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VOGTLE ELECTRIC GENERATING PLANT UNIT 1
READINESS REVIEW PROGRAM
APPENDIX J
EQUIPMENT QUALIFICATION

SUMMARY

The Readiness Review Program is being conducted at the initiative of Georgia Power Company (GPC) management to assure that all design, construction, and operational commitments have been properly identified and implemented at the Vogtle Electric Generating Plant (VEGP) Unit 1. Appendix J, which was submitted on March 24, 1986, presents an assessment of the compliance of the seismic and environmental qualification of electrical and mechanical equipment with the Final Safety Analysis Report (FSAR) commitments and regulatory requirements. The Nuclear Regulatory Commission (NRC) conducted an evaluation to determine if the results of the program review of the equipment qualification presented in Appendix J represent an effective and accurate assessment of the VEGP identification and implementation of the equipment qualification licensing requirements. The report contained herein describes the NRC evaluation.

The NRC evaluation was essentially performed by Region II. Neither the NRC Office of Nuclear Reactor Regulation (NRR) nor the Office of Inspection and Enforcement reviewed Appendix J specifically. They did, however, review the equipment qualification topics included in other Modules and the Independent Design Review (IDR) as part of the reviews of these programs. The reports on these reviews are included in the inspection reports for the IDR and other modules.

The Region II evaluation was accomplished through a detailed examination including:

1. A review of each section of the Appendix
2. A review of the backup files prepared by the Readiness Review Team (RRT) which support the material presented in the Appendix
3. A verification that a representative sample of the equipment qualification commitments identified in the Appendix are correct and are in accordance with FSAR commitments and regulatory requirements
4. A check of a sample of the documents reviewed by the RRT and an independent sample of documents selected by the Region II inspector
5. An inspection of a sample of safety related equipment currently installed in Unit 1
6. A review of Appendix J findings and a discussion with the RRT of the progress in resolving the findings.

During this examination, it was apparent to the NRC reviewers and inspectors that GPC management supported the Readiness Review by active participation in the development and implementation of the program. This evaluation also indicates that the licensee's program review was comprehensive and provides adequate assurance that plant safety related equipment is qualified in accordance with NRC requirements and FSAR commitments except for the findings which were identified by the NRC reviewers and inspectors. These findings should be subject to continuing review and action until closed out in order to preclude the possibility of safety problem development. The findings identified during this evaluation are summarized in the four items listed below:

Unresolved Item 50-424/86-61-10, Review FSAR Commitment to IEEE 317-1976 for Chemical Spray of Electrical Penetrations. (Closed)

Inspector Followup Item 50-424/86-50-01, Review Resolution of the RRT Observation No. 21-J3 for Qualification of Non-metallic Parts in Manual Valves. (Closed)

Inspector Followup Item 50-424/86-50-02, Provide a Description of the Method Used to Identify Safety Related Equipment. (Closed)

Inspector Followup Item 50-424/86-50-03 Complete Corrective Action for RRT Findings J-1 and J-4. (Closed)

These items do not appear to represent significant programmatic weaknesses. This conclusion is made on the basis that the foregoing items for Vogtle 1 can be satisfactorily closed. Resolution of all matters concerning these open items will be handled during future NRC inspections.

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1. Scope of Review

This review consisted of an examination of each section of the Appendix and was performed by inspectors from Region II of the Nuclear Regulatory Commission (NRC). The Region II review was assisted by an employee of EG&G Idaho, Inc., a prime contractor to the U.S. Department of Energy at the Idaho National Engineering Laboratory. Appendix Sections 1.0, 2.0, 4.0, 5.0, 6.0, and 8.0 presented data on Appendix organization, project organization, program description, audits and special investigations, and conclusions. These did not require the review depth given to Appendix Sections 3.0 and 7.0 which covered Commitments and Program Verification. These latter two sections provide the more significant aspects concerning licensee commitments along with adequacy of commitment carrythrough into both program implementation and equipment testing and analyses. Review of these two sections included an examination of content; review of findings, concerns and observations; review of a sample of items reviewed by the Georgia Power Company (GPC) Readiness Review Team (RRT); and an examination of an independently selected sample of records and field construction. The methodology used and an evaluation of each section are presented in the following.

2. Methodology

a. NRR Review

The NRC Office of Nuclear Reactor Regulation (NRR) did not perform a specific review of Appendix J. They did, however, review equipment qualification topics as part of their review of other Modules. This review in these modules focused on the adequacy and accuracy of the commitments contained in Section 3 of the Modules including the equipment qualification topics. The inspection reports for these Modules includes the results of this review.

b. IE Review

The NRC Office of Inspection and Enforcement (IE) did not perform a specific review of Appendix J. They did, however, review equipment qualification topics as part of their review of the Independent Design Review (IDR). The review of the equipment qualification topics will be included in the IE report for Module 22.

c. Region II Review

The review performed by the Region II Evaluation Team included a review of the entire Module but focused on Subsections 3.5, 7.1 and 7.2. These subsections contain the details of the readiness review of

implementation of the technical requirements. The review of these subsections emphasized the evaluation of the readiness review of the correct interpretation of the regulatory requirements in establishing commitments and the proper carrythrough of the commitments to the identification of testing and analysis that would adequately qualify the equipment. The evaluation extended to verifying that the testing and analyses were properly performed by evaluation of actual test reports and verifying by field inspection that the equipment models covered by the test reports were the models installed in the plant.

The Region II evaluation of the readiness review was performed by selecting a sample of the reviews performed by the Readiness Review Team (RRT) and verifying the RRT conclusions. Also, a sample of requirements not reviewed by the RRT was selected and reviewed to determine if the action on these requirements added additional verification for the conclusions. A specific sample of 17 of the 98 commitments was selected for verification that the regulatory requirements had been satisfied by the commitment and that the implementation in design control documents adequately meet the commitments. Seventeen was considered an adequate sample because some of the listed commitments are duplicates. Section 2.1.2.1 of the Appendix reports that there are 65 unique commitments. In addition, several of the commitments are identical or similar to those that are implemented for other purposes in other Modules and were also reviewed as part of the other Module reviews. The verification of the proper implementation as part of the review of other modules lends confidence that the Vogtle Electric Generating Plant (VEGP) has implemented them correctly in the equipment qualification activities. For example the requirement to use the damping values of Reg. Guide 1.61 for seismic analysis is required in Modules 8, 11 and 19 as well as in this Appendix and has been reviewed as properly implemented in the review of Modules 8, 11 and 19.

The second order implementation was verified by selecting 12 of the 17 first order commitments and verifying that the commitments were carried through to the purchase specifications and the actual testing of the equipment. Thirteen pieces of equipment were checked. Three purchase specifications and 15 test reports were reviewed.

The implementation evaluations were made by reviewing the Equipment Qualification Data Packages (EQDPs) at the Vogtle site and interviewing the responsible member of RRT. The evaluation and interviews were conducted during the inspection team visits of June 23 through July 2, 1986 and July 21, through July 25, 1986 documented in Inspection Report 50-424/86-61 and this report, respectively.

3. Evaluations

The evaluation of each Appendix section is provided in the following using a Appendix section-by-section format. Included are a description of the section, what was reviewed, the basis for acceptance, and a statement of any required followup or evaluation.

a. Section J1 - Scope

(1) Review Introduction and Section Examination

This Section of the Appendix provides a description of the intent and content of Appendix J. Also provided is a description of equipment qualification-related activities examined during the verification of other modules of the readiness review.

The section identifies that the equipment qualification requirements are to be met for safety-related equipment and post-accident monitoring equipment. However regulations [10 CFR 50.49(b)(2) require that non-safety related electrical equipment whose failure under postulated environmental conditions could prevent satisfactory accomplishment of safety functions also be included in the equipment qualification program. Although the Module does not discuss the evaluation of the non-safety related equipment, VEGP has subsequently identified in Section II of the report, Environmental Qualification of Electrical Equipment in a Harsh Environment dated May, 1986, that an evaluation has been done and that Vogtle Unit 1 does not have any non-safety related electrical equipment whose failure could prevent satisfactory accomplishment of safety functions.

The effective date of the Appendix was given as October 1, 1985. Additional progress and changes in the equipment qualification of the RRT since that date were discussed with the RRT. The RRT indicated that the remaining Equipment Qualification Data Packages that were not complete at the time of the Readiness Review were now under review by the Equipment Qualification Task Force and are expected to be issued by early September 1986.

The status of the qualification and installation of safety-related equipment was not defined in this section. The status was reviewed with the RRT and the status was determined to be 90% qualified.

(2) Inspection Results

In the May 1986 Environmental Qualification Report VEGP describes the evaluation of non-safety related equipment and concludes that Vogtle Unit 1 does not have any non-safety related electrical

equipment whose failure could prevent satisfactory accomplishment of safety functions. Even though this topic was not addressed in the Readiness Review the discussion in the Qualification report provides evidence that VEGP has complied with the requirement. The equipment qualification program at the time of the Readiness Review had progressed sufficiently that a meaningful evaluation was made. The current status indicates that adequate effort to qualify the equipment are being made and the commitment to have all equipment qualified prior to fuel load is achievable. Followup or additional evaluation of Section J1 is not required.

b. Section J2 - Responsible Organizations

(1) Review Introduction and Section Examination

This section of the Appendix provides a description of the organizations that are responsible for establishing and implementing the Equipment Qualification Program. The responsibilities of each organization are clearly defined and the interrelation of the organizations are described.

Vogtle has emphasized equipment qualification and has established a Equipment Qualification Task Force (EQTF). This organization has provided additional technical consultation in developing and implementing the program and along with making independent reviews of the acceptability of the qualification of the equipment.

The organization description did not discuss responsibilities of the Nuclear Steam Supply System (NSSS) Supplier. This item required clarification. The RRT clarified the responsibilities of the NSSS Supplier. They reported that the NSSS Supplier is responsible for establishing the generic qualification of all NSSS Supplied equipment. The generic qualification is documented in WCAP 8587 and its equipment specific sub reports. The RRT reported that these documents had received prior approval by the NRC. Approval for the methodology was documented in NRC letter of November 10, 1983. In addition, approval for each equipment specific report is documented by separate letter. VEGP is responsible for assuring that the Vogtle plant specific requirements are enveloped by the generic qualifications. The Vogtle Unit 1 Equipment Qualification Program calls for the development of a Equipment Qualification Data Package that will incorporate all of the NSSS supplied equipment. This data package will be reviewed and approved by the Equipment Qualification Task Force. VEGP reported that the data package has been prepared and is currently under review by the Task Force.

(2) Inspection Results

The organization described in the module with the clarification of the responsibilities of the NSSS Supplier is considered capable of establishing and implementing an effective equipment qualification program. Followup or additional evaluation of Section J2 is not required.

c. Section 3.0 - Commitments and Implementation

(1) Review Introduction and Section Examination

This section of the Appendix contains a listing of commitments and implementing documents which are displayed in two matrices. The first matrix is entitled "Commitment Matrix" and presents a listing of commitments by the Georgia Power Company for Vogtle 1 along with the source document reference for each commitment. The source document identifying the commitments was usually the Final Safety Analysis Report (FSAR). FSAR Section 1.9 identified compliance with the Regulatory Guides, Section 3.10 provided the seismic qualification requirements and Section 3.11 provided the environmental requirements. Other source documents were correspondence in response to NRC questions concerning qualification, responses to Generic Letters and responses to Enforcement and Inspection Enforcement Bulletins.

The second matrix is entitled "Implementation Matrix" and presents a listing of required features referred to within each commitment along with the document reference where the feature has been implemented. The implementing documents were usually the appendices to the Plant Reference Manual. These were Appendix EA for environmental qualification and Appendix QG for the seismic qualification. Other implementing documents were the design control documents:

DC 1000C	Rev. 3	General Design Criteria for Civil Structures
DC 1005	Rev. 1	Seismic Interdiscipline
DC 1007	Rev. 4	Environmental Interdiscipline
DC 1010	Rev. 4	Project Classification List Interdiscipline
DC 1017	Rev. 4	Pipe Stress and Pipe Supports Analysis Criteria

These documents implemented the commitments by requiring compliance with Regulatory Guides and IEEE standard. The Guides and Standards invoked to implement the program were identified in the Implementation Matrix of Module Section 3.5. The Region II review was directed at verifying the proper implementation of the listed commitments. This was accomplished by selecting a sample of 17 individual commitments reflecting a representative sample of the 65 unique commitment topics.

(a) Identification Review.

The NRC evaluation at the Readiness Review did not include a complete review of the FSAR, the NRC Safety Evaluation Report (SER) and the regulating documents (RGs, NUREGs, IE Bulletins, Generic Letters, and NRC Questions) to verify that all the commitments related to equipment qualification had been included in the Appendix J Commitment Matrix. As an alternative, credit is taken for the NRR equipment qualification audits which have verified or will verify that the VEGP Unit 1 has met the essential regulatory requirements to assure that the safety-related equipment is qualified. The NRR Seismic Qualification Review Team (SQRT) and the Pump and Valve Operability Review Team (PVORT) audits were conducted June 22-26, 1986. The environmental audit is currently scheduled for September 9-11, 1986. The results of these audits will be incorporated in a supplement to the NRC SER for VEGP Unit 1.

The Region II inspectors reviewed the commitment list and the appropriate sections of the Final Safety Analysis Report (FSAR) to identify any obvious omission based on their experience. The review revealed that Section 3.11 of the FSAR did not specifically commit to compliance with 10 CFR 50.49 for qualification of electrical equipment in a harsh environment nor was evidence found in either the review of the FSAR or the Appendix J that a specific check had been made by VEGP for compliance with each requirement of 10 CFR 50.49. Nevertheless, except for the consideration of non-safety related equipment discussed in Section 3.0, the Region II reviewers concluded that VEGP has committed to compliance with 10 CFR 50.49 because the individual requirements of 10 CFR 50.49 are covered by the commitments in the Module Commitment Matrix. Although it was not included in the documents reviewed by the RRT, VEGP does commit to meet the requirements of 10 CFR 50.49 in the May 1986 Environmental Qualification Report.

(b) Implementation Review

Seventeen of the 65 unique commitments (listed in subsection 3.4 Commitment Matrix) were selected as a review sample. The seventeen were selected to cover the major features of the equipment qualification program and to cover items where the reviewers have found problems in the review of equipment qualification programs at other plants. The examination of the sample consisted of:

- o Verifying correspondence between the subsection 3.4 Commitment Matrix and the subsection 3.5 Implementation Matrix for each commitment selected.

- o Reviewing the referenced commitment source-document citation for a clear statement of requirement for each commitment within the sample.
- o Checking the document listed in the subsection 3.5 Implementation Matrix for proper implementation of the requirements embraced by the commitment.

The individual commitments reviewed are listed in Table 1 of this report. The review results for First order implementation are reported in Column five of the Table.

Several of the commitments were for compliance with Regulatory Guides and IEEE Standards. Each of these documents have specific individual requirements that may number from only a few to many depending on the document. The implementation matrix of the Appendix subsection 3.5 has identified implementation of each of the sections of these guides and standards by identifying the sections of the implementation document where the requirement is implemented. The review of the RRT backup files revealed an even more thorough evaluation. These files listed the subsection or paragraph number where the individual requirement was identified in the implementation document. The Region II review included verification that the implementing document included a statement requiring compliance with the reference guide or standard. In addition, the review verified requirements for compliance with one specific requirement of IEEE 323-1974, and three specific requirements for IEEE 344-1975. The standard IEEE 323-1974 defines the environmental qualification requirements and the standard IEEE 344-1975 defines the seismic qualification requirements.

The review verified that the source documents gave a clear statement of the commitments and, except for number 175, the implementation documents gave clear statements of the actions that were to be taken to accomplish compliance with the commitments. Commitment 175 is to comply with Regulatory Guide 1.100. Regulatory Guide 1.100 endorses IEEE 344-1975 for meeting seismic qualification requirement except it imposes restrictions on the static coefficient analysis and the single frequency tests allowed by Section 5.3 and 6.6.2 of IEEE 344-1975. The specific paragraphs of Plant Reference Manual (PRM) Appendix QG identified in the RRT backup files for implementation of the Regulatory Guide did not clearly impose these restrictions. Although the specific statements of compliance could not be identified, in the opinion of the Region II inspectors, compliance with the requirements of the referenced sections together with the other sections of PRM Appendix QG, assure that the required restrictions are observed.

(2) Inspection Results

The Region II review of this section did not disclose significant omissions. The program was verified as providing compliance with 10 CFR 50.49 even though no specific commitment was made in Section 3.11 of the FSAR. Verification was accomplished by observing that the individual requirements had been established by the commitments listed. The lack of specific statements committing to the restrictions of Regulatory Guide 1.100 was not considered an omission because, in the opinion of the Region II reviewers, meeting the requirements of the referenced implementation sections together with the other section of PRM Appendix QG would assure that the required restrictions are observed. Followup or additional evaluation of Section J3 is not required.

d. Section J4 - Program Description

(1) Review Introduction and Section Examination

This section of the Appendix describes the equipment qualification program including interfaces between various Vogtle Project organization responsible for implementing and coordinating the EQ program. Addressed in this section are development of the qualification criteria, review of documents provided by the equipment suppliers and acceptance of equipment qualification by the EQTF. The section was examined by the inspectors for content, background for the review of other sections of the Appendix (especially Section J7, Program Verification) and for the veracity of the information presented.

- (a) Design Criteria. Subsection J4.2 entitled "Design Criteria" describes the related design control documents and identifies the specific features of these documents that control the implementation of the equipment qualification requirements. These documents were reviewed to facilitate their use in verifying the commitment implementation review of Section J7.
- (b) Specifications and Appendixes. Subsection J4.3 entitled "Specifications and Appendixes" describes the documents used to implement qualification for equipment purchases. Standard appendixes are used in the procurement specifications to define and incorporate environmental and seismic qualification requirements. Appendix EA is provided for environmental qualification requirements and Appendix QG is provided for seismic qualification requirements. These appendixes were developed under the direction of the EQTF. The appendixes are necessary to implement the codes and

standards identified in the commitment matrix (Section J3.4) because the codes and standards provide neither detailed qualification requirements nor plant specific information. The appendixes were reviewed to facilitate their use in verifying the commitment implementation review of Section J7.

- (c) Supplier Submittals and Reviews. Subsection J4.4 entitled "Supplier Submittals and Reviews" describes the review and approval of the plans, procedures, qualification tests and analyses that the equipment suppliers are required to provide in order to verify that the equipment supplied is capable of operating if exposed to the conditions specified in the Procurement Specifications. Bechtel Power Corporation (BPC) is responsible for identifying, tracking and expediting the equipment qualification documentation provided by the equipment suppliers for balance of plant equipment. Equipment qualification documents undergo several levels of review in accordance with the Project Reference Manual, Part c, Section 37, Equipment Qualification. Westinghouse is responsible for qualification and associated documentation for NSSS equipment. The qualification of NSSS is documented in Westinghouse generic documents that have received NRC approval. Westinghouse and BPC are responsible for the review of the Westinghouse documentation to ensure that Vogtle specific requirements are enveloped by the Westinghouse generic equipment qualification program.
- (d) Equipment Qualification Data Packages. Subsection J4.5 entitled "Equipment Qualification Data Packages" describes the method of control of the equipment qualification documentation and approvals of the adequacy of the documentations. The controls of the Equipment Qualification Data Packages are described.

(2) Inspection Results

The description of the program and documentation control indicate that the VEGP has provided considerable emphasis to equipment qualification program and that a program has been in place from the onset of design and carried through as the construction of the plant has progressed.

The description of the documentation for the NSSS equipment indicated that the qualifications were established by reference to Westinghouse generic programs that were previously approved by the NRC. No reference was provided for the approval. This item required clarification. A reference (NRC Letter from C. O. Thomas to E. P. Rahe, Jr., Westinghouse Electric Corporation, November 10, 1983) for the approval letter was provided by the RRT. Followup or additional evaluation of Section J4 is not required.

e. Section J5 - Audits and Special Investigations

(1) Review Introduction and Section Examination

This section provides a discussion of the audits of Appendix J related items made by Georgia Power Company (GPC) Quality Assurance along with those performed by NRC, The Bechtel Power Company Quality Assurance, the Southern Company Services Quality Assurance, the Institute of Nuclear Power Operations (INPO) and the Licensee's Self-Initiated Evaluation Team.

An audit matrix is included in this section of the Appendix which identifies the audit finding and reports the status. The audit matrix shows all audit findings closed except Finding 84-17 of the Southern Company Services Quality Assurance Audit. This finding was related to the justification of exceptions to specifications in the Equipment Qualification data packages X3AJ01A and X3501B. The status of the resolution was not determined by the Region II reviewers but the item should be resolved prior to fuel load.

The Region II inspectors selected the findings of the Georgia Power Company Quality Assurance Audit 85163 as the review sample. The Georgia Power Quality Assurance files for findings 831, 832, 833 and 834 were reviewed. The findings were all found to be satisfactorily resolved with one exception. Finding 834 was still listed as open in the Quality Assurance files but was listed as closed in the audit matrix of Appendix J. The finding was that the equipment qualification data packages were not being updated in a timely manner. The explanation for the discrepancy given by the responsible member of the RRT was that procedures had been revised to require timely updates of equipment qualification data packages and, therefore, the RRT considered the finding closed. The Georgia Power Company Quality Assurance was continuing to monitor the update of packages to ensure that the procedure changes were being followed; however, they considered the finding open. Subsequent data (Georgia Power letter E. D. Groover to R. H. Pinson dated April 4, 1986) was provided to the Region II inspectors that indicated that action to resolve the finding was inadequate. The response to the letter (Bechtel Power Corporation letter D. L. Kinnsch to Georgia Power M. H. Googe dated April 24, 1986) indicated that corrective action is in progress and a final response is scheduled to be provided by August 22, 1986.

The Region II inspectors were satisfied that even though the item was incorrectly shown as closed in the Audit Matrix of the Appendix, the resolution of the finding was being pursued and was being adequately tracked by Georgia Power Quality Assurance.

In addition to the audits reported in the Appendix, NRR on June 24 to June 27, 1986 also conducted audits. These were performed by the Seismic Qualification Review Team (SQRT) and the Pump and Valve Operability Review Team (PVORT). These teams audited the VEGP overall program for seismic and operability qualification and specifically reviewed the qualification records for 36 pieces of electrical and mechanical equipment. A list of the equipment and open audit items resulting from the audits are shown in Table 2. These Open Items were subsequently resolved in SER Supplements 3 and 4.

(2) Inspection Results

Numerous and effective audits have been conducted on the VEGP Equipment Qualification Program which emphasizes the importance given to this activity by VEGP management. Adequate corrective actions were taken for audit findings. Those findings not closed are being effectively tracked to assure resolution. Followup or additional evaluation of Section J5 is not required.

f. Section J6 - Program Changes

This section of the Appendix describes the changes in program after March 1979. The program after that date utilized the Appendices that were prepared under the direction of the EQTF; that is, Appendix EA for environmental qualification and Appendix EQ for seismic qualification.

g. Section J7 - Equipment Qualification Program Verification

This section describes the verification activities performed by the RRT to ascertain whether the equipment qualification program has implemented the VEGP licensing commitments. This verification was divided into two parts. Part I (Section J7.1) addresses the commitment implementation verification performed as a part of Appendix J and Part II (Section J7.2) summarizes the results of equipment qualification verifications performed in other modules and in the Independent Design Review.

The RRT verification was performed by selecting a sample of 19 commitments. Two pieces of appropriate equipment were selected for each commitment. The qualification of each piece of equipment was verified by reviewing the second level implementation documents such as procurement specifications, equipment qualification data packages, suppliers qualification reports and installation drawings.

(1) Review Introduction and Section Examination

A sample of 12 commitments were evaluated by Region II to access if they had been effectively implemented. None of the commitments selected were related to the post-accident monitoring requirements of RG 1.97. As an alternative, credit was taken for the NRR review and approval of the post-accident monitoring requirement.

The evaluation process was to select one or two pieces of safety-related equipment for the commitment under evaluation and trace the documentation for that piece of equipment through the elements of the program. The path of implementation was.

- o Commitment Identified in the FSAR
- o Requirement Identified in the Design Control Document
- o Requirement Identified in the Design Specification
- o Requirement Identified in the Procurement Specification
- o Supplier description of how the requirement had been met
- o Test and analysis reports describing how the qualification was verified
- o Approval of the qualification signifying the commitment had been met.

The documents verifying the qualifications were contained in the Equipment Qualification Data Packages. Evaluation was made to answer the following questions.

- o Did the commitment identified in the FSAR adequately meet the licensing requirement?
- o Did the requirements in the Design Control document, the Design Specification and the Procurement Specification adequately implement the commitment?
- o Were tests conducted or analysis performed that would satisfy the requirements?
- o Did the equipment operate as required during and after the tests or were adequate analysis provided to demonstrate that it would?
- o Were the tests, analyses and results adequately documented?
- o Were procedures identified to assure that the equipment would continue to meet the requirements for the life of the plant or replacement identified?
- o Was the qualification appropriately approved?

Two of the twelve commitments were those that required meeting the requirements of IEEE 323-1974 and IEEE 344-1975. These two documents encompass nearly all the features of the equipment qualification program. A complete evaluation of the

implementation of these two documents would be essentially 100% verification which is beyond the scope of the Region II review. Therefore one of the specific requirements of IEEE 323-1974 (the requirement that the test temperature curve must envelope the curve for the design basis event with a 15° margin) was evaluated for three pieces of equipment. Also, two specific requirements for IEEE 344-1975 were evaluated, one for one piece of equipment and one for two pieces of equipment. Of the twelve commitments selected for evaluation by Region II, 10 were those that had been evaluated by the RRT. In some cases, one piece of equipment was used to verify more than one commitment and in other cases commitment evaluations were made for more than one piece of equipment. In some cases the same piece of equipment selected by the RRT was used to verify the commitment and in other cases a different piece of equipment was selected. A total of 15 pieces of equipment were used in the Region II evaluation.

(a) Results of Evaluation

The results of the evaluation of the program implementation are summarized in Table 1. Included in the Table are a list of the commitments evaluated, the results of the evaluation, the documents that were reviewed in the evaluation and the equipment selected for evaluation. The evaluations verified satisfactory implementation of the commitments except for six items of concern which are discussed as follows:

1) Commitments 157 and 5011

Commitment 157 requires qualification of electrical penetration assemblies per Regulatory Guide 1.63. Regulatory Guide 1.63 invokes IEEE 317-1976. Section 6.4.13 of IEEE 317-1976 states in part "Compatibility with design basis maximum postulated accident event environmental condition ... and chemical spray shall be verified by Design Basis Event Test". Also, commitment 5011 requires that safety related equipment be qualified for chemical spray. Review of the CONAX Report 1PS-473 Rev. A revealed that the model used for medium voltage penetrations 1-1818-H3-P08, P13, P17, P18, P52 and P55 was not spray tested. The justification given in the test report was that "The inboard end of the penetration is enclosed in an enclosure box. This precludes spray impingement on the inboard compression seal and avoids compromise of the electrical integrity". This justification is not considered adequate because effectiveness of the box to resist spray and the ability of the penetration

materials to withstand the chemical atmosphere were not provided. In the absence of acceptable justification, the penetrations should be verified by actual test. IEEE 317-1976 does not provide for an alternative for a spray test.

Review of the qualification and acceptance documents seems to indicate that the decision to not require the chemical spray test was made by the penetration supplier, CONAX. The purchase order required meeting Regulatory Guide 1.63 and IEEE 317-1976. Deficiency reports justifying acceptance without a spray test were not found.

The procedures to assure qualification of purchased equipment appeared to have failed. This failure appeared to be an isolated incident. The failure to require a spray test and the acceptance of the penetrations without processing a deficiency report is identified as Unresolved Item 50-424/86-61-10.

2) Commitment 5002

Commitment 5002 was listed as being implemented by Paragraph 7.2.5 of PRM Appendix QG. This paragraph required that "The structural integrity and/or function must not be affected by the loads which are transmitted to the valve (nozzle), or the loads must be simulated during functional testing". The Anchor Darling test report, Bechtel file No. X4AR01-574-1 for the 4 inch gate valve IHV-3009, did not provide justification that the loads transmitted to the valve nozzles by the piping would not affect the valve function. Also, the loads were not simulated in the functional testing. Analyses were included in the report demonstrating that the strength of the nozzles was greater than the strength of the pipe and the test valve was line mounted so that the reaction forces from the static load tests would be transmitted to the valve. Although neither the analysis nor the test are in strict compliance with the requirement of PRM Appendix QG, they are the methods normally used by industry to demonstrate operability. Therefore the methods are considered satisfactory for demonstrating operability of valve IHV-3009. No followup or additional evaluation is required for this item.

3) Commitment 5011

Commitment 5011 was listed as being implemented by Paragraph 3.3.1.J of DC-1007 Rev. 4. This paragraph requires qualification for chemical spray. Although the specific time duration for chemical spray test is not identified in DC-1007 the 24 hour spray test specified in IEEE 323-1974 Appendix A is usually applied. The duration of the spray test applied to the cable could not be determined from the review of the Okonite Test Report, Bechtel file number X3AJ02-7-2. The lack of a specified required time duration was not considered to be a serious omission because the Okonite Cable is a standard cable with extensive use in nuclear service. It did receive a spray test of some time duration and the IEEE specified 24 hour time duration is not a firm requirement but a recommendation. No followup or additional evaluation is required for this item.

4) Commitment 5017

Commitment 5017 specifies that the safety related equipment must be capable of performing its safety related functions. The pressurizer level transmitters LT-459, 459F, 460 and 461 were evaluated as part of the Region II Module 20 review. These transmitters had a tag indicating that the safe pressure is 1500 psig which is well below the normal operating and accident pressures for these transmitters. The equipment qualification report EQDP-ESE-3B Rev. 1 was reviewed to determine if it would identify the internal pressure for which the transmitters were qualified. The report only discussed the external environment of the transmitters and did not specify the internal pressure for which the transmitters were qualified. Followup and additional evaluation for this deficiency has been identified in the Module 20 Review Report.

The Region II Module 20 review also identified a concern related to the ability of the containment pressure transmitters to perform their safety related function. During the review of the Purchase Order Receipt files, the NRC Inspector noted that replacement transmitters had been ordered. Further investigation revealed that Quality Group B transmitters had been installed for transmitters IPT 934, 935, 936 and 937. Quality Group B transmitters are not qualified for the normal and the accident environments in the regions where the

transmitters are located. Therefore the transmitters were replaced with Quality Group A transmitters which are qualified for the environments. The qualification document EQDP-ESE-3A Rev. 4 was reviewed and the qualification of Quality Group A transmitter was verified for the required location. Transmitter IPT 936 was inspected by Region II and verified to be a Barton Model 764 which corresponds to the Model identified as qualified on the System Component Evaluation Work Sheet.

The identification that unqualified transmitters had been installed resulted from the Hazards Analysis Review being conducted by VEGP. The Hazards Analysis Review also identified that the transmitters were located below the flood level and, as a result, the transmitters were relocated to be above the flood level. The action taken by VEGP verifies that the Hazard Analysis Review has been effective in identifying and correcting deficiencies. No inspector followup or additional evaluation is required for this item.

5) Commitment 173

Commitment 173 requires that the environmental qualification of safety related equipment to be as specified by IEEE 323-1974. The RRT checked each purchase specification to determine if the specifications invoked IEEE 323-1974 for environmental qualification. The team identified four specifications for manual valve that did not invoke IEEE 323-1974. These valves have non-metallic diaphragms and "O" rings. This concern was identified as RRT Observation No. 21-J3. The Project response to the Observation was that these specifications did not require invoking IEEE 323 for the reason described in FSAR Section 3.11.B.2. A review of the FSAR Section by Region II indicated that it did not provide alternate requirements for environmental qualification. The Project response, therefore, has not resolved the concern that adequate control be provided for qualifying these non-metallic parts. The failure to provide specific criteria for the qualification of non-metallic parts is identified as Inspector Followup Item 50-424/86-50-01.

6) Equipment Qualification List

During the tracking of the qualification of the Fisher 4 inch diaphragm operated valve on the bypass line around the main steam isolation valve, the Region II Inspector found that the NAMCO limit switches

(Numbers 1ZS13005A, 5B, 6A, 6B, 7A, 7B, 8A and 8B) for this valve and the other bypass valves were not included in the environmental equipment qualification list. The Environmental Qualification Report available for review was the September 1985 revision. VEGP reported that the limit switches have been added in the May 1986 Revision. Region II has subsequently verified that the limit switch have been added. Because these items were missing the Region II inspector attempted to determine the method used by VEGP to develop the equipment qualification list. A discussion of the method could not be identified in the FSAR. VEGP should provide a discussion of the method they used to assure that all safety related equipment requiring qualification has been identified. This issue is identified as Inspector Followup Item 50-424/86-50-02.

(b) Review of Calculations

VEGP performed calculations to determine the pressure, temperature, and radiation dose that the safety related equipment would be exposed to during normal, accident and post-accident conditions. The RRT reviewed these calculations for compliance with NUREG-0588 and reported their review in Section J7.1.2.6 of the Appendix.

NUREG-0588, positions 1.1 and 1.2, address the generation of equipment qualification temperature and pressure profiles that envelop the adverse environmental conditions of either a loss-of-coolant accident (LOCA) or a main steam line break (MSLB). The RRT performed a review of the VEGP LOCA and MSLB calculations to verify that the computer code COPATTA was used and that the input to the code was based on the VEGP-specific design. In addition, the results of these calculations were compared to the EQ pressure and temperature profiles maintained in VEGP design criteria document DC-1007 to verify that the equipment qualification profiles envelop the potential LOCA and MSLB conditions.

NUREG-0588 Position 1.4 addresses the determination of radiation conditions, inside and outside containment, to which equipment must be qualified. A review of VEGP radiation source and shielding calculations was performed by the RRT to determine whether the assumptions, outlined in Position 1.4, were included in the calculations.

The Region II Inspectors reviewed the RRT backup files to evaluate the RRT review. The files demonstrated that the RRT had made an extensive and detailed review. The qualifications of the person who had conducted the review were discussed with the RRT responsible representative. He

reported that the reviewer had served as a lead engineer for performing similar calculation at another plant and was familiar with the details of the calculation. The COPATTA computer code had been previously used for such calculations and appears to be adequate.

(2) Inspection Results

The Region II review verified that the equipment qualification program is being vigorously implemented. A few items of concern were identified. VEGP has audit and review programs in place which were found to be effective in identifying and correcting many of the concerns raised by the Region II Inspector. One unresolved item and two inspector followup items remain. The findings are described in Section 3.g.(1)(a) and are listed in Section 4.

h. Section J8 - Program Assessment/Conclusions

(1) Review Introduction and Section Examination

This section of the Appendix provides a summary of open corrective actions, two certifications from review managers or participants, and mini-resumes for the various RRT members. Two findings were identified as a result of the RRT review.

o Finding J-1

Action: Revise procurement specifications X4AF03 and X4AF04 to incorporate appropriate stress limits from Final Safety Analysis Report Table 3.9.B.3-5. Review and revise, if required, procurement specifications for remaining active pumps and valves for conformance to committed stress limits. Review corresponding qualification reports for conformance to revised specifications. Incorporate stress limits and loading combinations for active and inactive equipment in applicable design criteria. The corrective action for this finding has been assigned to the Licensee's Architect Engineer, BPC Project Engineering. The scheduled completion date was May 1, 1986.

The Region II Inspector reviewed the status of the action for Finding J-1 with the RRT. A package of material was provided showing the status of corrective action. The required revisions to procurement specifications design control documents and the FSAR were found to be completed or in progress. The stress limits were met for the active pumps. The valves were still under evaluation. No required hardware changes were identified by the review to date. The completion date of May 1, 1986 was not met and an extension was obtained.

o Finding J-4

Action: Review and revise, if required, safety-related specifications that use data from design criteria document DC-1007 for conformance to its latest revision. Review qualification reports for conformance to revised specifications. The corrective action for this finding has been assigned to the Licensee's Architect Engineer, BPC Project Engineering. The scheduled completion date was June 1, 1986.

The RRT reported that action to resolve of Finding J-4 was in progress but no records were provided for the Region II Inspector to access the progress. The completion date of June 1, 1986 was not met and an extension was obtained.

(2) Inspection Results

Findings J-1 and J-4 identify significant deficiencies in the qualification of the VEGP safety related equipment. The Region II Inspector concluded that VEGP recognizes the seriousness of the findings and is taking action to correct the deficiencies. Completion of the corrective actions is identified as Inspector Followup Item 50-424/86-50-03.

4. Findings

The following four findings were identified during the NRC evaluation of the Module __. One finding has been identified as an Unresolved Item. The other three have been identified as Inspector Followup Items.

Unresolved Item 50-424/86-61-10, "Review FSAR Commitment to IEEE 317-1976 for Chemical Spray of Electrical Penetrations", identified that the medium voltage penetrations 1-1818-143-P08, P13, P17, P18 P52 and P55 should be qualified for chemical spray by a type test. The procurement acceptance procedures should be reviewed to verify that acceptance of the penetrations without a deficiency evaluation report is on isolated incident.

Inspector Followup Item 50-424/86-50-01, "Review Resolution of the RRT Observation No. 21-J3 for Qualification of Non-metallic Parts in Manual Valves", identifies that the VEGP resolution of the RRT Observation No. 21-J3 is not satisfactory because an alternate criteria to IEEE 323-1974 for environmental qualification of the non-metallic parts of the manual valves was not provided. VEGP should identify an alternate criteria and verify that the non-metallic parts meet the criteria.

Inspector Followup Item 50-424/86-50-02, "Provide a Description of Method Used to Identify Safety-Related Equipment", identifies that VEGP should provide a discussion of the method used to assure that all safety related equipment requiring qualification have been identified and included in the equipment qualification list.

Inspector Followup Item 50-424/86-50-03, "Complete Corrective Action for RRT Findings J-1 and J-4" identified that the corrective actions for these findings were not complete and the scheduled days have passed. The NRC will verify that the corrective actions are satisfactorily completed.

5. Conclusions

Based upon the review within the scope of this module, the NRC has reached the following conclusions for Equipment Qualification for Vogtle Unit 1.

a. Summary of Specific Conclusions

With the exceptions of those items discussed earlier and noted herein the following has been determined to be acceptable.

(1) Scope

The scope of activities of the RRT in review of the equipment qualification program and the description of equipment qualification activities examined during the verification of other modules of the readiness review as described in Section 1.0 were found to accurately report the activities of the RRT in the review of the Vogtle Unit 1 Equipment Qualification program. The review of the essential item of qualification of non-safety related equipment whose failure could prevent accomplishment of safety functions was not addressed in this module but was addressed in the May 1986 Environmental Qualification report.

(2) Organization

The description of the organization and responsibilities for equipment qualification activities as given in Section 2.0 was found to be accurate except the responsibilities of the NSSS supplier were not described. Clarification of their responsibilities as provided by the RRT during the Region II inspection were found to be accurate.

(3) Commitments

The Region II review of the commitments given in Section 3.0 revealed that the FSAR did not have a specific statement committing to compliance with 10 CFR 50.49. The Region II Inspector determined that this omission was not significant because the commitments included in Section 3.0 meet the individual requirements of that Section of the Code. The licensing commitments and the implementing documents were determined to be in compliance with the FSAR, Regulatory Guides and IEEE standards. This determination was made even though the specific restrictions of RG 1.100 were not implemented because other provisions of the implementing documents would assure that the restrictions are observed. A specific check of the

completeness of the commitment list was not considered necessary by the Region II Inspector. As an alternative, credit is taken for the NRR equipment qualification audits which verify that VEGP Unit 1 has met the essential regulatory requirements that assure that the safety-related equipment is adequately qualified.

(4) Program Description

The program description as given in Section 4.0 was reviewed and determined to be generally correct and in agreement with the FSAR and requirements.

(5) Audits and Special Investigations

The Audit Program described in Section 5.0 was determined to be on accurate presentation of the audit process, previously identified equipment qualification problems and NRC inspection results. Adequate corrective actions were taken for the audit findings and, for those findings that were not closed, the resolutions are being effectively tracked to assure satisfactory closure.

(6) Program Changes

The Section 6.0 outline of program changes was determined to accurately describe the one change mode after March 1979. This was to use the Appendices prepared under the direction of the Equipment Qualification Task Force.

(7) Program Verification

The verification of implementation of a sample of the commitments as given in Section 7.0 of the Appendix was checked and found to be accurate except for Commitment 5011. Also the implementation of a sample of commitments not included in the RRT sample was reviewed and were found to be properly implemented except for Commitment 173 and the development of the equipment qualification list. The discrepancies found were specific to the items of equipment for which the records were reviewed and do not indicate significant program weakness. If additional applicant response resolves these three items the RRT verification of implementation would be considered adequate.

(8) Program Assessments/Conclusions

The RRT findings as described in Section 8.0 were reviewed and found to be consistent with the evaluation of Section 7. The corrective actions were reviewed with the RRT and were found to be in progress and were being adequately tracked.

b. General Conclusions

The examination performed by NRC indicated that this module presents an adequate assessment of the GPC process for qualification of safety-related equipment for Vogtle 1.

GPC's management supported the Readiness Review by active participation and adequate resource. There was no evidence of coercion or attempt to dilute either the effort or the findings. The Readiness Review Staff displayed the requisite, competence and professionalism for a review of this nature.

The review performed by the Readiness Review Staff was determined to be sufficiently comprehensive in scope and depth to identify problem areas, and the dispositions of findings determined to be adequate. The procedures for equipment qualification were comprehensive and provide adequate assurance that activities associated with equipment qualification were determined to be consistent with commitments and are acceptable. Based on the review of this module, it appears that qualification was performed in accordance with the appropriate procedures and that records reflect the quality of that qualification. The NRC findings appear to have minor significance and do not appear to represent significant programmatic weaknesses. The deficiencies must be further evaluated to determine their significance and need for any subsequent corrective action.

Pending resolution of the findings identified above, the NRC concludes that the Vogtle program for equipment qualification complies with NRC requirements and FSAR commitments. This conclusion is based on information currently available to the inspectors and reviewers. Should subsequent contradictory information become available it will be evaluated to determine what effect it may have on the above conclusion.

6. References

1. Vogtle Electric Generating Plant, Readiness Review, Appendix J, Equipment Qualification.
2. March 24, 1986, letter for D. O. Foster, Vice President and Project General Manager, Vogtle Project, Georgia Power Company, forwarding Appendix J for NRC evaluation.
3. NRC letter from C. O. Thomas to E. P. Rahe, Jr., Westinghouse Electric Corporation, dated November 10, 1983.

TABLE 1. SUMMARY NRC REGION II INSPECTION OF READINESS REVIEW APPENDIX J

Reference Number	Commitment Source	Commitment Section	Commitment Subject	Verified First Order And Document	Equipment Checked	Verified Second Order and Document	Verified In Other Module And Document	Verified Second Order by RRT And Document
126	FSAR	1.9.29	Seismic Design Class Per RG. 1.29 Rev. 3	Yes, DC1010-1 Rev. 4 Sec. 1.0 and Footnote Table 1		Not Reviewed	Not Reviewed	Not Reviewed
154	FSAR	1.9.61	Dampening Values for Seismic Design Per RG. 1.61	Yes, PRM Appendix QG Rev. 0 Sec. 3.2.1		Not Reviewed	Yes Module 8	Yes, X4AF03-222-4
157	FSAR	1.9.63	Penetration Assemblies Qualified Per RG. 1.63	Yes, PRM Appendix EA Rev. 3	Penetrations 1-1818-HJ-P08, P13, P17, P18, P52 and P55	Note 1, Purchase Order X3A503/ CONAX PAV 3636 PAV2-150, Report IPS-473 Rev. A	Note 1, Module 12	Not Reviewed
172	FSAR	1.9.89	Environmental Qualification IE Equipment Per Reg. Guide 1.89	Yes, PRM Appendix EA Rev. 3 Sec. 1.2		Not Reviewed	Not Reviewed	Not Reviewed
173	FSAR	1.9.89.1	Environmental Qualification IE Equipment Per IEEE 323-1974	Yes, PRM Appendix EA Rev. 3 Sec. 1.2 and DC-1007, Rev. 4		See Specific Sections		
			Temperature Margin For Type Test IEEE 323-1974 Sec. 6.3.1.5(1)	Yes, PRM Appendix EA Rev. 3 Sec. 3.1.H	ANSCO Valve HY13005A	Yes, Purchase Spec. X5AC01 and Automatic Switch Co. Report AYR-67368 Rev. a	Not Reviewed	Not Reviewed
					Namco Limit Switch 12S13005A	Yes, ACME Cleveland Development Co. TR3613-PP		
					600V Power and Control Cable	Yes, Environmental Qualification Report AHW-02-08	Not Reviewed	Not Reviewed
174	FSAR	1.9.92	Combining Model And Spatial Components Per RG. 1.92. Rev. 2	Yes, PRM Appendix QG Rev. 0 Sec. 3.6.2 And DC-1005 Rev. 1 Sec. 3.6.4	Not Reviewed	Not Reviewed	Not Reviewed	Yes, X4AF03-222-4

TABLE 1. (Continued)

Reference Number	Commitment Source	Commitment Section	Commitment Subject	Verified First Order And Document	Equipment Checked	Verified Second Order and Document	verified In Other Module and Document	Verified Second Order by RRT And Document
175	FSAR	1.9.100	Seismic Qualification of IE Equipment Per RG. 1.100	Note 2, PRM Appendix QG Rev. 0 Sec. 1.1.A		Not Reviewed	Not Reviewed	Not Reviewed
176	FSAR	1.9.100	Seismic Qualification of IE Equipment per IEEE 344-1975	Yes, PRM Appendix QG Rev. 0 Sec. 1.1A	See Specific Sections			
			Test mounting to simulate service mounting, IEEE 344-1975 Sec. 6.1.1	Yes, PRM Appendix QG Rev. 0 Sec. 2.1.1	ASCO Valve IHY13005A	Yes, Automatic Switch Co. Report AQR-67368 Rev. a	Not Reviewed	Not Reviewed
			Broadening Response Spectra. IEEE 344 Sec.6.6.1.1	Yes, DC-1000-C Appendix X Pages 78-79		Not Reviewed	Not Reviewed	Not Reviewed
			Single and Multi axis Test requirements IEEE 344 Sec.6.6.6	Yes, PRM Appendix QG Rev. 0 and DC-1005 Section 3.6.3	ASCO Valve IHY13005A	Note 3, Automatic Switch Co. Report AQR-67368 Rev. a	Not Reviewed	Not Reviewed
					Namco Limit Switch IZS1305A	Note 4, ACME Cleveland Development Company TR 3613-PP	Not Reviewed	Not Reviewed
1016	FSAR	3.7.B.3.6	Effects of three components earthquake motion per IEEE 344-1975 when Qualification by test.	Yes, PRM Appendix QG Rev. 0 Section 1.6.1 and DC-1005 Sec. 3.6.3	Motor Control Center 1-1805-53 ABC	Yes, Farwell and Hendricks		Yes, X3AC03-2400-3
4999	FSAR	3.9.B.3.2.1	Pump shaft deflection during earthquake	Yes, PRM Appendix QG Rev. 6 Sec. 3.1.8	Auxiliary Feedwater Pump 1-1302-P4-002	Yes, Ingersoll Rand TR-8306 Supp. 1 Rev. 0	Not Reviewed	Yes, X4AF03-222-4
					Nuclear Service Water Cooling Pump	Yes, Report by C. K. McDonald ME-878	Not Reviewed	Not Reviewed

TABLE 1. (Continued)

Reference Number	Commitment Source	Commitment Section	Commitment Subject	Verified First Order And Document	Equipment Checked	Verified Second Order and Document	Verified In Other Module and Document	Verified Second Order by RRT And Document
5000	FSAR	3.9.B.3.2.2	Static Load Tests for active valves	Yes, PRM Appendix QG Rev. 0 Sec. 7.2.5	4 inch gate valve main steam system IHV-3009	Yes, Anchor Darling Report Test by Wyle Report 46470-02	Not Reviewed	Yes, X4AR01-534-5
5002	FSAR	3.9.B.3.2.2	Nozzle loads on active valves	Yes, PRM Appendix QG Rev. 0 Sec. 7.2.5	4 inch gate valve main steam system IHV-3009	Note 5, X4AR0-574-1 Anchor Darling Report	Not Reviewed	Yes, X4AR01-574-1
5007	FSAR	3.10.B.2.1	Operability during and after earthquake	Yes, PRM Appendix QG Rev. 0 Sections 2.5.1 2.3.5 and 2.4	Motor Control Center 1-1805-53-ARC	Yes, Farwell Hendrick AC-10148	Not Reviewed	Yes, X3AC03-2400-3
5011	FSAR	3.11.5.1	Performance of safety function with Chemical Spray	Yes, DC-1007 Rev. Section 3.3.1.5 and Table 2	600V Power and Control Cable Okonite Cable EC1AA021658	Note 6, X3A502-7-2 Okonite Test Report	Yes, Module 6	Yes, X3AJ02-7-2
					Medium voltage Penetrations 1-1818-H3-P08 P13, P17, P18 P52 and P55	Note 1, CONAX Corp. IPS-473	Not Reviewed	Not Reviewed
5016	FSAR	3.10.N.1	Spectra employed envelope plant specific response spectra.	Yes, PRM Sec. C-37 Rev. 2 Sec. 37.4	Solid State Protection System Cabinet 1-1605-Q5-SPA	Yes, EQDP-ESE-16 Rev. 53/83	Not Reviewed	Yes, X6AA10-123-25
5017	FSAA	3.11.N	Equipment perform safety related function	Yes, PRM Sec. C-37 Rev. 2 Sec. 37.4	Pressurizer Level Transmitters LT 459, 459F 460 and 461	Note 7, EQDP-ESE -3B Rev. 1	Yes, Module 20	Not Reviewed
					Containment Pressure Transmitters IPT-934, 935, 936 and 937	Note 8, EQDP-ESE-3A Rev. 4	Yes, Module 20	Not Reviewed

TABLE 1. (Continued)

Reference Number	Commitment Source	Commitment Section	Commitment Subject	Verified First Order And Document	Equipment Checked	Verified Second Order and Document	Verified In Other Module and Document	Verified Second Order by RRT And Document
5018	FSAR	3.11.B.1	Replace if qualified life less than 41 years	Yes, EODP Sec. G	125 Vdc Battery and Charger 1-1806-B3-BYD 1-1806-B3-CAA	Yes, X3AD01-179-1 and X3AD01-118-2 Action Environmental Test Report	Not Reviewed	Yes, X3AD01-179-1 X3AD01-118-2

Notes: 1. Not qualified for chemical spray. U. resolved Item 5-0424/86-61-10.

2. Restriction imposed by Reg Guide 1.100 not specifically addressed. Other requirements assure restrictions will be observed. No additional followup required.
3. Appendix QG Section 1.6.1 requires bi-axial motion as a minimum without exception. Single axis testing was performed. Component was shown to be rigid. Testing was in compliance with IEE-344-1975 even though not in strict compliance with Appendix QG. No additional followup required.
4. Appendix QG Section 1.6.1 requires bi-axial motion as a minimum without exception. Single axis testing was performed and justification provided. Testing was in compliance with IEE-344-1975 even though not in strict compliance with Appendix QG. No additional followup required.
5. External nozzle loads were not imposed during test nor was justification provided. Not in strict compliance with Appendix QG but consistent with industrial practice. No additional followup required.
6. Duration of spray test could not be determined. Duration is not considered critical. Cable is standard cable with wide use in nuclear service. No additional followup required.
7. Tags on transmitters give safe pressure as 1500 psig well below normal and accident pressure. Followup has been identified in Module 20.
8. Transmitters replaced with qualified model and relocated above flood level as a result of Hazards Analysis Review. No additional followup required.

TABLE 2

EQUIPMENT AUDIT BY SQRT AND PVORT

SQRT Audit Items:

<u>Equipment</u>	<u>Seismic Qualification Findings</u>
1. Plant Safety Monitoring System Plasma Display and Keyboard. Manufactured by Westinghouse. Tag No. 11623Q5000A.	Qualified pending resolution of aging for qualified life.
2. Three-inch Air Operated Globe Valve. Manufactured by Copes-Vulcan, Model 3IA76RE. Tag No. 1HV8160.	Qualified
3. Boric Acid Transfer Pump. Manufactured by Crane Chempump, Model No. GUH-10K. Tag. No. 11208P6006M01.	Qualified
4. Reactor Coolant Filter Vessel. Manufactured by Permutit Co., Drawing No. N1E10125. Tag No. 1-1208-F4001.	Qualified
5. Strap-On Resistance Temperature Detector. Manufactured by Minco, Model 58809. Tag No. 1TE1313.	Qualified
6. Main Control Board. Manufactured by Electronic Power and Control, Drawing No. 1547E30. Tag No. 11601Q5MCB.	Qualified
7. Power Operated Relief Valve. Manufactured by Crosby/Garret. Tag No. 1PV0455A.	Documentation complete. Note 1
8. RHR 8-inch Isolation Valve. Manufactured by Westinghouse, Model No. 08002GM84FGB00. Tag No. HV8716A.	Qualified
9. Waste Gas Decay Tank. Manufactured by LAMCO Industries, Serial No. 794. Tag No. 11902V6001.	Qualified
10. Safety Injection Pump. Manufactured by Pacific Pump, Model 3-inch JHF. Tag No. 11204P6003.	Qualified

TABLE 2 (continued)
EQUIPMENT AUDIT BY SQRT AND PVORT

SQRT Audit Items (cont'd):

<u>Equipment</u>	<u>Seismic Qualification Findings</u>
11. Nuclear Instrumentation System CH. Manufactured by Westinghouse, Drawing No. 1062E37. Tag No. 11602Q5NIR.	Documentation complete. Note 1
12. Post Accident Monitoring System Process Indicator. Tag No. 1L102A.	Qualified
13. 480-Vdc Distribution Panel. Manufactured by Square D Company, Catalog No. 3262-8. Tag No. 1-1805-Q3-OPC.	Qualified
14. AC-Starter. Manufactured by Eaton Corporation.	Qualified
15. Auxiliary Feedwater Pump. Manufactured by Ingersoll-Rand Company, Size 6HMTA-5. Tag No. 1-302-P4-001.	Qualified pending resolution of: (1) including seismic loads in pressure boundary analysis; (2) using SSE loads in foundation support analysis; and (3) justification of stress limits.
16. Containment Building Normal Air Cooling Rack. Manufactured by CVI Corporation, Drawing No. B793-003 Rev E. Tag No. 1-1511-E1001.	Qualified pending resolution of evaluation of thermal stresses.
17. One-inch Y-Check Valve. Manufactured by Kerotest Manufacturing Corporation, Mark No. 616. Tag No. 1-1202-U4-1555.	Qualified
18. Time Delay Relay. Manufactured by Amerace Corporation, Model No. E7022 P0002. Tag No. A-62-12482.	Qualified for 7.1 years limited by thermal aging.
19. Nuclear Service Cooling Water Pump. Manufactured by Bingham-Willamette Co., Model 18 x 27B VCM.	Qualified
20. Shutdown Panel. Manufactured by Reliance Electric Co. Tag No. 1-1605-P5-SDB.	Qualified

TABLE 2 (continued)
EQUIPMENT AUDIT BY SQRT AND PVORT

SQRT Audit Findings (cont'd):

<u>Equipment</u>	<u>Seismic Qualification Findings</u>
21. Sixteen-inch Main Feedwater Isolation Valve. Manufactured by Anchor-Darling Valve Co., Model 1-900FWIN. Tag No. HV-5227.	Qualified
22. Battery. Manufactured by C&D Batteries, Model LCY-37. Tag No. 11806B3BYA. less.	Qualified pending maintenance program for change out in 10 years or
23. Engineered Safety Features Panel. Manufactured by Reliance, Model 944. Tag No. 11620Q5EST.	Qualified
24. Three-inch Flexible Wedge Gate Valve and Operator. Manufactured by Anchor Darling, Model 211.	Documentation complete Notes 1 and 2

PVORT Audit Items:

<u>Equipment</u>	<u>Operability Qualification Finding</u>
25. Eight-inch Swing Check. Manufactured by Westinghouse, Model 08001CS92000000. Tag No. 11206U6015.	Qualified
26. Three-inch Diaphragm Valve. Manufactured by ITT Grinnell, Model 3DA92R. Tag No. 1HV-7136.	Qualified
27. Twelve-inch Motor Operated Gate Valve. Manufactured by Westinghouse, Model 12001GM88SEH00000.	Qualified
28. Safety Injection Pump. Manufactured by Pacific Pump Co., Model 3JHF. Tag No. 11204P6004.	Qualified pending documentation of qualification to operate with debris.
29. Two-inch Control Valve. Manufactured by Fisher Corporation, Model 667-ss-95. Tag No. 1HV-8145.	Qualified (This valve has a lateral support. See Note 2.)

TABLE 2 (continued)
EQUIPMENT AUDIT BY SQRT AND PVORT

PVORT Audit Items:

<u>Equipment</u>	<u>Operability Qualification Finding</u>
30. Diesel Fuel Oil Transfer Pump. Manufactured by Johnston Pump, Model RG22V-MT, TEFC, EP. Tag No. 12403P4001.	Qualified
31. Ten-inch Butterfly Valve. Manufactured by Fisher Controls, Model 9280. Tag No. 1HV-1975.	Qualified
32. Nuclear Cooling Water Transfer Pump. Manufactured by Bingham-Willamette Company, Model 8 x 12A VCM. Tag No. 11202P4007.	Qualified
33. Three-inch Solenoid Valve. Manufactured by California Controls Company, Model T3603. Tag No. 1HV-9068A.	Qualified
34. Eight-inch Air Operated Gate Valve. Manufactured by Ancho Darling, Model Flexible Wedge. Tag No. AHV-19722.	Qualified
35. Main Steam Safety Valve. Manufactured by Crosby Valve Co., Model HA75FN. Tag No. 1PSV-3001.	Qualified
36. Sixteen-inch Tilting Disc Check Valve. Manufactured by Anchor Darling, Model ATLVO 771414617WCB. Tag No. 11305U4071.	Qualified pending documentation of flow measurements and trending analysis. Note 3.

NOTES:

1. These files were only reviewed to verify that the required documents were included. They were not reviewed for technical adequacy.
2. The VEGP personnel reported that this valve as well as some other valves have lateral supports on the operators. The qualification tests were performed with the actuators free. VEGP has a program in progress to evaluate the qualification of these valves. VEGP has agreed to inform the NRC of the results of the program and resolve this issue prior to fuel load.

NOTES:(continued)

3. In response to an audit request by the NRC, VEGP provided a description of their methodology for assuring that check valves operating in regions of flow disruption will not have undetected failure that would compromise their safety-related functions. The methodology included flow observations during plant operations. The NRC staff has requested classification of the flow measurements to be made for this purpose on the feedwater system.
-

ACRONYMS

BPC	-	Bechtel Power Corporation
EQDP	-	Equipment Qualification Data Package
EQTF	-	Equipment Qualification Task Force
FSAR	-	Final Safety Analysis Report
GPC	-	Georgia Power Company
IE	-	Office of Inspection and Enforcement
LOCA	-	Loss of Coolant Accident
MSLB	-	Main Steam Line Break
NRC	-	Nuclear Regulatory Commission
NRR	-	Office of Nuclear Reactor Regulation
NSSS	-	Nuclear Steam Supply System
PRM	-	Plant Reference Manual
PVORT	-	Pump and Valve Operability Review Team
RRT	-	Readiness Review Team
RG	-	NRC Regulatory Guides
SQRT	-	Seismic Qualification Review Team
VEGP	-	Vogtle Electric Generating Plant.