1FT 414	1FT 435	1LT 1311
1FT 415	1FT 436	1LT 1312
1FT 416	1FT 444	1LT 1320
1FT 424	1FT 445	1LT 1321
1FT 425	1FT 446	1LT 1322
1FT 426		

During the plant walkdown, level transmitters 1LT 1320, 1LT 1311, and 1LT 1312 were inspected. The transmitters were properly mounted and sealed and no anomalies were noted.

Based on the audit inspection, the inspector concluded the transmitters covered by this file meet the 10 CFR 50.49 requirements.



- (13) ITT Barton Transmitters, Model 753 and Veritrak Transmitters, Model 76PG1, EQDF No. ESE-2

The licensee claims qualification to the 10 CFR 50.49 requirements for these transmitters based on the methodology of WCAP-8587.

The pressure transmitters under review are used to monitor turbine pressure and steam line pressure and have component identification numbers of IPT 408 and IPT 418. As qualified, the Barton and Veritrak transmitters are interchangeable between these locations.

No pressure transmitters from this file were inspected during the plant walkdown.

The inspector concluded the pressure transmitters covered by this file meet the 10 CFR 50.49 requirements.

- (14) ITT Barton Transmitters, Model 752, Veritrak Transmitters, Model 76DP1, Veritrak Transmitters, Model 76DP2, and Tobar Transmitters, Model 32DP1, EQDP Nos. ESE-3A, 3B, and 3C

The licensee claims qualification to the 10 CFR 50.49 requirements for these transmitters based on the methodology of WCAP-8587.

The ITT Barton 752 and Veritrak 76DP1 transmitters in file EQDP-ESE-3A are used to monitor reactor coolant system flow, containment pressure, boric acid tank level, and the refueling water storage tank.

The Veritrak 76DP2 and Tobar 32DP1 transmitters are qualified to be used interchangeably for pressurizer level and steam generator level.

To establish qualification for these transmitters, a combined test and analysis approach was taken.

Testing was performed on the Veritrak Model 76SD2 Differential Pressure Transmitter and documented in "Equipment Qualification Test Report, Veritrak Differential Pressure Transmitters - Group A," WCAP-8587, Supplement 2-E038.

A similarity analysis was performed to establish qualification of the Tobar 32DP1 for the following conditions:

- ° Thermal aging
- ° Radiation environment
- ° Containment pressure

- o Seismic environment
- o High energy line break (HELB)
- o Loss-of-coolant accident (LOCA)

The two-phase analysis consisted of:

- (a) A rigorous review of the drawings for both the Tobar model and the Veritrak qualification unit. Any differences found between the Tobar Model 32DP1 and the Veritrak Model 76DP2 qualification unit were noted and investigated.
- (b) A review of design changes which may have been implemented on the Tobar Model 32DP1 but not on the Veritrak Model 76DP2 qualification unit was conducted.

The similarity analysis results showed no differences between the Tobar model and the Veritrak qualification unit which would result in performance outside of the specifications given for the conditions above.

Based on the results of the similarity analysis comparing the Tobar Model 32DP1 with the Veritrak Model 76DP2 which was tested and qualified, the inspector concluded that the Tobar model will perform its required safety functions in an equivalent manner to the Veritrak Model under the conditions described above.

The inspector concluded that the transmitters covered by this file meet the 10 CFR 50.49 requirements.

- (15) ITT Barton, Model 763, Veritrak, Model 76PH2 and Tobar, Model 32PG1 and 32PA1, EQDP Nos. ESE-1A, 1B, and 1C

The licensee claims qualification to the 10 CFR 50.49 requirements for these transmitters based on the methodology of WCAP-8587.

The transmitters under review are used to monitor reactor coolant system wide range pressure, pressurizer pressure, and steam line pressure. As qualified, these transmitters can be used interchangeably in these positions. The component identification numbers for these transmitters are:

<u>Veritrak 76PH2</u>	<u>Barton 763</u>	<u>Tobar 32PA1</u>
1PT 455	PT 403	PT 960
1PT 456	PT 405	PT 962
1PT 457		PT 964
1PT 458		PT 966

No transmitters from this file were inspected during the plant walkdown.

The inspector concluded the pressure transmitters covered by this file meet the 10 CFR 50.49 requirements.

(16) Westinghouse Motors, Life Line D, EQDP No. AE-2

The licensee claims qualification to the 10 CFR 50.49 requirements for these motors based on the methodology of WCAP-8587.

These pump motors are located outside of containment and are hermetically sealed isolating the motor environment from the external environment with the exception of temperature.

The motors under review are the Boric Acid Transfer Pump Motor, Component Number 11208P6002M01 and the Boron Injection Recirculation Pump, Component Number 11208P6002M01.

The licensee states that no preventive maintenance is required to support the equipment qualified life.

During the plant walkdown, Motor 11208P6002M01 was inspected. The motor's electrical connections were Raychem splices. A question about the splice configuration was asked and later resolved. No other anomalies were noted.

The inspector concluded the motors covered by this file meet the 10 CFR 50.49 requirements.

(17) Joy/Reliance Fan Motor, Model No. 140-5, EQDP No. X4AJ34

The licensee claims qualification to the 10 CFR 50.49 requirements by Joy Test Report X-604.

The motors under review are located in containment and have component identification numbers of:

1-1516-B7-001-000  
2-1516-B7-001-000

1-1516-B7-002-000  
2-1516-B7-002-000

These motors were qualified to a temperature of 350°F, while the accident temperature in their locations is 400°F based on a Main Steam Line Break (MSLB). The licensee justified this discrepancy by stating that the motors are required to function only for a LOCA with a maximum calculated temperature of 291°F.

Maintenance requirements were adequately addressed in the file.

IEN 86-53 "Improper Installation of Heat Shrinkable Tubing" was adequately addressed.

No motors from this file were inspected during the plant walkdown inspection.

The inspector concluded the fan motors covered by this file meet the 10 CFR 50.49 requirements.

- (18) Limitorque Motor Operated Valves (MOVs) Model SMB/53, Located Outside Containment, EQDP Nos. HE-1 Revision 3, HE-4 Revision 4, and X4AR01

Test reports supporting equipment qualification of the Outside Containment Limitorque MOVs at Vogtle to NUREG-0588, Category I are Limitorque Test Reports B0009, B0003, B0058, Westinghouse Test Report WCAP 8587, and the documentation contained in Vogtle Files HE1 Revision 3, HE4 Revision 4, and X4AR01. File review resulted in no open items/concerns.

Plant walkdown was performed on the following three outside containment Limitorque MOVs: plant Tag Number 1HV 3019, in the main steam system and provides steam line isolation; plant Tag Number 1HV8485A, in the chemical and volume control system and provides High Pressure Safety Injection (HPSI) pump discharge isolation; and Tag Number 1HV 8401, in the chemical and volume control system, and provides emergency boration. All of these valves appeared to be well maintained, clean, and in good order. None exhibited undue oil or grease leakage. Inspection of MOV 8485A, which was powered by a dual voltage (230/460) Reliance motor, however, resulted in one concern. A blind barrel crimp connector (nylon insulated wire joint) was used as a connector for the motor windings. Previously, the licensee had indicated that no dual voltage limitorque MOVs were used in the plant. Later, the licensee determined that there are 38 dual voltage MOVs at Vogtle 1, all located outside containment. The NRC questioned the qualification status of the wire connectors used in the actuator compartments. In response, the licensee provided information from Limitorque which indicated that the dual voltage motors tested in Reports 600198 and 600376A were interconnected with Thomas & Betts (T&B) Type RB-4 and/or RC-6 wire joint connectors or equal. They also provided information from a walkdown inspection, conducted later the same day, of ten actuators which confirmed that T&B type connectors were indeed used. In addition, an analysis of the radiation and temperature characteristics was performed for nylon insulating materials in general. The inspector concluded that the licensee had failed to establish qualification for the dual voltage crimped connectors in that they could not establish similarity to what

was tested by Limatorque in test reports 600198, 600376A and B0003. However, the inspectors were aware of recent tests performed by another licensee on T&B connectors which could be used to establish qualification for Vogtle's application outside containment. At the time of the exit meeting, the licensee had obtained preliminary test data from Wyle Labs on T&B connectors which indicated acceptable performance for radiation levels of  $2 \times 10^7$  Rads TID. The licensee was also pursuing obtaining the Illinois Power test report to establish added assurance that T&B connectors are suitable for their VEGP application. In addition, the licensee committed to inspect the remaining dual voltage motors prior to the end of the first refueling outage. At the time of the exit meeting, the licensee was preparing an operability statement and a proposal for resolution. This is, at present, considered an unresolved item (50-424/88-12-01).

- (19) Limatorque Motor Operated Valves (MOVs), Model SMB/SB, Located Inside Containment, EQDP No. X5AC03

Test reports supporting qualification of the inside containment Limatorque MOVs at Vogtle to NUREG-0588, Category I are Limatorque Test Reports 600456, B0009, B0058, Westinghouse Test Report WCAP 8587, and the documentation contained in Vogtle File X5AC03. Since the maximum containment temperature is 352°F for about two minutes, a thermal lag analysis (calculation X6CJH.49) was presented in the file which extended the maximum LOCA tested temperature of 300°F in Limatorque TR 600456 to envelope the plant conditions of 352°F at Vogtle. File review resulted in no concerns. Plant walkdown of inside containment MOVs was not conducted because of the plant being at power.

Based upon review of the files and repeated assurance by the licensee that there were no Limatorque MOVs inside containment with dual voltage motors (see concern in Paragraph I, above), the inspector concluded that the inside containment Limatorque MOVs at Vogtle 2 were environmentally qualified to perform their safety functions.

During the course of the Limatorque EQ audit, several generic concerns were addressed. The following is a brief discussion of these concerns and the Vogtle resolution of each.

- ° In-Compartment Heaters (IN 86-71) - Some inside containment and outside containment Limatorques at Vogtle have in-compartment heaters, but are all electrically de-energized. Vogtle is particularly sensitive to this issue since it was burn damage to wiring at Vogtle from the compartment heaters that prompted the issuance of Information Notice (IN) 86-71. Response to this issue includes walkdown sheets for burnt wire detection, maintenance forms directing the electrical de-energization,

- (20) Conax Electrical Penetration, Types 4 and 5, Instrument, EQDP No. X3AB03

Test reports supporting qualification of the Types 4 and 5 Conax Instrument penetrations to the EQ level of NUREG-0588, Category I, are Conax Test Reports IPS-473, and IPS-585.2, "Qualification of Electrical Penetrations," and Conax Test Report IPS-585.4, "Qualification of Conax Feedthrough Subassemblies." During the file review, emphasis was placed on plant Tag Number 11818H3P19 this penetration is the one used in the instrument loop containing the Westinghouse high radiation monitoring system. Data in the Vogtle EQ file adequately demonstrated qualification of the Conax penetration with the Conax Feedthrough Assembly (conductor to ground insulation resistance greater than  $10^{12}$  ohms and shield to ground greater than  $10^8$  ohms through out the entire test series), however, on feedthrough 5, 11, and 16 of plant tag number 11818H3P19 Westinghouse modified the connector on the inside containment side of the feedthrough assembly. Qualification data for this modification was not present in either the Conax penetration file or the high radiation monitor file. Additional information was obtained from Westinghouse and found acceptable (See Paragraph 6.h.(8). Westinghouse modification does not adversely effect the electrical performance documented in the referenced Conax test reports, the inspector considers the Licensee's EQ files adequately support qualification of the Conax penetrations for their environment at Vogtle. Plant walkdown of the Conax penetrations was not performed.

- (21) Revision 4 - Resistance Temperature Detector (RTD), Model 21204, EQDP No. ESE5

Test reports supporting qualification of the Model 21204 RdF RTDs to the EQ level of NUREG-0588, Category I are Westinghouse Test Reports WCAP 8587 Supplement 1 EQDP-ESE-5, Revisions 4, and WCAP 8587 Methodology Revision 6A. During the file review emphasis was placed on plant tag number 1TE431B located on the Loop 3 cold leg manifold of the reactor coolant system. This is a narrow range RTD and its safety function is to provide reactor trip. One minor concern arose from file review. Specified and demonstrated accuracy on the SCEW sheet was  $0^{\circ}\text{F}$  while the Test Report (ESW-5) supports  $\pm 1.2^{\circ}\text{F}$ . Prior to the exit meeting the Licensee committed to revise the SCEW sheets of all the affected RdF RTDs to reflect the  $\pm 1.2^{\circ}\text{F}$  accuracy and, also, verify that this accuracy was properly factored into the loop accuracy set point study. Based upon the file review, the inspector considers the RdF RTDs environmentally qualified to perform their safety function at Vogtle 1.

and electrical schematic drawings showing the heaters are de-energized. Additionally, plant walkdown of three MOVs showed the heaters were electrically disconnected.

- o Actuator Operation Under Degraded Voltage - Vogtle furnished documentation showing that all Class 1E motors are specified to operate at either 80 to 90% rated voltage and start at 75% rated voltage.
- o Magnesium Rotors (IN 86-02) - Vogtle has four Limitorque MOVs with magnesium rotors. All four have been put on power lockout and are not considered "active" valves. The failure of these valves would not compromise plant safety.
- o Unidentified Jumper Wires, (IN 86-03) - File investigation, interrogation of plant personnel, walkdown sheets, and maintenance/surveillance procedures showed only qualified wires to be present in the Vogtle Limitorque MOV compartments. Plant walkdown of three Limitorque MOVs showed only qualified Rockbestos Firewall III to be in use for the subject applications.
- o Degraded Insulation on Peerless dc Motors (IN 87-08) - There are no peerless dc motors with the suspect Nomex-Kapton insulated leads installed at Vogtle.
- o Underrated Terminal Blocks (IN 83-72) - Vogtle uses Raychem splices to terminate the power leads on all the inside containment safety-related (EQ) Limitorque MOVs except for two, which use the environmentally qualified GE-EB5 terminal strips.
- o T-Drains and Grease Reliefs - Inspection of inside containment Limitorques was not performed; however, interrogation of plant personnel, maintenance record review, and file review indicate the inside containment MOVs have grease reliefs and T-drains installed.
- o Lubrication

Finally, lubrication procedures were investigated. Only Exxon Nebula EPO is used in the main gear box; Mobile 28 or Beacon 325 is used in the limit switch gear box. Lubrication maintenance is performed at no greater than 18-month intervals. The six-month Limitorque recommended cycling of the MOVs for part coating and grease mixing is met by requiring cycling at least once every three months on MOVs where this frequency is possible. For the MOVs that cannot be cycled during power operation, the cycling requirement is once every cold shutdown but not more than once every three months.

## (22) Cable Entrance Seals

Devices such as solenoid valves and transmitters often require cable entrance seals for LOCA environment qualification. At Vogtle such seals were required, where needed, by the Bechtel construction specification for the plant, and the seals were covered in cable installation documentation. Although, the inspectors were satisfied that seals were in fact installed wherever required, improved documentation was considered necessary for ongoing plant operation and modification. The licensee committed to make the following changes: (a) A note will be added to the SCEW sheet for each component requiring a cable entrance seal, and (b) the EQ Data Package review checklist form will be modified to ensure that future qualification reviews document installation interface requirements affecting qualification.

## (23) Solenoid Valves with Elevated Normal Ambient Temperature

Solenoid valves may be hotter than normal operation ambient air temperature because of continuous energization of the valve coil or process heat transfer. This condition reduces the qualified life of the valve. During the plant walkdown inspection valve 1HY3005A was observed to be above ambient temperature in the MSIV area; the licensee later measured 138°F near elastometers most subject to aging. The inspectors questioned whether this qualified life reduction due to local heating had been considered in the Vogtle EQ program. In response the licensee provided an EQ Data Package revision request dated March 21, 1988, containing revised life calculations and SCEW sheets for 18 solenoid valves. The revised qualified lives range from 4.8 to 5.9 years, compared with an initially calculated eight years. Since the plant had operated for much less than four years, this action was considered satisfactory to resolve the concern.

## (24) Raychem Splice Sleeve Indentations

During the plant walkdown inspection minor indentations were observed in the sleeve of a Raychem splice in limit switch circuitry 1-HY-13006A in junction box 1ATJR0482B. The indentations resembled the shape of teeth in a plastic cable tie. The licensee initiated deficiency card DC 1-88-754 for an engineering evaluation. This action was found to be acceptable.

## (25) Raychem NJRS Nuclear Jacket Repair Sleeve

EQ Data package X3AJ11 claims qualification for the Raychem NJRS cable jacket repair sleeve for low voltage in-containment service. The inspectors noted that Raychem literature recommends this sleeve for use outside containment. Further,



although a LOCA qualification test was performed, Raychem test report states that the sleeve was only visually examined and found to be intact; the samples were not energized nor were any electrical tests performed.

It was determined that Bechtel Construction Specification X3AR01 Section E.9.5.6.B allows use of the NJRS sleeve inside containment. Since the 600 volt Eaton instrumentation and speciality cable was LOCA-qualified with its jacket in place (individual conductor insulation shielded from the LOCA steam and chemicals), the NJRS sleeve would have to provide a LOCA barrier when used inside containment with that type of cable. The inspectors concluded that the ability of the NJRS sleeve to exclude the LOCA atmosphere from the cable had not been demonstrated. This concern did not apply to other 600 -volt cable types used inside the Vogtle containment, since they were LOCA-qualified with individual conductor insulation exposed.

During the inspection the licensee examined the cable pull cards for all 155 qualified Eaton instrument cables inside containment. The NJRS sleeve was not used with 151 cables, One of the other four cables had been retired in place, and the pull cards for the last three were not available. The inspectors concluded that the possibility of NJRS sleeve being used, to date, on an in-containment Vogtle instrument cable was remote. It was agreed that if an NJRS sleeve was found to have been used on one of the last three cable, the licensee would deal with that concern at the time of discovery. The licensee further committed to install no future NJRS sleeves on in-containment instrument cable without convincing evidence of qualification. No further concerns in this regard were noted.

i. Instrument Loop Accuracy

The Vogtle EQ files for cables, splices, containment penetration assemblies and cable entrance seals used in instrument loops did not directly address performance requirements. However, the licensee produced records showing that this subject had been carefully considered in 1986 by GPCO, Bechtel, and Westinghouse. LOCA-produced errors were shown to be acceptable for each instrument in the RPS/ESFAS and EOP setpoint analysis documents based on length-specific cable leakage currents and demonstration that the other components cited above produce negligible leakage compared with the cable. In several cases it was necessary to replace cables with an improved type (EPDM instead of XLPO insulation). Impell recently performed analyses of certain worst case loops verifying that the Westinghouse calculations were conservative.

The instrument loop accuracy calculations and verifying analyses were considered acceptable. However, the licensee committed to improve the documentation of these analyses as follows: (a) The EQ program

documents will be revised to describe the calculations and provide specific references to them, and (b) The EQ Data Packages (probably SCEW sheets will be revised to spell out required and demonstrated performance for instrument cables, splices, penetrations, and cable entrance seals.

j. Cable Identification

During the plant walkdown inspection, seven circuit numbers from field wires and conduit were collected from the various equipment inspected. The licensee was asked to identify and establish qualification for the cable, using the numbers provided.

The paper trail provided by the licensee for this identification/qualification is as follows:

- (1) The numbers were fed into the EE580 data bank which provided a Cable Code (CC) number.
- (2) This CC is used with the Material Inventory System (MIS) to produce the manufacturer and purchase order number.
- (3) The purchase order number will be identified as per specification, which is the same as the EQDP package.

The cable numbers that were traced to the applicable EQ test report per the above method during the Vogtle EQ inspection audit were:

1AT13005ASC	1BE414RS199
1AT13006ASC	11CQPSIXW
1BE423RX048	1AE414RL160
1AA0213EA	

This exercise showed that the licensee was able to trace and establish qualifications for field cables.