

VOGTLE ELECTRIC GENERATING PLANT

UNIT 2

READINESS REVIEW PROGRAM

MODULE 6 - ELECTRICAL EQUIPMENT

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PREFACE

Georgia Power Company (GPC), in order to gain added assurance of the operational readiness of the Vogtle Electric Generating Plant (VEGP), conducted a pilot Readiness Review Program for Unit 1. The VEGP pilot Readiness Review Program was a systematic, in depth self-assessment of work processes and verification of compliance with regulatory commitments. To accomplish the VEGP pilot Readiness Review Program, the work processes and regulatory commitments were divided into manageable segments called modules. There are 22 modules. Each module is a predefined scope of VEGP activities.

Each module provides a brief description of the method of complying with project licensing commitments pertaining to the module scope and is not intended to make further commitments or to revise in any way prior commitments.

Activities common to several modules are defined in General Appendixes. There are seven appendixes. These appendixes, as appropriate, are referenced in the modules and are augmented in each module with module-scope-specific details as needed.

The VEGP pilot Readiness Review Program was conducted on a schedule to provide added operational readiness assurance to GPC management in support of the VEGP Unit 1 operating license. Conclusions reached regarding programmatic and technical adequacy through review of VEGP Unit 1 are indicative of Unit 2, since both units are being designed and constructed together under a single quality assurance program; with like management controls, procedures, specifications, and criteria.

The Unit 2 Readiness Review Program extends the results of the Unit 1 review by assessing activities, hardware, and documents within the scope of selected modules and ascertaining compliance with licensing requirements.

The VEGP Unit 2 Readiness Review Program is being conducted on a schedule to provide added operational readiness assurance to GPC management in support of the VEGP Unit 2 operating license.

The VEGP Readiness Review Program is not intended to eliminate or to diminish any authorities or regulatory responsibilities now assigned to or exercised by the Nuclear Regulatory Commission or GPC. Further, the Readiness Review Program is not intended to change the techniques of inspections or assurance of quality program activities. Rather, the VEGP Readiness Review Program is an added program initiated by GPC management to assess the VEGP and to provide additional feedback to management so that they may initiate any needed corrective actions in an orderly and timely manner.

The work processes and regulatory commitment compliance covered by each module scope will be assessed by, and the module prepared and reviewed by, individuals collectively familiar with the design, construction, and preoperational processes of nuclear power plants. It is the collective opinion of the Readiness Review Task Force, Readiness Review Board, and GPC management that, based on their experience, the methodology used in the module process will assess, on a programmatic basis, the adequacy of project commitment implementation.

Readiness Review findings and resulting dispositions are reviewed by the Project Quality Assurance staff and are input into the normal project process for safety significance and potential reportability evaluations in accordance with regulatory requirements.

EXECUTIVE SUMMARY

This module documents a review process conducted to ascertain whether the design and construction aspects of Class 1E electrical equipment in Unit 2 of the Vogtle Electric Generating Plant (VEGP) comply with licensing commitments and whether compliance is verifiable using existing project documentation. Class 1E electrical equipment includes items such as transformers, switchgear, motor control centers, distribution panels, batteries, and electrical penetration assemblies.

The review program for Unit 2 used the results of the Unit 1 review program as a base, and focused on differences between the units. These differences included added or revised licensing commitments and program changes resulting from project development or corrective actions to Nuclear Regulatory Commission (NRC) findings, project findings, design changes, or hardware modifications. The review consisted of technical and programmatic evaluations of the design and construction processes and results. Project documents such as design criteria and procedures; design output such as specifications, drawings, and calculations; and construction results such as installed hardware and quality documentation were examined during the review.

Discrepancies noted during review activities were issued to the Project as findings. Following receipt and evaluation of the response, the findings were categorized as follows to indicate their relative importance:

- Level I - Violation of licensing commitments, project procedures, or engineering requirements with indication of safety concern.
- Level II - Violation of licensing commitments or engineering requirements with no safety concern.
- Level III - Violation of project procedures with no safety concern.

The Readiness Review Program evaluation of electrical equipment in VEGP Unit 2 consisted of three major activities:

Commitment Implementation Review

Readiness Review has maintained the listing of commitments for design and construction developed during the Unit 1 Readiness Review Program through review of Final Safety Analysis Report (FSAR) amendments and letters to the NRC. The Project Engineering and Construction organizations were issued the listing of commitments applicable to this module at the beginning of the review period; and the Project

provided Readiness Review with updated implementation information which is presented in Section 3.

Unit 1 Finding Followup

During the assessment of Unit 1, the project committed to the performance of certain corrective actions. For Unit 2, Readiness Review provided Project Engineering and Construction with a list of Unit 1 findings and corresponding corrective actions. These groups evaluated those applicable to Unit 2 activities and informed Readiness Review as to the action taken. The listing of Unit 1 findings and Unit 2 actions is presented in Section 5.

Assessment

The Unit 2 assessment of electrical equipment consisted of an evaluation of commitment implementation, Unit 1 finding followup, and an assessment of design and construction activities to ascertain project compliance to commitments.

During the assessment, Readiness Review verified, by selective sampling, the updated implementation and Unit 1 finding followup information provided by the Project.

During the assessment of design and construction, Readiness Review chose a sample of design documents and installed equipment to verify acceptance to specified criteria and conformance to installation and procedural requirements. Seven pieces of equipment, four electrical penetrations, and approximately 200 documents were examined.

Nine findings were issued during the assessment. One was classified as Level I, two as Level II, and six as Level III.

The Level I finding, 2RRF-006-011, identified a difference between the wiring-fire separation criteria stated in the FSAR and those listed in the construction specification K3AR01. Preliminary evaluation of this condition on Deficiency Evaluation Report 186 resulted in notification to the NRC of a potentially reportable condition (CDR-M140). Final resolution is scheduled for March 1, 1987.

The Level II and III findings were judged to be instances of procedure noncompliance or inadequate procedural requirements with no safety concern and do not indicate, either individually or collectively, programmatic concerns.

Readiness Review Conclusion:

Based on the results of the review, and the implementation of effective corrective actions as committed to by the Project, Readiness Review concludes that adequate programs exist to ensure: the quality of design and construction; objective evidence that quality has been documented; and the licensing commitments within the scope of this module have been implemented.

MODULE 6
ELECTRICAL EQUIPMENT

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1 INTRODUCTION

1.1 SCOPE

This module is one in a series of modules that provides an evaluation of the design, construction, and preoperational testing of the Vogtle Electric Generating Plant Unit 2. It is intended to describe the method of complying with the project commitments found in the Final Safety Analysis Report (FSAR) and is not intended to make further commitments or revise prior commitments. If any differences exist between the commitments discussed in this document and the FSAR, those differences are unintentional and the FSAR shall take precedence and shall define the project commitments.

The scope of this module encompasses safety-related (Class 1E) electrical equipment. This equipment is listed in the plant equipment index under the 16XX and 18XX series and consists primarily of large, floor mounted assemblies, and wall mounted regulating transformers. The following categories of equipment are included:

- o Switchgear.
- o Motor control centers.
- o Distribution panels.
- o Control room panels.
- o Batteries.
- o Chargers.
- o Inverters.
- o Penetrations.

Motors are discussed in Modules 4, 16, 18A, and 20 and instruments are discussed in Modules 18A and 20.

The checks, reviews, inspections, audits, and verifications performed to ensure the adequacy of design and construction functions are examined. The organizations responsible for performing design and construction activities are identified and the work activities that the organizations perform are described. Also, the project commitments for electrical equipment are identified, the method of implementation is listed, and the results of a review for compliance to the committed requirements are presented.

This module addresses those project commitments identified through Amendment 33 of the FSAR. The effective date of this module is July 1, 1987, and changes to the included programs, organizations, commitments, etc., occurring after this date are not necessarily addressed.

1.2 MODULE ORGANIZATION

This module is divided into the following sections:

1. Introduction.
2. Organization - A brief description of the project organizations and their division of responsibilities as applicable to this module.
3. Commitments - Project licensing commitments pertaining to safety-related electrical equipment as found in the Final Safety Analysis Report, responses to generic letters, and responses to Inspection and Enforcement Bulletins. This section also lists the documents that demonstrate implementation of these commitments.
4. Program Description - A brief description of the processes for design and construction applicable to the scope of this module.
5. Audits and Inspections - Listings of Quality Assurance (QA) audits and findings and Nuclear Regulatory Commission (NRC) inspections and violations applicable to the scope of the module and conducted since the Unit 1 module. A description of special investigations is provided. The Readiness Review findings and NRC violations from the Unit 1 module activity are listed, the corrective actions are presented, and their applicability to Unit 2 is indicated.
6. Program Assessment - A description of the assessment plan development, plan implementation, and results, including corrective actions.
7. Assessment of Module Adequacy - The evaluations and conclusions by the Project, QA, and the Readiness Review Board of the module.
8. Assessment Plan - The assessment plan and checklists utilized by the Readiness Review Team.

1.3 PROJECT STATUS

As of the July 1, 1987, the design of safety-related electrical equipment was essentially complete and Construction had mounted most of the equipment.

Unit 2 work in progress includes termination of cables internal to the equipment and replacement of Unit 2 components transferred to Unit 1 during startup.

2 ORGANIZATION

2.1 INTRODUCTION

Georgia Power Company (GPC), acting on its own behalf and as agent for the Oglethorpe Power Corporation, the Municipal Electric Authority of Georgia, and the City of Dalton is responsible for the design, procurement, construction, and operation of the Vogtle Electric Generating Plant (VEGP). GPC administers the overall quality assurance program, provides procurement services, controls materials issue, performs quality control inspections, and provides construction services for calibration, tests, inspections, document control, and nonconformance control.

Bechtel Western Power Company (BWPC) is contracted by GPC to provide architect/engineering (A/E) services for plant equipment/systems contained within the Seismic Category I structures and is responsible for the overall design coordination of all plant equipment/systems.

Southern Company Services (SCS) provides A/E services for plant equipment systems contained within the Seismic Category II structures (including the switchyard) and provides supplier quality assurance reviews.

Cleveland Consolidated is the installer for all Class 1E electrical equipment and is responsible for installation and field fabrication activity.

Figure 2-1 shows the overall Project organizational structure. The following sections contain brief descriptions of the individual GPC, BWPC, SCS, and Cleveland Consolidation groups that perform activities concerning safety-related electrical equipment.

2.2 DESIGN

A brief description of the Project Engineering and the GPC organizations that perform design activities related to or interfacing with safety-related (Class 1E) equipment is presented in this section.

2.2.1 PROJECT ENGINEERING

Project Engineering is responsible for design of Class 1E equipment with the exception of protective relaying as discussed in 2.2.2. This responsibility is divided between two Project organizations; Design Engineering (DE), and Installation Engineering (IE). These organizations are comprised of personnel from Bechtel Western Power Company (BWPC) and Southern Company Services, with BWPC having overall design responsibility. The overall project engineering organizational structure is shown on Figure 2-2.

2.2.1.1 Design Engineering

DE is located at the jobsite with support staff in Norwalk, California. The design of Class 1E equipment is primarily performed by the electrical discipline with specialty support provided by the Environmental Qualification Group.

The electrical design group is divided into five groups under the direction of the electrical engineering group supervisor (EGS). These groups are Site Design Engineering, Systems Design, Controls Wiring, Physical Design, and Circuits and Raceway. Their functions are listed in Figure 2-3. Responsibility for the design of electrical equipment rests primarily with the Systems Design Group, with assistance provided by the Physical Design and the Controls Wiring Groups.

2.2.1.2 Installation Engineering

IE is located at the jobsite and is primarily responsible for resolution of field problems identified by the Project Construction organization. IE is responsible for updating the construction specification for installation of electrical equipment. They also serve as the primary contact for the Construction Discipline for resolution of field interferences and problems, and coordinate with DE the solution to field identified problems. IE reports to the Georgia Power Company (GPC) Electrical Discipline for project direction and to the electrical project engineer and the EGS, site design engineering, for technical direction. The IE organizational structure is shown on Figure 2-3.

2.2.2 GEORGIA POWER COMPANY

The System Protection and Control Department of GPC is responsible for the development and implementation of the protection policy for the GPC transmission system, generating plants, and distribution substations.

Protection Engineering, which reports to System Protection and Control, is responsible for carrying out this policy and is specifically responsible for the selection and setting of Vogtle Electric Generating Plant protective relays, including Class 1E protective relays.

The organizational structure of the GPC System Protection and Control Department is shown on Figure 2-4.

2.3 CONSTRUCTION

Project Construction is responsible for installation, maintenance, and inspection of Class 1E equipment. This responsibility is divided between the Electrical Discipline, Civil Discipline, and Quality Control organizations. These organizations are comprised of personnel from Georgia Power Company (GPC), and contractors reporting to GPC. A brief description of these groups is given below. The overall project construction organization is shown on Figure 2-5.

2.3.1 ELECTRICAL DISCIPLINE

The Electrical Discipline organization shown on Figure 2-6, is divided into four groups under the direction of the electrical discipline manager. These groups are: Electrical Installation, Installation Engineering (IE), Systems Completion, and Cleveland Consolidated. Cleveland Consolidated is the electrical contractor performing the actual hardware installation and is responsible for providing craft and supervisory personnel. The Electrical Installation Group performs construction support activities such as approving material requisitions, providing craft with vendor and design document information, providing maintenance information to the Construction Maintenance Organization (CMO), and initiating and/or revising field procedures. They are also responsible for meeting established schedules and resolution of quality problems. IE, as described in section 2.2.1.2, performs design activities to support resolution of field identified interferences.

The Systems Completion Group is primarily responsible for ensuring that the equipment is ready for turnover to the Startup organization and for completion of items subsequent to turnover.

2.3.2 QUALITY CONTROL

Quality Control, whose organization is shown on Figure 2-7, is responsible for inspection and acceptance of the electrical equipment. The Electrical Inspection Group is the primary inspection group. The inspectors are qualified and certified as discussed in Appendix F. Table 2-1 gives a summary of the certification requirements for electrical equipment inspection. The Civil/Mechanical Inspection Group performs inspections for housekeeping and maintenance of electrical equipment in conjunction with the CMO group.

2.3.3 GEORGIA POWER COMPANY CIVIL DISCIPLINE

The CMO is part of the Civil Discipline and is responsible for cleanliness, protection, and periodic maintenance of all permanent plant equipment during the construction phase.

2.4 ORGANIZATIONAL CHANGES

In January 1987, the design organization, then comprised of Home Office Engineering (HOE) and Project Field Engineering (PFE) was restructured to better support the construction effort. The major elements of this restructuring were:

- o Transfer of personnel from Norwalk (HOE) to the site. This onsite core group, along with the few remaining personnel in Norwalk, became Design Engineering (DE).
- o Relocation of PFE personnel from one central onsite location to individual groups located in proximity to each construction discipline. These groups became Installation Engineering (IE).
- o Designation of a single engineering group supervisor for each design discipline with overall responsibility for DE and IE work.
- o Design activities in direct support of construction work were assigned to the IE groups.
- o Design activities of a general or oversight nature were assigned to the DE group.
- o Control of the Project Reference Manual, the Design Manual, and responsibility for providing technical direction to the IE groups were assigned to DE.

TABLE 2-1

DETAILS OF ELECTRICAL EQUIPMENT INSPECTOR CERTIFICATION

The following work activities may be inspected using this certification:

- o Electrical equipment installation.
- o Rigging and lifting of equipment.
- o Penetrations.
- o Electrical instrumentation.

The following courses are required for certification:

- o Basic Math I.
- o Basic Blueprint.
- o Installation of Electrical Equipment^(a) which includes:
 - Drawings.
 - Codes/standards/specifications/procedures.
 - Grounding.
 - Penetration Assemblies.
 - Equipment.
 - Rigging and lifting.

a. Certification in visual inspection or an American Welding Society certification is required when weld inspections are performed.

LEGEND

— PROJECT DIRECTION
--- ADMINISTRATIVE DIRECTION

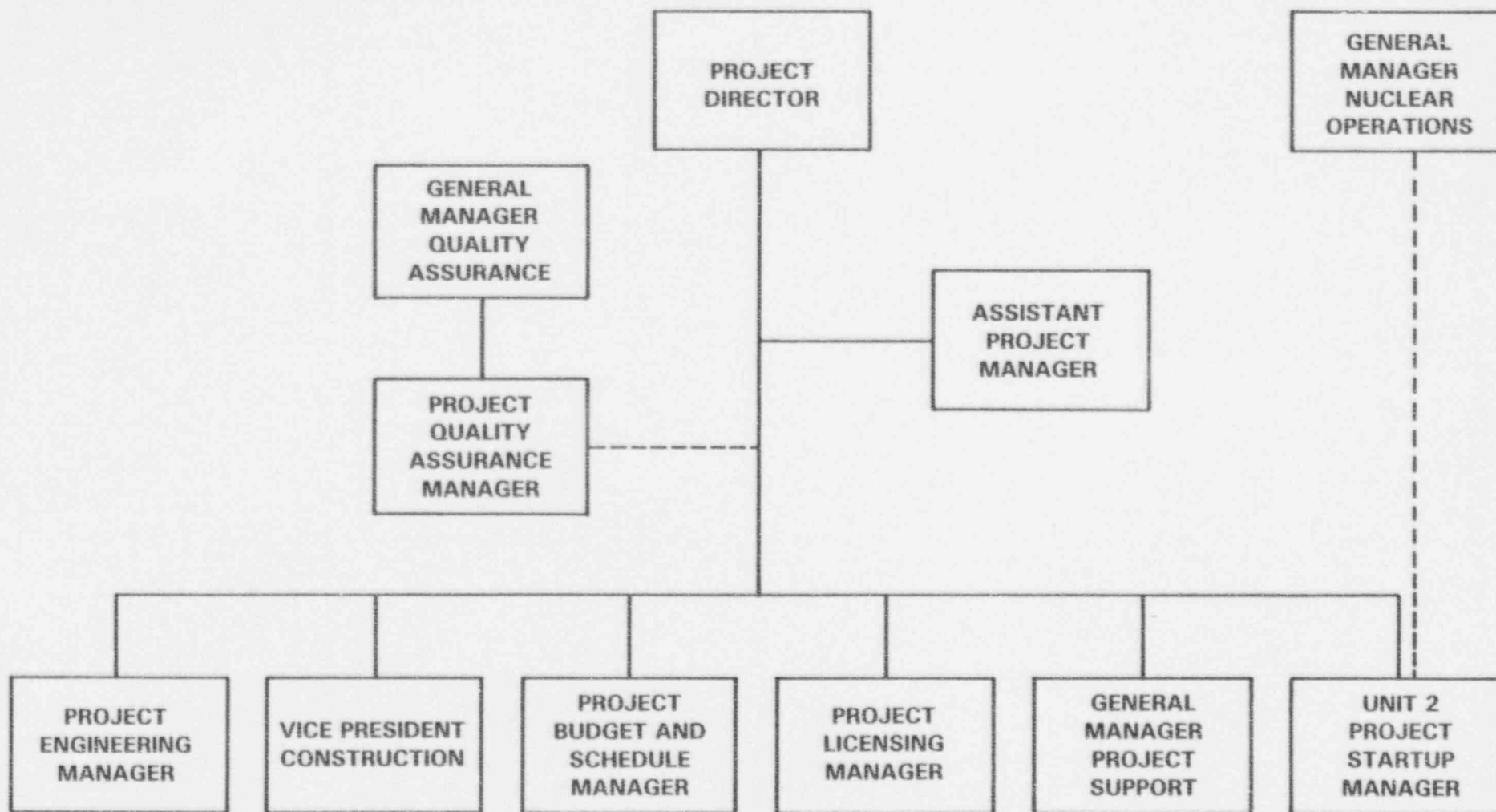


Figure 2-1 Project Organization

LEGEND

- PROJECT DIRECTION
- ADMINISTRATIVE DIRECTION
- FUNCTIONAL, TECHNICAL AND ADMINISTRATIVE DIRECTION

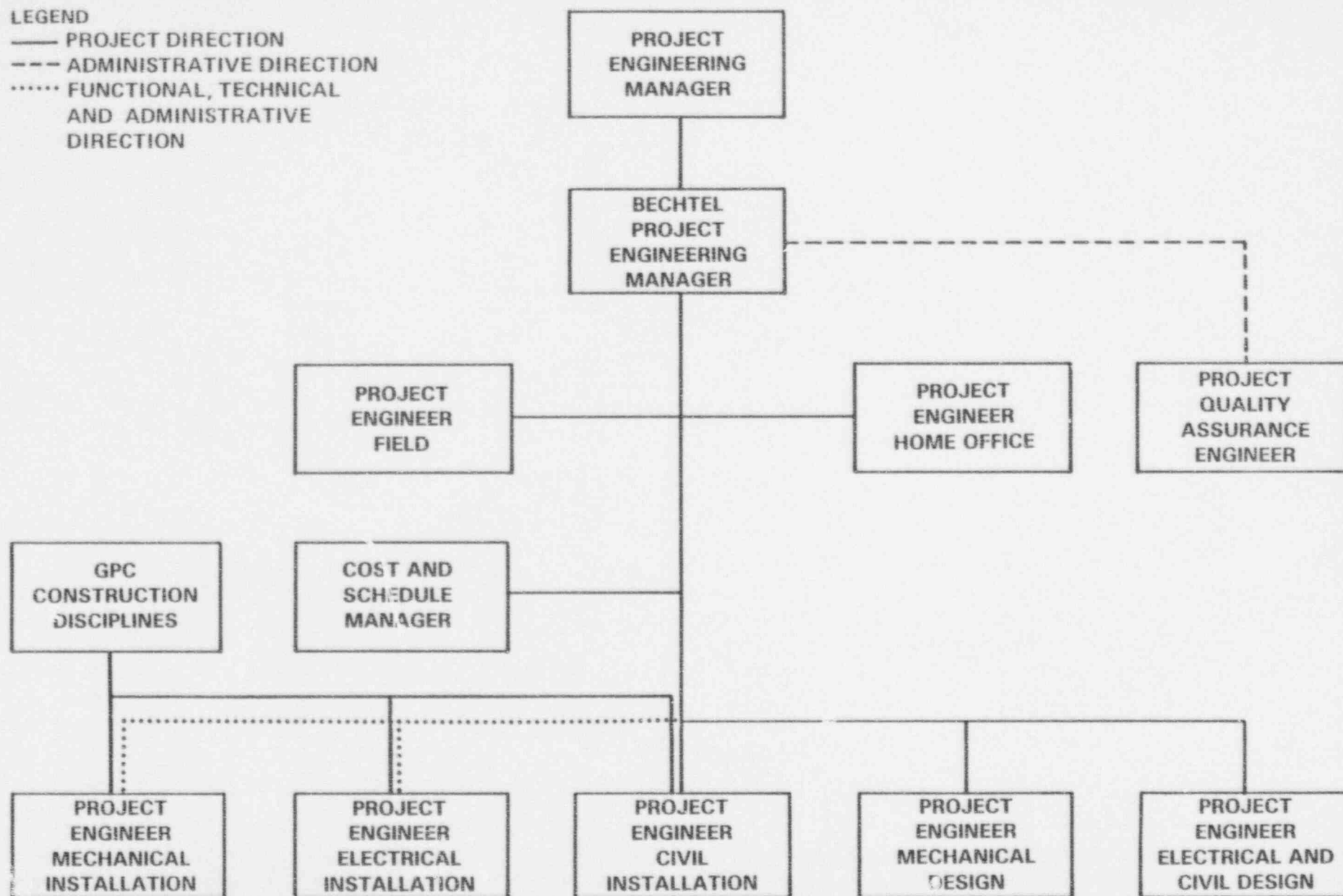


Figure 2-2 Project Engineering

(DESIGN ENGINEERING)

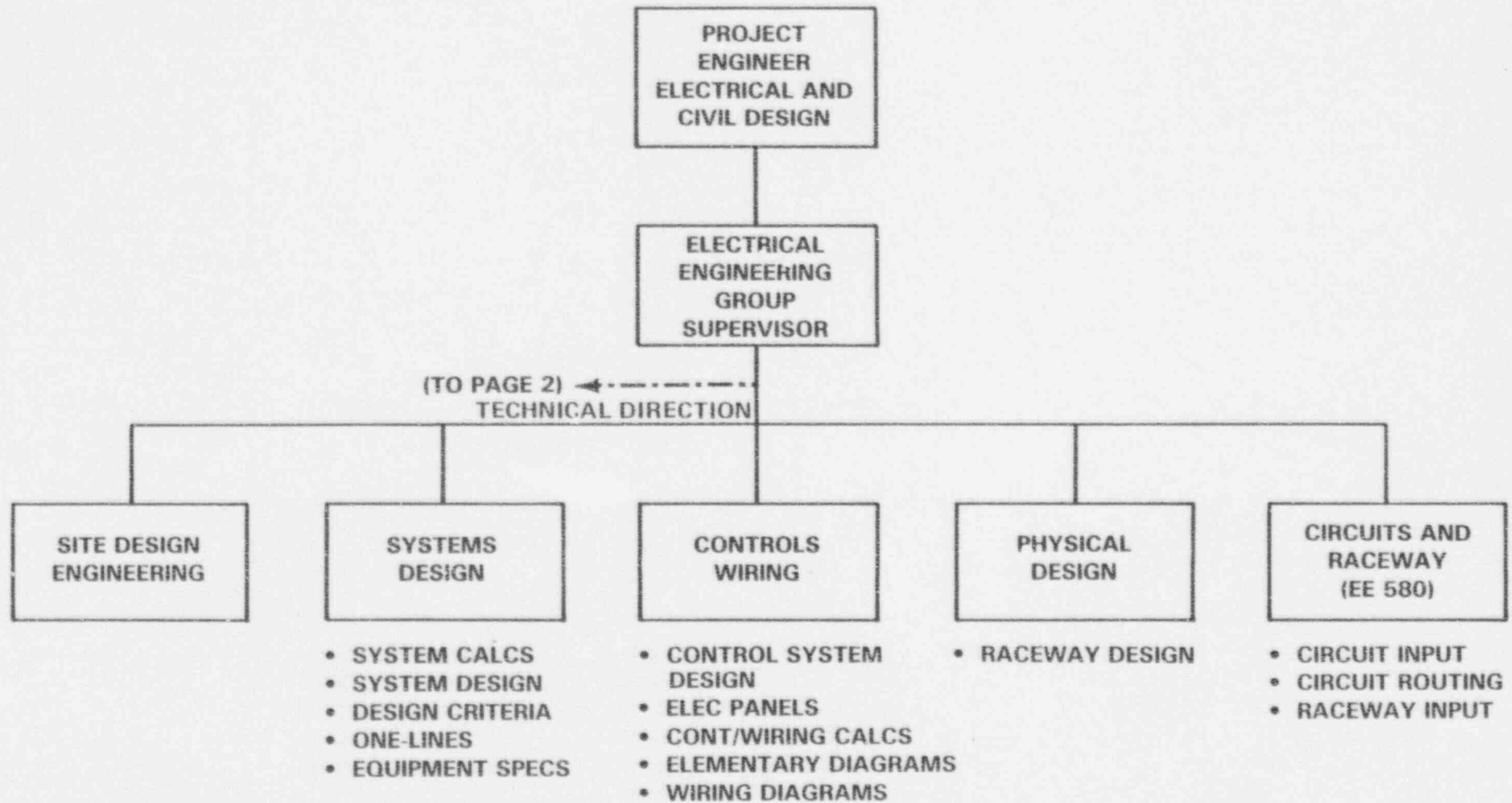


Figure 2-3 Project Electrical Engineering (Sheet 1 of 2)

(INSTALLATION ENGINEERING)

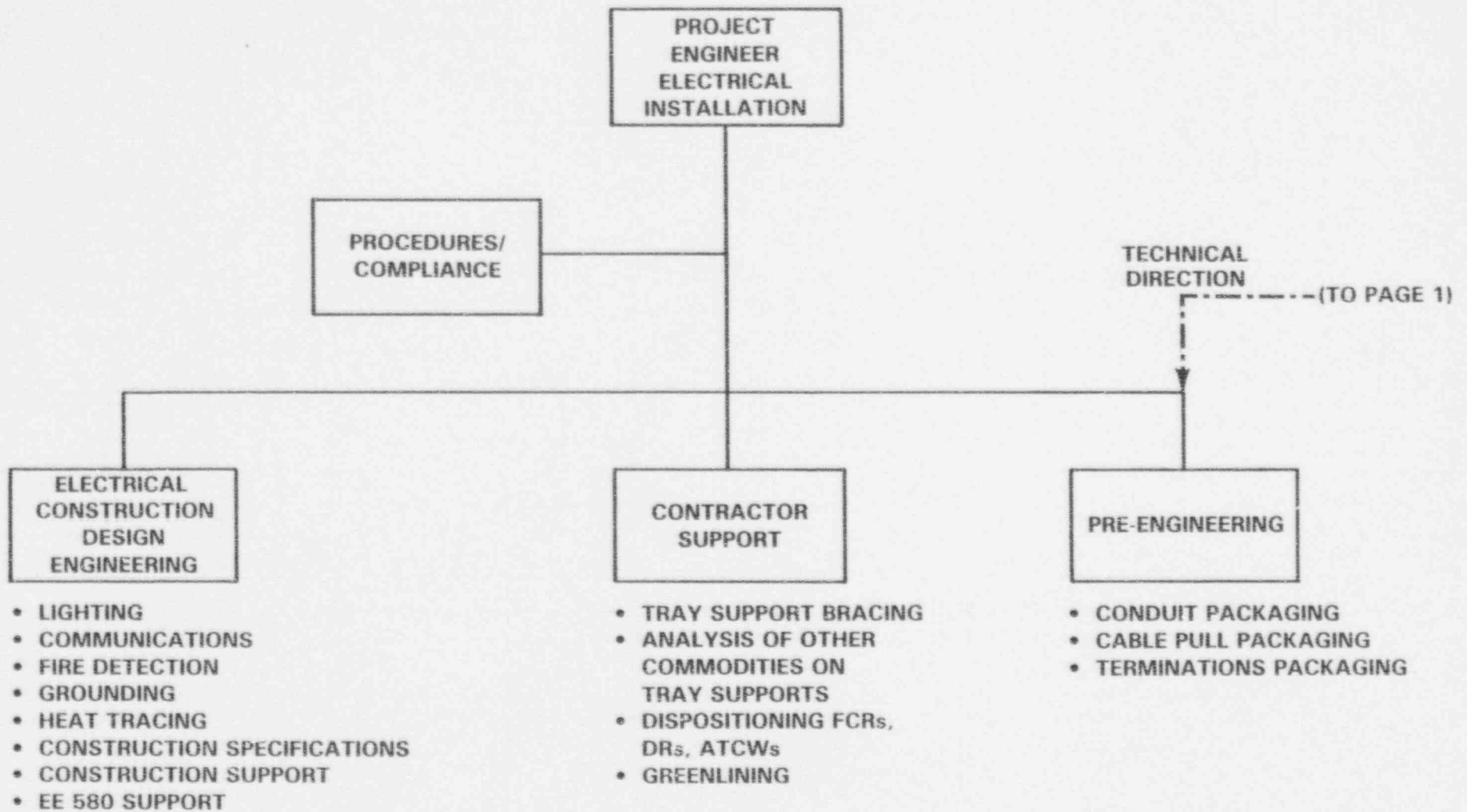


Figure 2-3 Project Electrical Engineering (Sheet 2 of 2)

LEGEND

— PROJECT DIRECTION

--- ADMINISTRATIVE DIRECTION

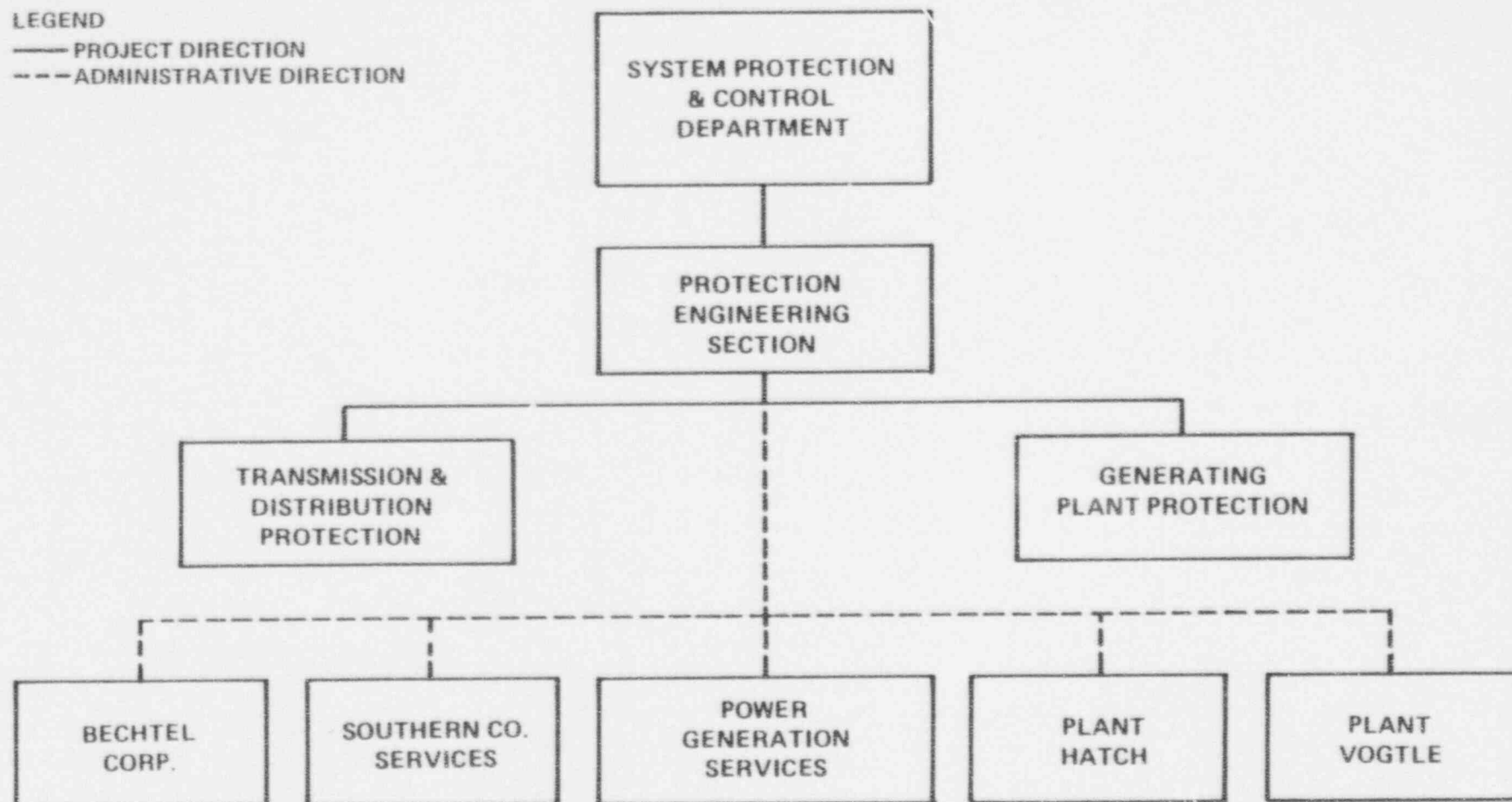


Figure 2-4 GPC System Protection and Control Department

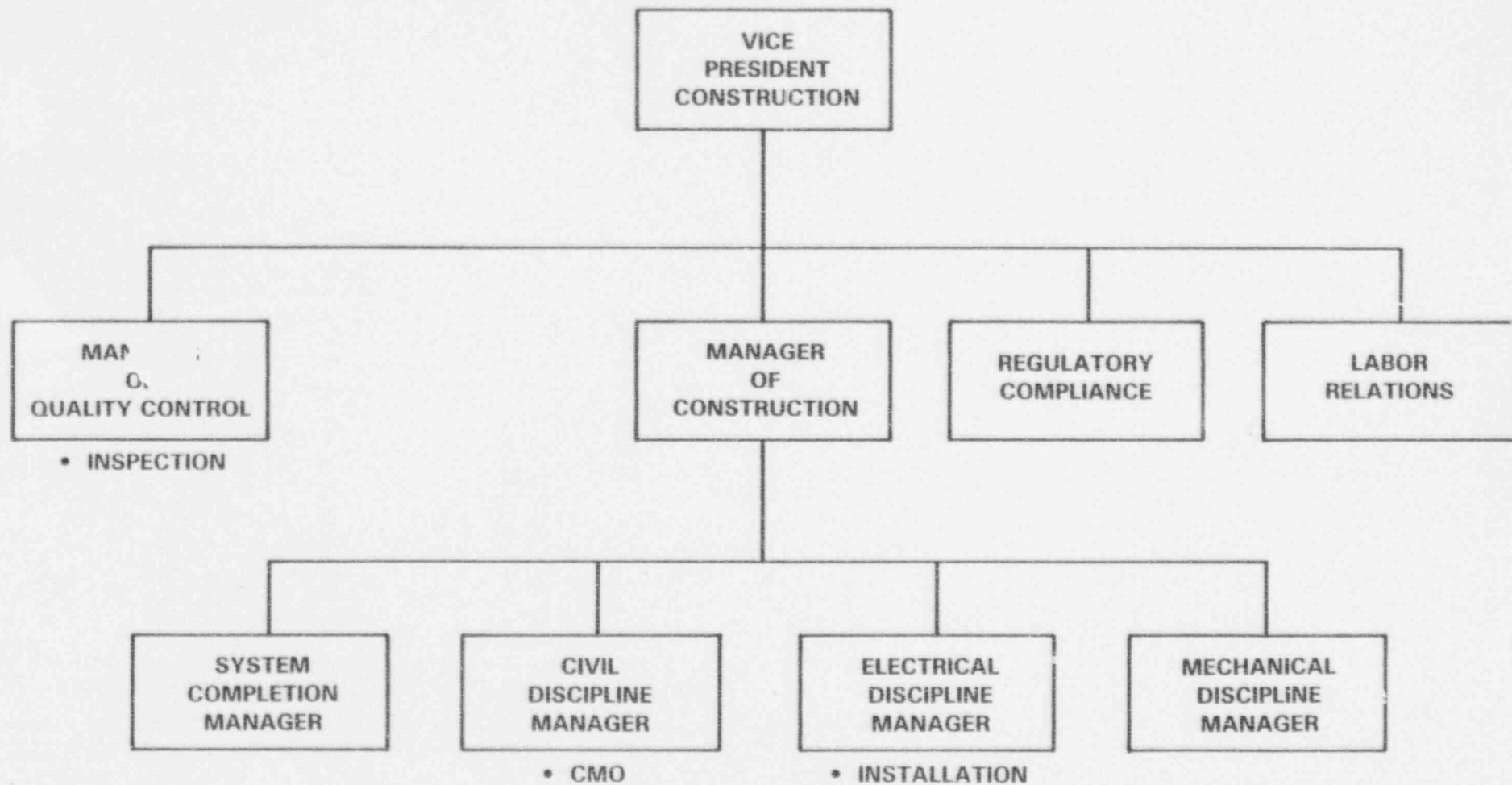


Figure 2-5 Construction Organization

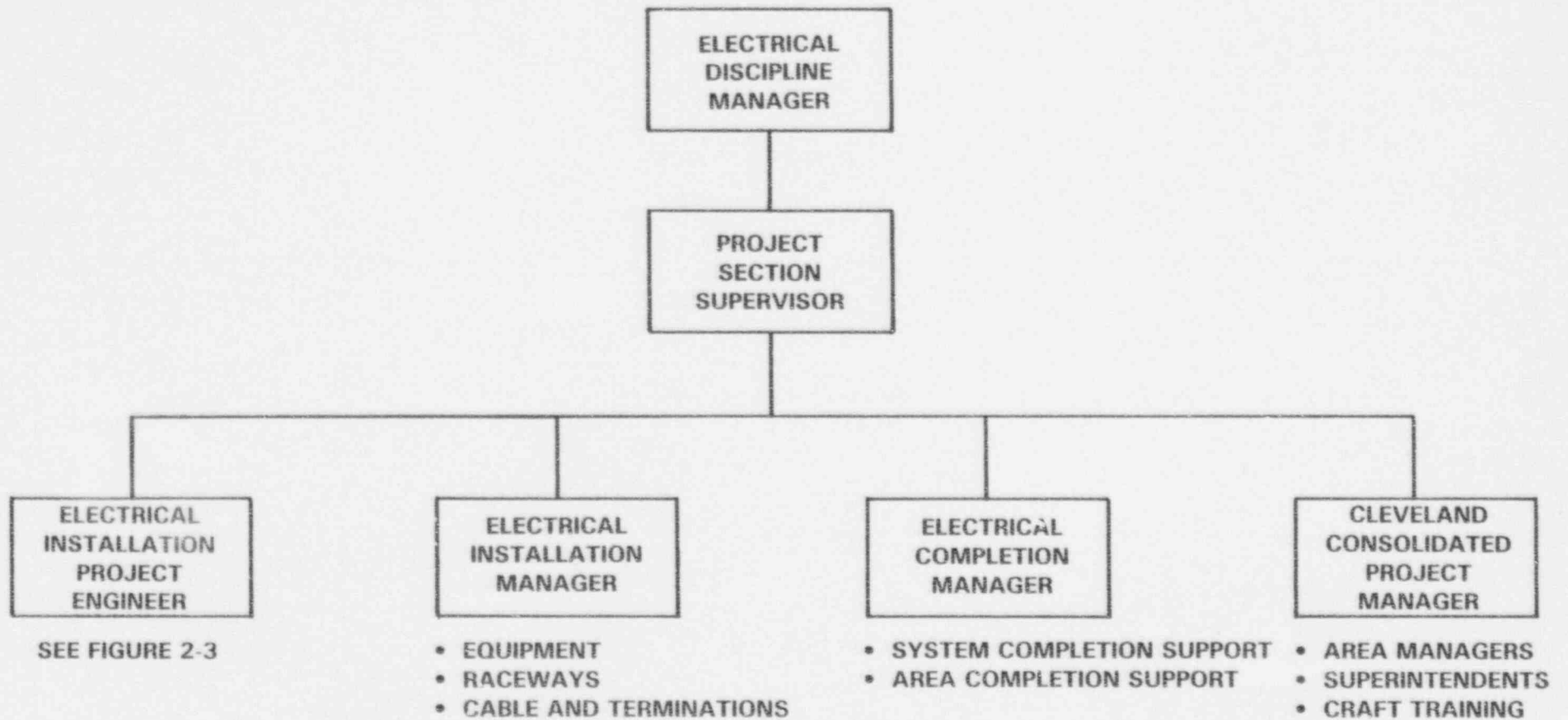


Figure 2-6 Electrical Discipline

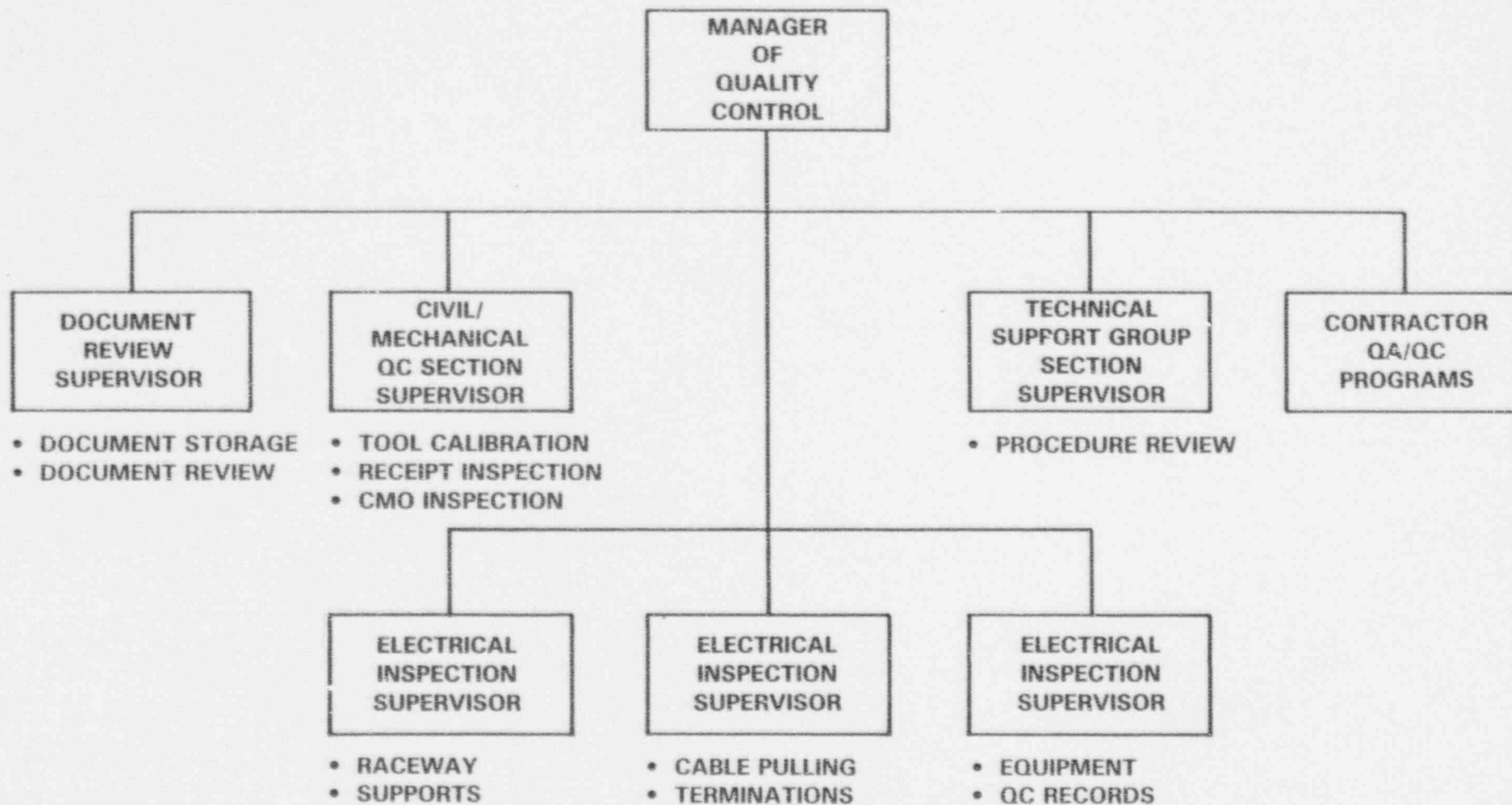


Figure 2-7 GPC Quality Control

3 COMMITMENTS

3.1 INTRODUCTION

This section contains, in matrix form, licensing and project commitments and the corresponding implementing documents. These are presented in two matrices; the commitment matrix and the implementation matrix.

Commitments

A commitment is an obligation to comply with the described requirements of an industry standard, Regulatory Guide, Branch Technical Position, or owner plan of specific action. For the purposes of Readiness Review, commitments are identified from the following sources:

- o Final Safety Analysis Report (FSAR), including responses to Nuclear Regulatory Commission (NRC) questions.
- o Responses to Inspection and Enforcement Bulletins.
- o Correspondence to the NRC.

These sources were reviewed and commitments were selected for inclusion on the matrix using the following guidelines:

- o Specific design and or construction requirement.
- o Specific standards of acceptance.
- o Specific cited technical data used as a design basis and/or unique design methodology.
- o Specific codes, standards, or regulatory requirements.

Descriptions, detailed data and/or parameters resulting from design activities, general codes, and regulations are not generally considered licensing commitments. These include:

- o Dimensions.
- o System operational concepts or operational descriptions.
- o Design calculation details such as strength parameters, flow rates, etc.
- o References to general standards such as 10 CFR 50, American Society of Mechanical Engineers, American Concrete Institute, etc. (specific requirements from such bodies, however, are commitments).

Implementation

An implementing document is a working level document that imposes the requirements of the commitment to a specific activity. Implementation of commitments is typically found in the following:

- o Design Criteria.
- o Material Specifications.
- o Construction Specifications.
- o Project Reference Manual.
- o Field Procedure Manual.
- o Startup Manual.
- o Drawings

Additionally, the Project has a commitment to comply with 10 CFR 50, Appendix B, Quality Assurance Criteria, and industrial standards such as American National Standards Institute (ANSI) ANSI/ASME N45.2 and N45.2.11. Although they were not identified as specific commitments in this module, Readiness Review considered the applicable requirements of these types of commitments in preparing and assessing the scope of work presented by this module.

Differences, if any, between the commitments discussed in this section and the FSAR are unintentional and the commitments in the FSAR take precedence.

3.2 COMMITMENT AND IMPLEMENTATION MATRICES

During the Unit 1 Readiness Review Program, the task force performed a systematic review of licensing documents and identified the project commitments. Once identified, these commitments were listed in a document called the commitment matrix. Readiness Review has maintained the matrix current for design and construction through review of Final Safety Analysis Report (FSAR) Amendments and letters to the Nuclear Regulatory Commission. Additionally, during the Unit 1 Readiness Review, the task force identified project controls that implemented the commitment requirements (i.e., design criteria, specifications, construction procedures, etc.) and listed them on a document called the implementation matrix. For Unit 2, the commitment matrix and implementation matrix were transmitted to the appropriate Project organizations for updating the implementation matrix data to reflect the latest implementing documents. Upon completion, the updated matrix was returned to Readiness Review, who verified the accuracy, on a selective sampling basis, as described in Section 6.

Changes in module commitments from those presented in the Unit 1 module are identified by a vertical row of "X's" in the left margin of the commitment matrix.

The commitment and implementation matrices are presented following this section and are current through Amendment 33 of the FSAR.

PLANT VOGTLE UNIT 2 READINESS REVIEW PROGRAM
COMMITMENT MATRIX

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=====
REF. COMMITMENT COMMITMENT      COMMITMENT      DOCUMENT/      MOD DES CON FSAR REMARKS
NUMBER SOURCE   SECTION        SUBJECT        FEATURE        ULE IGN ST  AMEN
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EXPLANATION OF FIELDS

REF. NO. - A reference number that corresponds to the appropriate line entry in the implementation matrix

COMMITMENT SOURCE - The document containing the commitment (FSAR, Generic Letter, I.E. Bulletin Response, etc.)

COMMITMENT SECTION - Identifies the FSAR section, letter number, or question number

COMMITMENT SUBJECT - The subject of the FSAR section or Generic Letter

DOCUMENT/FEATURE - The document discussed in the FSAR section or the plant feature described in the FSAR section

MODULE - The module for which the commitment is implemented

DESIGN/CONSTRUCTION - An X is placed under the heading for the organization responsible for implementation of the commitment

FSAR AMENDMENT - FSAR amendment number for revised commitments in zero (0) is placed in this column for changes made prior to Amendment 33 (start of Unit 1 Readiness Review)

NOTE:

Commitment changes from those presented in the Unit 1 module are identified by a vertical row of X's in the left margin.

PLANT VOGTLE UNIT 2 READINESS REVIEW PROGRAM
COMMITMENT MATRIX
CURRENT THRU FSAR AMENDMENT 33
=====

REF. NUMBER	COMMITMENT SOURCE	COMMITMENT SECTION	COMMITMENT SUBJECT	DOCUMENT/FEATURE	MOD ULE	DES IGN	CON ST	FSAR AMEN	REMARKS
=====	=====	=====	=====	=====	=====	=====	=====	=====	=====
108.00	FSAR	1. 2. 12. 1	SINGLE FAILURE, REDUNDANCY & INDEPENDENCE CRITERIA	IEEE 279-1971	06	X		0	
1491.00	FSAR	1. 2. 12. 1. 2.1	SINGLE FAILURE, REDUNDANCY AND INDEPENDENCE CRITERIA	IEEE 279-1971	06	X		0	
1503.00	FSAR	1. 3. 2-1	BATTERY SIZING	BATTERY SIZED TO PROVIDE DC POWER FOR 2-3/4 HOUR @55 DEGREES F	06	X		0	SEE SECTION 8.3
1601.00	FSAR	1. 9. 6. 2	INDEPENDENCE BETWEEN REDUNDANT STAND-BY (ON-SITE) POWER SOURCES AND THEIR DISTRIBUTION SYSTEM	RG 1.6, REV. 0, 3/71	06	X		0	SEE FSAR SECTIONS 8.3.1.1.2.D, 8.1 AND 8.3
1602.00	FSAR	1. 9. 22	PERIODIC TESTING OF PROTECTION SYSTEM ACTUATION FUNCTIONS	RG 1.22, REV. 0 (FEB. 72) EXCEPT AS INDICATED IN FSAR SECTION 1.9.22.2 AND 7.1.2.5	06	X		0	SEE FSAR 7.1.2.5
126.00	FSAR	1. 9. 29	SEISMIC DESIGN CLASSIFICATION	RG 1.29, REV. 3, 9/78	06	X		0	REF. TABLE 3.2.2-1
686.00	FSAR	1. 9. 30	Q.A. REQUIREMENTS FOR INSTALL., INSP., & TESTING OF INSTRUMENTATION & ELECTRIC EQUIPMENT	RG 1.30, 8/72	06	X	X	0	
687.00	FSAR	1. 9. 30	Q.A. REQUIREMENTS FOR INSTALL., INSP., & TESTING OF INSTRUMENTATION & ELECTRIC EQUIPMENT	ANSI N45.2.4-1972	06	X	X	0	

PLANT VOGTLE UNIT 2 READINESS REVIEW PROGRAM
COMMITMENT MATRIX
CURRENT THRU FSAR AMENDMENT 33
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REF. NUMBER	COMMITMENT SOURCE	COMMITMENT SECTION	COMMITMENT SUBJECT	DOCUMENT/FEATURE	MOD ULE	DES IGN	CON ST	FSAR AMEN	REMARKS
688.00	FSAR	1. 9. 30	Q.A. REQUIREMENTS FOR INSTALL., INSP., & TESTING OF INSTRUMENTATION & ELECTRIC EQUIPMENT	IEEE 336-1971	06	X	X	0	
131.00	FSAR	1. 9. 32	CRITERIA FOR SAFETY-RELATED ELECTRIC POWER SYSTEMS FOR NUCLEAR POWER PLANTS	RG 1.32, REV. 2, 2/77	06	X		0	SEE REG. GUIDE 1.6, 1.9, 1.75, 1.81 AND 1.93. SEE FSAR 8.1 AND 8.3
132.00	FSAR	1. 9. 32	CRITERIA FOR SAFETY-RELATED ELECTRIC POWER SYSTEMS FOR NUCLEAR POWER PLANTS	IEEE 308-1974	06	X		0	
133.00	FSAR	1. 9. 32. 1	CRITERIA FOR SAFETY-RELATED ELECTRIC POWER SYSTEMS FOR NUCLEAR POWER PLANTS	10CFR50, APP. A, GDC 17	06	X		0	
134.00	FSAR	1. 9. 32. 1	CRITERIA FOR SAFETY-RELATED ELECTRIC POWER SYSTEMS FOR NUCLEAR POWER PLANTS	10CFR50, APP. A, GDC 18	06	X		0	
1551.00	FSAR	1. 9. 53. 2	APPLICATION OF SINGLE FAILURE CRITERION	RG 1.53, REV. 0, 6/73	06	X		0	REF. 7.1.2.6 & 15.0.8
2188.00	FSAR	1. 9. 61	DAMPING VALUES FOR SEISMIC DESIGN	RG 1.61, 10/73	06	X		0	
157.00	FSAR	1. 9. 63	PENETRATION ASSEMBLIES	RG 1.63, REV. 2, 7/78	06	X		0	EXCEPTIONS NOTED IN FSAR 1.9.63

PLANT VOGTLE UNIT 2 READINESS REVIEW PROGRAM
COMMITMENT MATRIX
CURRENT THRU FSAR AMENDMENT 33
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REF. COMMITMENT NUMBER SOURCE	COMMITMENT SECTION	COMMITMENT SUBJECT	DOCUMENT/ FEATURE	MOD DES CON ULE IGN ST AMEN	FSAR REMARKS
160.00 FSAR	1. 9. 75	PHYSICAL INDEPENDENCE OF ELECTRIC SYSTEMS	RG 1.75, REV. 2, 9/78	06 X X	0 SEE SECTION 7.1.2.2
171.00 FSAR	1. 9. 81	SHARED EMERGENCY AND SHUTDOWN SYSTEMS FOR MULTI-UNIT NUCLEAR POWER PLANTS	RG 1.81, REV. 1, 1/75	06 X	0 SEE FSAR 8.1
172.00 FSAR	1. 9. 89	QUALIFICATION FOR CLASS IE EQUIPMENT	RG 1.89, REV. 0, 11/74	06 X	0 SEE FSAR 3.11.B.
173.00 FSAR	1. 9. 89. 1	QUALIFICATION FOR CLASS IE EQUIPMENT	IEEE 323-1974	06 X	0 WCAP-8587 IMPLEMENTS IEEE 323-1974 FOR NSSS EQUIPMENT. SEE 3.11.B
174.00 FSAR	1. 9. 92	COMBINING MODAL RESPONSES AND SPATIAL COMPONENTS IN SEISMIC RESPONSE ANALYSIS	RG 1.92, REV. 1, 2/76	06 X	0 SEE SECTION 3.7.B.2.7, 3.7.B.3.6 & 3.7.B.3.7.
175.00 FSAR	1. 9.100	SEISMIC QUALIFICATION OF CLASS IE ELECTRIC EQUIPMENT	RG 1.100 REV. 1, 8/77	06 X	0 SEE FSAR 3.10.B.2
177.00 FSAR	1. 9.106	THERMAL OVERLOAD PROTECTION FOR ELECTRIC MOTORS ON MOTOR OPERATED VALVES.	RG 1.106, REV. 1, 3/77	06	0 SECTION C.2 NOT APPLICABLE.
1610.00 FSAR	1. 9.106	THERMAL OVERLOAD PROTECTION FOR ELECTRIC MOTORS ON MOTOR OPERATED VALVE.	RG 1.106/IEEE 279-1971, SECTION 4.1, 4.2, 4.3, 4.4, 4.5, 4.10 AND 4.13	06 X	0 PARA. #8.3.1.1.2, ITEM K5

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NUMBER SOURCE	SECTION	SUBJECT	FEATURE	ULE IGN ST AMEN	
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182.00 FSAR	1. 9.128	INSTALLATION DESIGN AND INSTALLATION OF LARGE LEAD STORAGE BATTERIES	RG 1.128, REV. 1, 10/78	06 X	0 SEE FSAR 8.1 AND 8.3
4114.00 FSAR	3. 1. 1	CONFORMANCE WITH NUCLEAR REGULATORY COMMISSION GENERAL DESIGN CRITERIA, OVERALL REQUIREMENTS.	10CFR50, APP. A, GDC 06 2	X	0
4115.00 FSAR	3. 1. 1	CONFORMANCE WITH NUCLEAR REGULATORY COMMISSION GENERAL DESIGN CRITERIA, OVERALL REQUIREMENTS.	10CFR50, APP. A, GDC 06 4	X	0
4116.00 FSAR	3. 1. 1	CONFORMANCE WITH NUCLEAR REGULATORY COMMISSION GENERAL DESIGN CRITERIA, OVERALL REQUIREMENTS	10CFR50, APP. A, GDC 06 5	X	0
4118.00 FSAR	3. 1. 2	PROTECTION BY MULTIPLE FISSION PRODUCT BARRIERS	10CFR50, APP. A, GDC 06 17	X	0
4119.00 FSAR	3. 1. 2	PROTECTION BY MULTIPLE FISSION PRODUCT BARRIERS	10CFR50, APP. A, GDC 06 18	X	0
4132.00 FSAR	3. 1. 5	REACTOR CONTAINMENT	10CFR50, APP. A, GDC 06 50	X	0
835.00 FSAR	3. 2. 2-1	CLASSIFICATION OF STRUCTURES, COMPONENTS, SYSTEMS	RG. 1.29-NOTE (e)	06 X	0

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849.00	FSAR	3. 2. 2-1	OFFSITE POWER SYS.	OFFSITE POWER EQUIPMENT IS DESIGNED AND ARRANGED TO PROVIDE REDUNDANCY AND SEPARATION FOR INCREASED RELIABILITY	06	X		0	
4370.00	FSAR	3. 7.8. 1-1	DAMPING VALUES FOR FIXED BASE STRUCTURES AND COMPONENTS	PERCENT OF CRITICAL DAMPING PER MODE	06	X		0	
981.00	FSAR	3. 7.8. 1. 3	SEISMIC DAMPING VALUES FOR ITEMS OTHER THAN CABLE TRAYS AND SUPPORT SYSTEM	RG 1.61	06	X		0	REFER TO REF. NO. 4370
1016.00	FSAR	3. 7.8. 3. 6	THREE COMPONENTS OF EARTHQUAKE MOTION	IEEE 344-1975 FOR QUALIFICATION BY TESTING.	06	X		0	ANALYSIS MEETS RG 1.92
1978.00	FSAR	3. 8. 2. 3	STEEL CONTAINMENT, LOAD & LOAD COMBINATION, CLASS MC ITEMS	ASME III, NE3000	06	X		0	SEE FSAR SECTIONS 3.8.2.1 THRU 3.8.2.1.5 FOR DESCRIPTION OF CLASS MC ITEMS.
1984.00	FSAR	3. 8. 2. 3	STEEL CONTAINMENT, LOAD AND LOAD COMBINATIONS	RG 1.57	06	X		0	
1113.00	FSAR	3. 8. 2. 4	ELECTRICAL PENETRATION ASSEMBLIES	ASME III, NE3000, 1977 THROUGH SUMMER 1979 ADDENDA.	06	X		0	

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1991.00	FSAR	3. 8. 2. 6	STEEL CONTAINMENT, CLASS MC MATERIALS	ASME III, NE2000	06	X			0 SEE FSAR SECTION 3.8.2.1 FOR LIST OF CLASS MC COMPONENTS
1993.00	FSAR	3. 8. 2. 7	STEEL CONTAINMENT, CLASS MC ITEMS, TESTING	ASME III, NE6000	06	X			0
1117.00	FSAR	3. 8. 2. 8	STANDARD REVIEW PLAN EVALUATION	ASME III, NE3000	06	X			0
1994.00	FSAR	3. 8. 2. 8	STEEL CONTAINMENT, CLASS MC ITEMS, LOAD & LOAD COMBINATION	ASME III, NE3000	06	X			0
1995.00	FSAR	3. 8. 2. 8	STEEL CONTAINMENT, CLASS MC ITEMS, LOAD & LOAD COMBINATION	RG 1.57	06	X			0 NOTE: SECTION 3.8.2.8 REFERS TO SECTION 1.9.57 AND SECTION 1.9.57 REFERS TO SECTION 3.8.2.8 FOR CONFORMANCE
1202.00	FSAR	3.10.B. 1	SEISMIC QUAL. AND DOCUMENTATION FOR SAFETY RELATED EQUIP. AND SUPPORTS.	IEEE 344-1975	06	X			0
1203.00	FSAR	3.10.B. 1	SEISMIC QUALIFICATION AND DOCUMENTATION FOR SAFETY RELATED EQUIP., AND SUPPORTS	RG 1.100	06	X			0
2007.00	FSAR	3.10.B. 1	SEISMIC QUALIFICATION OF CATEGORY I MECHANICAL & ELECTRICAL BOP EQUIPMENT, CRITERIA	SEISMIC CATEGORY I SAFETY RELATED MECHANICAL & ELECTRICAL EQUIPMENT IS QUALIFIED TO WITHSTAND THE EFFECTS OF SEISMIC LOADS RESULTING FROM OBE AND SSE	06	X			0

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1199.00	FSAR	3.10.B. 2. 1	MEANS OF QUALIFICATION	SEISMIC- THE OBES SHALL CONTAIN A MINIMUM OF 50 CYCLES OF MAXIMUM STRESS	06	X		0	
1206.00	FSAR	3.10.B. 2. 1	MEANS OF SEISMIC QUALIFICATION OF MECH. & ELECT. EQUIP.	IEEE 344-1975	06	X		0	
1207.00	FSAR	3.10.B. 2. 1	MEANS OF SEISMIC QUALIFICATION OF MECH. & ELECT. EQUIP.	RG 1.100	06	X		0	
1210.00	FSAR	3.10.B. 2. 1	MEANS OF QUALIFICATION	SEISMIC-ALL INTERFACES AND THE EFFECTS OF THE AMPLIFICATION WITHIN THE EQUIPMENT DUE TO THE INTERFACES AND SUPPORTING STRUCTURES ARE CONSIDERED IN THE SEISMIC QUALIFICATION.	06	X		0	
1213.00	FSAR	3.10.B. 2. 2	MEANS OF SEISMIC QUALIFICATION TESTING BY MULTI-FREQ. OR SINGLE FREQ. INPUTS	RG 1.100	06	X		0	
1215.00	FSAR	3.10.B. 2. 2	METHOD OF SEISMIC QUAL. ANALYSIS W/O TESTING	IEEE 344-1975, SECT. 5	06	X		0	

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REF. COMMITMENT NUMBER SOURCE	COMMITMENT SECTION	COMMITMENT SUBJECT	DOCUMENT/ FEATURE	MOD DES CON ULE IGN ST AMEN	FSAR REMARKS
1216.00 FSAR	3.10.B. 2. 2	ANALYSIS	SEISMIC-WHEN AN EQUIVALENT STATIC COEFFICIENT ANALYSIS IS PERFORMED, JUSTIFICATION FOR ITS USE IS PROVIDED BY THE SUPPLIER	06 X	0
1220.00 FSAR	3.10.B. 2. 2. 2	METHOD OF SEISMIC QUALIFICATION TESTING	IEEE 344-1975, SECT. 6	06 X	0
1217.00 FSAR	3.10.B. 2. 2. 3	COMBINED ANALYSIS AND TEST METHOD OF EQUIP. QUALIFICATION	IEEE 344-1975, SECTION 7	06 X	0 EQUIP. QUAL. TEST METHODS OF PARA. 3.10.B.2.2.1 & 3.10.B.2.2.2 APPLY
1219.00 FSAR	3.10.B. 2. 2. 4	METHOD OF SEISMIC QUALIFICATION TEST SEQUENCE VERIFICATION	IEEE 323-1974, SECT. 6	06 X	0
1228.00 FSAR	3.10.B. 4. 1	QUALIFICATION AND DOCUMENTATION PROCEDURES	RG 1.100	06 X	0
1229.00 FSAR	3.10.B. 4. 1	QUALIFICATION AND DOCUMENTATION PROCEDURES	IEEE 344-1975	06 X	0
1231.00 FSAR	3.10.B. 4. 2.E	STANDARD REVIEW PLAN EVALUATION - SEISMIC QUALIFICATION OF BOP EQUIPMENT	BC-TOP-4A USED AS GUIDANCE FOR COMBINATION OF MULTIMODAL RESPONSE	06 X	0 MEETS INTENT OF RG 1.92
1262.00 FSAR	3.11.B. 2	ACCEPT. CRIT. ENV. QUAL. SAFETY RELATED EQUIPMENT	RG 1.89	06 X	0

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1263.00	FSAR	3.11.B. 2	QUALIFICATION TESTS AND ANALYSES. TYPE TESTING.	IEEE 323-1974	06	X		0	
1264.00	FSAR	3.11.B. 2	QUALIFICATION TESTS AND ANALYSES	RG 1.100	06	X		0	
X 1268.00	FSAR	3.11.B. 2	QUALIFICATION TESTS AND ANALYSES. ACCEPT. CRIT. FOR ENV. QUAL. SAFETY REL. EQUIPMENT	SUPPLIERS OF SAFETY-RELATED ELECTRICAL & MECHANICAL EQUIPMENT MUST MEET IEEE 323-1974 PARA 6.3.2 SEQUENCE REGARDLESS OF EQUIPMENT LOCATION IN THE PLANT	06	X		27	
1269.00	FSAR	3.11.B. 2	QUALIFICATION TESTS AND ANALYSES	NUREG-0588	06	X		0	
264.00	FSAR	5. 4. 1. 1	DESIGN BASES	TMI ACTION ITEM II.K.3.25	06	X		0	WESTINGHOUSE LETTERS OG-110 (12-11-83), & OG-117 (3-9-83)
2343.00	FSAR	5. 4. 1. 3. 8	RCP OVERSPEED CONSIDERATION	RCP OVERSPEED - FOR TURBINE TRIPS BY REACTOR TRIP SYSTEM OR TURBINE PROTECTION SYSTEM GENERATOR, AND RCP's REMAIN CONNECTED FOR 30 SECONDS	06	X		0	WCAP 8163
2390.00	FSAR	6. 1. 1. 1	SPEC. FOR PRINCIPAL PRESSURE - RETAINING MATERIAL	ASME III, NE-2000 (CONT. PENETRATING MATERIALS)	06	X		0	REFERENCE TO TABLES 3.2.2-1 AND 5.2.3-1.

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NUMBER SOURCE	SECTION	SUBJECT	FEATURE	ULE IGN ST	AMEN	
2399.00 FSAR	6. 2. 2. 1. 1. 1.0	CONTAINMENT COOLING SYSTEM SAFETY DESIGN BASES	RG 1.32	06 X		0
2445.00 FSAR	6. 2. 5. 2. 1	ELECTRIC HYDROGEN RECOMBINER	EACH RECOMBINER IS POWERED FROM A SEPARATE SAFEGUARD BUS AND IS PROVIDED WITH A SEPARATE POWER PANEL AND CONTROL PANEL.	06 X		0
4483.00 FSAR	7. 1. 2. 1. 3.E	INSTRUMENTATION AND CONTROL POWER SUPPLY SYSTEM - RTS	IEEE STD. 308-1974 SECT. 5.4	06 X		0
4549.00 FSAR	7. 6. 1. 2	I & C POWER SUPPLY SYSTEM ANALYSIS	IEEE 308-1974	06 X		0
4808.00 FSAR	7. 6. 1. 2	I & C POWER SUPPLY SYSTEM ANALYSIS	RG 1.6	06 X		0
4809.00 FSAR	7. 6. 1. 2	I & C POWER SUPPLY SYSTEM - ANALYSIS	VITAL AC-NO SINGLE FAILURE IN THE I & C POWER SUPPLY SYSTEM OR ASSOCIATED POWER SUPPLIES CAN CAUSE LOSS OF POWER TO MORE THAN ONE OF THE REDUNDANT LOADS.	06 X		0
2360.00 FSAR	8. 1-1	ACCEPTANCE CRITERIA/GUIDELINES FOR ELECTRIC POWER SYSTEMS	10CFR50, APP.A, GDC 2	06 X		0

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NUMBER SOURCE	SECTION	SUBJECT	FEATURE	ULE IGN ST AMEN	
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2361.00 FSAR	8. 1-1	ACCEPTANCE CRITERIA/GUIDELINES FOR ELECTRIC POWER SYSTEMS	10CFR50, APP.A, GDC 4	06 X	0
2362.00 FSAR	8. 1-1	ACCEPTANCE CRITERIA/GUIDELINES FOR ELECTRIC POWER SYSTEMS	10CFR50, APP.A, GDC 5	06 X	0
2363.00 FSAR	8. 1-1	ACCEPTANCE CRITERIA/GUIDELINES FOR ELECTRIC POWER SYSTEMS	10CFR50, APP.A, GDC 17	06 X	0
2364.00 FSAR	8. 1-1	ACCEPTANCE CRITERIA/GUIDELINES FOR ELECTRIC POWER SYSTEMS	10CFR50, APP. A, GDC 18	06 X	0
2365.00 FSAR	8. 1-1	ACCEPTANCE CRITERIA/GUIDELINES FOR ELECTRIC POWER SYSTEMS	10CFR50, APP. A, GDC 50	06 X	0
2366.00 FSAR	8. 1-1	ACCEPTANCE CRITERIA/GUIDELINES FOR ELECTRIC POWER SYSTEMS	RG 1.6	06 X	0
2368.00 FSAR	8. 1-1	ACCEPTANCE CRITERIA/GUIDELINES FOR ELECTRIC POWER SYSTEMS	RG 1.32	06 X	0
2369.00 FSAR	8. 1-1	ACCEPTANCE CRITERIA/GUIDELINES FOR ELECTRIC POWER SYSTEMS	RG 1.47	06 X	0

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2370.00 FSAR	8. 1-1	ACCEPTANCE CRITERIA/GUIDELINES FOR ELECTRIC POWER SYSTEMS	RG 1.63	06 X	0
2371.00 FSAR	8. 1-1	ACCEPTANCE CRITERIA/GUIDELINES FOR ELECTRIC POWER SYSTEMS	RG 1.75	06 X	0
2372.00 FSAR	8. 1-1	ACCEPTANCE CRITERIA/GUIDELINES FOR ELECTRIC POWER SYSTEMS	RG 1.81	06 X	0
2373.00 FSAR	8. 1-1	ACCEPTANCE CRITERIA/GUIDELINES FOR ELECTRIC POWER SYSTEMS	RG 1.106	06 X	0
2375.00 FSAR	8. 1-1	ACCEPTANCE CRITERIA/GUIDELINES FOR ELECTRIC POWER SYSTEMS	RG 1.118	06 X	0
2376.00 FSAR	8. 1-1	ACCEPTANCE CRITERIA/GUIDELINES FOR ELECTRIC POWER SYSTEMS	RG 1.128	06 X X	0
2380.00 FSAR	8. 1-1	ACCEPTANCE CRITERIA/GUIDELINES FOR ELECTRIC POWER SYSTEMS	BTP ICSB 11(PSB)	06 X	0
2382.00 FSAR	8. 1-1	ACCEPTANCE CRITERIA/GUIDELINES FOR ELECTRIC POWER SYSTEMS	BTP ICSB 21	06 X	0

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2383.00 FSAR	8. 1-1	ACCEPTANCE CRITERIA/GUIDELINES FOR ELECTRIC POWER SYSTEMS	BTP PSB-1	06 X	0
2180.00 FSAR	8. 1. 4. 2.A	ON SITE POWER SYSTEM	10CFR50, APP.A, GDC 17	06 X	0
4810.00 FSAR	8. 1. 4. 2.B	ON SITE POWER SYSTEM - CAPABILITY OF EACH ON SITE 1E AC POWER SYSTEM TO MAINTAIN ONE UNIT SAFE CONDITIONS	10CFR50, APP. A, GDC 17	06 X	0
94.00 FSAR	8. 1. 4. 2.E	ELECTRIC POWER DESIGN BASES ON SITE POWER	10CFR50, APP. A, GDC 5	06 X	0
4813.00 FSAR	8. 1. 4. 2.F	ON SITE POWER SYSTEM-SINGLE FAILURE CRITERIA	10CFR50, APP.A, GDC 17	06 X	0
2181.00 FSAR	8. 1. 4. 2.G	ON SITE POWER SYSTEM	BATTERIES ARE SIZED FOR 165 MINUTES OF OPERATION WITHOUT SUPPORT OF BATTERY CHARGERS	06 X	0
4814.00 FSAR	8. 1. 4. 2.L	ON SITE POWER SYSTEM - PERIODIC TEST CAPABILITIES OF CLASS 1E EQUIPMENT.	10CFR50, APP. A, GDC 18	06 X	0
2.00 FSAR	8. 1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS	10CFR50, APP. A, GDC 4	06 X	0

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3.00	FSAR	8. 1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS	10CFR50, APP. A, GDC 06 5		X		0	
4.00	FSAR	8. 1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS	10CFR50, APP. A, GDC 06 18		X		0	
5.00	FSAR	8. 1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS	10CFR50, APP. A, GDC 06 50		X		0	
6.00	FSAR	8. 1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS	RG 1.6	06	X		0	
8.00	FSAR	8. 1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS	RG 1.22	06	X		0	
9.00	FSAR	8. 1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS	RG 1.29	06	X		0	
10.00	FSAR	8. 1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS	RG 1.30	06	X		0	
11.00	FSAR	8. 1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS	RG 1.32	06	X		0	
13.00	SAR	8. 1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS	RG 1.41	06	X		0	
14.00	FSAR	8. 1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS	RG 1.47	06	X		0	

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15.00	FSAR	8. 1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS	RG 1.53	06	X		0	
17.00	FSAR	8. 1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS	RG 1.63	06	X		0	
18.00	FSAR	8. 1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS	RG 1.75, REV. 2, 9/78	06	X	X	0	SEE TABLE 8.1-1
19.00	FSAR	8. 1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS	RG 1.81	06	X		0	
20.00	FSAR	8. 1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS	RG 1.89, 11/74	06	X		0	
21.00	FSAR	8. 1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS	RG 1.93	06	X		0	
22.00	FSAR	8. 1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS	RG 1.100, REV. 1, 8/77	06	X		0	
23.00	FSAR	8. 1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS	RG. 1.106	06	X		0	
24.00	FSAR	8. 1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS	RG 1.128	06	X	X	0	
26.00	FSAR	8. 1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS	IEEE 279-1971	06	X		0	

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27.00	FSAR	8. 1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS	IEEE 308-1974	06	X	X	0	
28.00	FSAR	8. 1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS	IEEE 317-1976	06	X	X	0	
29.00	FSAR	8. 1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS	IEEE 323-1974	06	X		0	
31.00	FSAR	8. 1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS	IEEE 336-1971	06	X		0	REF. FSAR 1.9.30
32.00	FSAR	8. 1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS	IEEE 344-1975	06	X		0	
33.00	FSAR	8. 1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS	IEEE 379-1972	06	X		0	
35.00	FSAR	8. 1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS	IEEE 384-1974	06	X	X	0	
36.00	FSAR	8. 1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS	IEEE 484-1975	06	X	X	0	
95.00	FSAR	8. 1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS	10CFR50 APP.A, GDC2	06	X		0	
2352.00	FSAR	8. 1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS	10CFR50, APP.A, GDC17	06	X		0	SEE TABLE B.1-1

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2354.00	FSAR	8. 1. 4. 3	COMPLIANCE WITH RG & IEEE STANDARDS	RG 1.118	06	X		0	
2355.00	FSAR	8. 1. 4. 3	COMPLIANCE WITH RG & IEEE STANDARDS	RG 1.129	06	X		0	
2356.00	FSAR	8. 1. 4. 3	COMPLIANCE WITH RG & IEEE STANDARDS	IEEE 338-1977	06	X		0	
37.00	FSAR	8. 2. 1. 1	OFFSITE SOURCES	OFFSITEPOWER-NATIONA L BUREAU OF STANDARDS HANDBOOK NO. 8 (NATIONAL ELECTRICAL SAFETY CODE PART 2)	06	X		0	
38.00	FSAR	8. 2. 1. 1	OFFSITE SOURCES	OFFSITE POWER SYSTEM HAS THE CAPACITY AND CAPABILITY TO SUPPLY THE POWER NECESSARY FOR THE SAFETY LOADS OF ONE UNIT WHILE PLACING THE OTHER IN COLD SHUTDOWN	06	X		0	
41.00	FSAR	8. 2. 2. 4	CONFORMANCE TO CRITERIA (PREFERRED POWER SOURCES)	10CFR50, APP. A, GDC 4	06	X		0	
42.00	FSAR	8. 2. 2. 4	CONFORMANCE TO CRITERIA (PREFERRED POWER SOURCES)	10CFR50. APP. A, GDC 17	06	X		0	
43.00	FSAR	8. 2. 2. 4	CONFORMANCE TO CRITERIA (PREFERRED POWER SOURCES)	10CFR50, APP. A, GDC 18	06	X		0	
44.00	FSAR	8. 2. 2. 5	STANDARDS AND GUIDES	ANSI C37.010 - 1972	06	X		0	

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45.00	FSAR	8. 2. 2. 5	STANDARDS AND GUIDES	ANSI C37.90 - 1971	06	X		0	
46.00	FSAR	8. 2. 2. 5	STANDARDS AND GUIDES	ANSI C57.12.00 - 1973	06	X		0	
53.00	FSAR	8. 3. 1. 1	DESIGN CRITERIA FOR CLASS IE EQUIPMENT	ANSI C37.010 - 1972	06	X		0	
54.00	FSAR	8. 3. 1. 1	DESIGN CRITERIA FOR CLASS IE EQUIPMENT	ANSI C37.06 - 1971	06	X		0	
55.00	FSAR	8. 3. 1. 1	DESIGN CRITERIA FOR CLASS IE EQUIPMENT	ANSI C37.13 - 1973	06	X		0	
56.00	FSAR	8. 3. 1. 1	DESIGN CRITERIA FOR CLASS IE EQUIPMENT	NEMA AB1-1975	06	X		0	
63.00	FSAR	8. 3. 1. 1	RESIDUAL HEAT REMOVAL ISOLATION VALVE POWER SUPPLY	IEEE 323	06	X		0	
64.00	FSAR	8. 3. 1. 1	RESIDUAL HEAT REMOVAL ISOLATION VALVE POWER SUPPLY	IEEE 344	06	X		0	
96.00	FSAR	8. 3. 1. 1	AC POWER SYSTEMS CLASS IE QUALIFICATION-INTERC ONNECTIONS	IEEE 323	06	X		0	
97.00	FSAR	8. 3. 1. 1	AC POWER SYSTEMS CLASS IE QUALIFICATION-INTERC ONNECTIONS	IEEE 344	06	X		0	
98.00	FSAR	8. 3. 1. 1	AC POWER SYSTEMS CLASS IE INTERCONNECTIONS	RG 1.75	06	X		0	

PLANT VOGTLE UNIT 2 READINESS REVIEW PROGRAM
COMMITMENT MATRIX
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REF. NUMBER	COMMITMENT SOURCE	COMMITMENT SECTION	COMMITMENT SUBJECT	DOCUMENT/ FEATURE	MOD ULE	DES IGN	CON ST	FSAR AMEN	REMARKS
99.00	FSAR	8. 3. 1. 1	AC POWER SYSTEM CLASS 1E -SHARING OF SYSTEM BETWEEN UNITS	RG 1.32	06	X		0	
100.00	FSAR	8. 3. 1. 1	AC POWER SYSTEM, CLASS 1E, SHARING OF SYSTEMS BETWEEN UNITS	RG 1.81	06	X		0	
104.00	FSAR	8. 3. 1. 1	AC POWER CONTAINMENT ELECTRICAL PENETRATIONS	10CFR50, APP. A, GDC 50	06	X		0	
4815.00	FSAR	8. 3. 1. 1	CLASS 1E BUS UNDERVOLTAGE PROTECTION SENSORS	IEEE 279	06	X		0	
4817.00	FSAR	8. 3. 1. 1	CLASS 1E SYSTEMS EQUIPMENT LAYOUT	ALL SAFETY RELATED EQUIPMENT HOUSED IN SEISMIC CAT. I STRUCTURES	06	X		0	
82.00	FSAR	8. 3. 1. 4. 3	CABLE ROUTING	SEPARATION- WITHIN PANELS AND CONTROL BOARDS, 6 IN. MIN. SPATIAL SEPARATION OR BARRIERS ARE PROVIDED BETWEEN COMPONENTS OR CABLES OF DIFFERENT SEPARATION GROUPS	06	X	X	0	
4824.00	FSAR	8. 3. 2. 1	125-V DC SAFETY FEATURES SYSTEMS - DESIGNATION AS 1E	IEEE 308	06	X		0	
4825.00	FSAR	8. 3. 2. 1	125-V DC SAFETY FEATURES SYSTEMS	NO SINGLE FAILURE IN ANY 125-V DC SYSTEM WILL RESULT IN CONDITIONS THAT WILL PREVENT SAFE SHUTDOWN.	06	X		0	

PLANT VOGTLE UNIT 2 READINESS REVIEW PROGRAM
COMMITMENT MATRIX
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REF. COMMITMENT COMMITMENT			COMMITMENT	DOCUMENT/	MOD DES CON FSAR	REMARKS
NUMBER SOURCE	SECTION		SUBJECT	FEATURE	ULE IGN ST AMEN	
4826.00 FSAR	8. 3. 2. 1		SIZING OF BATTERIES	IEEE 485- 1978	06 X	0 SIZED TO PROVIDE REQUIRED LOAD FOR 2 3/4 HRS.
4828.00 FSAR	8. 3. 2. 1		SIZING OF BATTERIES	BATTERY CAPACITY IS INCREASED BY 10% FOR LOAD GROWTH AND 25% FOR AGING	06 X	0
4829.00 FSAR	8. 3. 2. 1		SIZING OF BATTERIES	BATTERY MIN. VOLTAGE DESIGN LIMIT IS 1.80-V/CELL OR 106.2-V/BATTERY	06 X	0
4830.00 FSAR	8. 3. 2. 1		125V-DC SAFETY FEATURES SYSTEMS SIZING OF BATTERY CHARGERS	IEEE 308	06 X	0
4831.00 FSAR	8. 3. 2. 1		125V-DC SAFETY FEATURES SYSTEMS SIZING OF BATTERY CHARGERS	RG 1.32	06 X	0
4832.00 FSAR	8. 3. 2. 1		125V-DC SAFETY FEATURES SYSTEMS SIZING OF BATTERY CHARGERS	CHARGERS SPECIFIED TO MAINTAIN OUTPUT VOLTAGE REQUIRED + OR - 1% FROM NO LOAD TO FULL LOAD	06 X	0
4833.00 FSAR	8. 3. 2. 1		125V-DC SAFETY FEATURES SYSTEMS SIZING OF BATTERY CHARGERS	CHARGER OUTPUT FILTERED TO LIMIT RIPPLE VOLTAGE TO MAX. 3% RMS WITH BATTERY DISCONNECTED	06 X	0
4836.00 FSAR	8. 3. 2. 1		MAINTENANCE AND TESTING - PERIODIC CAPACITY TESTS	RG 1.129	06 X	0

PLANT VOGTLE UNIT 2 READINESS REVIEW PROGRAM
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REF. COMMITMENT	COMMITMENT	COMMITMENT	DOCUMENT/	MOD DES CON FSAR	REMARKS
NUMBER SOURCE	SECTION	SUBJECT	FEATURE	ULE IGN ST AMEN	
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4839.00 FSAR	8. 3. 2. 1	DC POWER SYSTEM - MAINTENANCE AND TESTING-PERIODIC CAPACITY TESTS	IEEE 450-1975	06 X	0
4827.00 FSAR	8. 3. 2. 1. 1	SIZING OF BATTERIES	BATTERIES SIZED AT MIN. TEMP. OF 55 DEGREES F	06 X	0
4836.00 FSAR	8. 3. 2. 2	ANALYSIS - TRAIN C&D BATTERY CHARGERS QUALIFIED AS ISOLATION DEVICES	IEEE 384	06 X	0
4837.00 FSAR	8. 3. 2. 2	ANALYSIS - TRAIN C&D BATTERY CHARGERS QUALIFIED AS ISOLATION DEVICES	RG 1.75	06 X	0
3527.00 FSAR	9. 2. 1-3	NSCW COMPONENT DATA	CLASS 1E POWER SUPPLY.	06 X	0
2319.00 FSAR	10A. 2. 6	AUX. FEEDWATER SYSTEM PHYSICAL SEPARATION BETWEEN ELECTRICAL COMPONENTS	R.G. 1.75	06 X	0
2320.00 FSAR	10A. 2. 6	AUX. FEEDWATER SYSTEM PHYSICAL SEPARATION BETWEEN ELECTRICAL COMPONENTS	IEEE 384	06 X	0
4880.00 FSAR	12. 3. 4. 1. 6	POWER SUPPLIES (ARMS)	MONITORS THAT ARE IDENTIFIED AS SAFETY RELATED ARE REDUNDANT AND ARE SUPPLIED POWER FROM THE PLANT 120-V SAFETY RELATED BUSES	06 X	0

PLANT VOGTLE UNIT 2 READINESS REVIEW PROGRAM
COMMITMENT MATRIX
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REF. COMMITMENT NUMBER SOURCE	COMMITMENT SECTION	COMMITMENT SUBJECT	DOCUMENT/ FEATURE	MOD DES CON ULE IGN ST AMEN	FSAR REMARKS
4881.00 FSAR	12. 3. 4. 1. 6	POWER SUPPLIES (ARMS)	POWER TO THE CHANNELS THAT MONITOR ONLY NORMAL OPERATIONS IS SUPPLIED FROM THE REGULATED 120-V INSTRUMENTATION BUS THAT IS BACKED BY THE DIESEL GENERATOR	06 X	0
2905.00 FSAR	17. 1. 2	Q. A. PROGRAM	RG 1.30 (8-11-72)	06 X	0
2968.00 FSAR	17A. 0	INTRODUCTION	ANSI N45.2.4-1972 (IEER 336-1971)	06 X	0 REF. FSAR SEC. 1.9.30
754.00 FSAR	17A. 1	QUALITY ASSURANCE REQ. FOR INST. AND INSP. OF ELECT. EQUIP.	RG 1.30, 8/11/72	06 X	0 REF. FSAR 1.9.30
5019.00 I.E.B. CORRES.	C-77/06/27	ITE IMPERIAL PNEUMATIC TIME DELAY RELAYS	PNEUM. TIME DELAY RELAYS WITH A REPEAT ACCUR. RANGE OF + OR - 15% OR GREATER WILL NOT BE USED. SOLID STATE T.D.R. OR PNEUM. T.D.R. WITH A REPEAT ACCUR. RANGE BETTER THAN + OR - 15% WILL BE USED.	06 X	0 RESPONSE TO IEB 77-01
5020.00 I.E.B. CORRES.	C-77/11/11	WESTINGHOUSE TYPE AR RELAY	NO WESTINGHOUSE TYPE "AR" RELAYS WILL BE USED IN THE B.O.P. SAFETY CIRCUITS	06 X	0 RESPONSE TO IEB 77-02

PLANT VOGTLE UNIT 2 READINESS REVIEW PROGRAM
COMMITMENT MATRIX
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REF. NUMBER	COMMITMENT SOURCE	COMMITMENT SECTION	COMMITMENT SUBJECT	DOCUMENT/ FEATURE	MOD ULE	DES IGN	CON ST	FSAR AMEN	REMARKS
4668.00	I.E.B. CORRES.	C-79/12/28	WESTINGHOUSE ELECTRIC RELAYS	(SEE D.E. MATRIX) MEASURES WILL BE TAKEN TO ENSURE THAT DEFECTIVE W-BFD RELAYS ARE NOT USED	06	X			0 RESPONSE TO IEB 79-25
4289.00	NRC QUEST. CORRES.	Q260. 61	PRESSURIZER RELIEF VALVES, BLOCK VALVES, LEVEL INDICATORS	POWERED FROM CLASS 1E AC/DC SYSTEMS	06	X			0 REFERENCE TO FSAR TABLE 3.2.2-1. RESPONSE TO QUESTION
4310.00	NRC QUEST. CORRES.	Q420. 10	ISOLATION DEVICES	IEEE 472	06	X			0 RESPONSE TO QUESTION.
4319.00	NRC QUEST. CORRES.	Q420. 46	BALANCE OF PLANT INTERFACE WITH WESTINGHOUSE DESIGN	WCAP 8760	06	X			0 RESPONSE TO QUESTION
4272.00	NRC QUEST. CORRES.	Q430. 5-1	MAIN CONTROL BOARD & REMOTE SHUTDOWN PANEL ILLUMINATION LEVELS	THE EMERGENCY LIGHTING POWER DISTRIBUTION SYSTEM IS CLASS 1E FROM 4.16KV TO 480-V LEVEL.	06	X			0 RESPONSE TO QUESTION
4274.00	NRC QUEST. CORRES.	Q430. 59	POWER SUPPLY TO CLASS 1E BUSES	10CFR50, APP. A, GDC-17	06	X			0 RESPONSE TO QUESTION.
4275.00	NRC QUEST. CORRES.	Q430. 59	POWER SUPPLY TO CLASS 1E BUSES	IEEE 308-1974	06	X			0 RESPONSE TO QUESTION
4276.00	NRC QUEST. CORRES.	Q430. 59	POWER SUPPLY TO CLASS 1E BUSES	RG 1.32	06	X			0 RESPONSE TO QUESTION.
4277.00	NRC QUEST. CORRES.	Q430. 61	120V AC POWER SUPPLIES	RG 1.75	06	X			0 RESPONSE
4280.00	NRC QUEST. CORRES.	Q430. 64	MOV OL PROTECTION PER RG POS. C.1(a)	RG 1.106	06	X			0 RESPONSE

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COMMITMENT MATRIX
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REF. NUMBER	COMMITMENT SOURCE	COMMITMENT SECTION	COMMITMENT SUBJECT	DOCUMENT/FEATURE	MOD ULE	DES IGN	CON ST	FSAR AMEN	REMARKS
4281.00	NRC QUEST. CORRES.	Q430. 64	MOV'S	MOV MOTOR OVERLOAD IS ANNUNCIATED IN CONTROL ROOM	06	X			0 RESPONSE
4283.00	NRC QUEST. CORRES.	Q430. 68	QUALIFICATION OF DEGRADED VOLTAGE PROTECTION EQUIPMENT	IEEE 323-1974	06	X			0 RESPONSE TO QUESTION
4284.00	NRC QUEST. CORRES.	Q430. 68	QUALIFICATION OF DEGRADED VOLTAGE PROTECTION EQUIPMENT	IEEE 344-1975	06	X			0 RESPONSE TO QUESTION
4181.00	NRC QUEST. CORRES.	Q430. 69	QUALIFICATION OF LOAD SEQUENCER, PROTOTYPE TEST	IEEE 344-1975	06	X			0 RESPONSE TO QUESTION
4286.00	NRC QUEST. CORRES.	Q430. 69	QUALIFICATION OF LOAD SEQUENCERS, PROTOTYPE TEST	IEEE 323-1974	06	X			0 RESPONSE TO QUESTION
4329.00	NRC QUEST. CORRES.	Q430. 75	QUALIFICATION OF FIRE-RESTRAINT MATERIAL USED AS SEPARATION BARRIERS WITHIN PANELS AND CONTROL BOARDS	ASTM E-119	06	X			0 RESPONSE TO QUESTION
4936.00	NRC QUEST. CORRES.	Q430. 75(E)	HIGH ENERGY EQUIP. IN CABLE SPREADING ROOMS	RG 1.75	06	X			0 RESPONSE TO QUESTION
4937.00	NRC QUEST. CORRES.	Q430. 75(E)	HIGH ENERGY EQUIP. IN CABLE SPREADING ROOMS	IEEE 384	06	X			0 RESPONSE TO QUESTION

PLANT VOGTLE UNIT 2 READINESS REVIEW PROGRAM
IMPLEMENTATION MATRIX

REF. SOURCE AND NUMBER SECTION	SUBJECT	DOCUMENT/FEATURE	DESIGN		CONST		REMARKS
			DES CON	CURRENT IGN ST. AS OF	CURRENT	CONSTRUCTION IMPLEMENTATION	

EXPLANATION OF FIELDS

- REF NO. - A reference number that corresponds to the appropriate line entry in the commitment matrix.
- SOURCE AND SECTION - The commitment source and section to be implemented
- SUBJECT - The subject of the commitment paragraph
- DOCUMENT/FEATURE - The document discussed in the FSAR section or the plant feature described in the FSAR section. (See Commitment Matrix.)
- DESIGN/CONSTRUCTION - An X is placed under the heading for the organization responsible for implementation of the commitment
- DESIGN CURRENT
AS OF: - The date that commitment implementation was verified
- CONST CURRENT
AS OF:
- DESIGN
IMPLEMENTATION - The Project document(s) that were reviewed to verify commitment implementation
- CONSTRUCTION
IMPLEMENTATION

PLANT VOGTLE UNIT 2 READINESS REVIEW PROGRAM
IMPLEMENTATION MATRIX - MODULE 06

REF. SOURCE AND NUMBER SECTION	SUBJECT	DOCUMENT/FEATURE	DESIGN		CONST CURRENT AS OF:	CONSTRUCTION IMPLEMENTATION	REMARKS
			DES CON IGN ST.	CURRENT AS OF:			
2.01 FSAR 8. 1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS - ENVIRONMENTAL AND MISSILE DESIGN BASES	10CFR50, APP. A, GDC X 4 (FSAR 8.1.4.3)	06-22-87	DC-1000-E, REV. 6, 8-29-85 , C.S., DC-1806, REV. 5, 8-23-85, C.S., DC-1816, REV. 3, 9-3-85, C.S., DC-1818, REV. 3, 8-22-85, C.S., DC-1821, REV. 5, 5-2-83, C.S., DC-1006, REV. 2, 7-13-83, C.S., DC-1007, REV. 6, 3-24-86, C.S.			DC-1010 APPLIES DC-1007 CRITERIA TO SAFETY-RELATED ELECTRICAL EQUIPMENT.
2.02 FSAR 8. 1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS - ENVIRONMENTAL AND MISSILE DESIGN BASES	10CFR50, APP. A, GDC X 4 (FSAR 8.1.4.3)	06-22-87	DC-1010, REV. 5, 2-7-86, PG S. 90-94, DC-1003, REV. 2, 6-29-83, C.S.			DC-1010 APPLIES DC-1007 CRITERIA TO SAFETY-RELATED ELECTRICAL EQUIPMENT.
3.00 FSAR 8. 1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS - SHARING OF STRUCTURES, SYSTEMS, AND COMPONENTS	10CFR50, APP. A, GDC X 5 (FSAR 8.1.4.3)	06-22-87	DC-1000-E, REV. 6, 8-29-85, C.S., DC-1806, REV. 5, 8-23-85, C.S., DC-1815, REV. 2, 5-18-83, C.S., DC-1816, REV. 3, 9-3-85, C.S., DC-1818, REV. 3, 8-22-85, C.S., DC-1821, REV. 5, 5-2-83, C.S.			
4.01 FSAR 8. 1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS - INSPECTION AND TESTING OF ELECTRIC POWER SYSTEMS	10CFR50, APP. A, GDC X 18 (FSAR 8.1.4.3)	06-22-87	DC-1000-E, REV. 6, 8-29-85, C.S., DC-1801, REV. 3, 7-19-83, C.S., DC-1804, REV. 5, 10-2-85, C.S., DC-1805, REV. 5, 8-6-85, C.S., DC-1806, REV. 5, 8-23-85, C.S., DC-1807, REV. 3, 8-23-85, C.S., DC-1815, REV. 2, 5-18-83, C.S.			
4.02 FSAR 8. 1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS - INSPECTION AND TESTING OF ELECTRIC POWER SYSTEMS	10CFR50, APP. A, GDC X 18 (FSAR 8.1.4.3)	06-22-87	DC-1823, REV. 3, 2-3-84, C.S., DC-1826, REV. 1, 9-18-78, C.S., DC-1625, REV. 1, 8-2-83			

PLANT VOGTLE UNIT 2 READINESS REVIEW PROGRAM
IMPLEMENTATION MATRIX - MODULE 06

REF. SOURCE AND NUMBER SECTION	SUBJECT	DOCUMENT/FEATURE	DESIGN		CONST CURRENT AS OF:	CONSTRUCTION IMPLEMENTATION	REMARKS
			DES CON IGN ST.	CURRENT AS OF:			
4.03 FSAR B. 1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS - INSPECTION AND TESTING OF ELECTRIC POWER SYSTEMS	10CRF50, APP. A, GDC X 1B (FSAR 8.1.4.3)		06-22-87	DC-1816, REV. 3, 9-3-85, C .S., DC-1821, REV. 5, 5-2- 83, C.S.		
5.00 FSAR B. 1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS - REACTOR CONTAINMENT DESIGN BASES	10CRF50, APP. A, GDC X 50 (FSAR 8.1.4.3)		06-22-87	DC-1000-E, REV. 6, 8-29-8 5, C.S., DC-1818, REV. 3, 8 -22-85, C.S., DC-1823, RE V. 3, 2-3-84, C.S.		
6.00 FSAR B. 1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS - INDEPENDENCE BETWEEN REDUNDANT STAND-BY (ON-SITE) POWER SOURCES AND THEIR DISTRIBUTION SYSTEM	RG 1.6 (FSAR 8.1.4.3)	X	06-22-87	DC-1000-E, REV. 6, 8-29-8 5, PG. 16, DC-1804, REV. 5, 10-2-85, C.S., DC-1805, R EV. 5, 8-6-85, C.S., DC-18 06, REV. 5, 8-23-85, C.S., DC-1807, REV. 3, 8-23-85, C.S.		
8.00 FSAR B. 1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS - PERIODIC TESTING OF PROTECTION SYSTEM ACTUATION FUNCTIONS	RG 1.22 (FSAR 8.1.4.3)	X	06-22-87	DC-1000-E, REV. 6, 8-29-85, PG. 16, DC-1605, REV. 1, 3-29-83, C.S., DC-1625, REV. 1, 8-2-83, C.S.		
9.00 FSAR B. 1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS - SEISMIC DESIGN CLASSIFICATION	RG 1.29 (FSAR 8.1.4.3)	X	06-22-87	DC-1000-E, REV. 6, 8-29-8 5, PG. 16, DC-1005, REV. 1, 4-4-83, C.S., DC-1010, RE V. 5, 2-7-86, C.S.		
10.00 FSAR B. 1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS - QUALITY ASSURANCE REQ. FOR INST. AND INSP. OF ELECT. EQUIP.	RG 1.30 (FSAR 8.1.4.3)	X X	06-22-87	DC-1000-E, REV. 6, 8-29-85, PG. 16, DC-1818, REV. 3, 8-22-85, C.S.	05-21-87 SEE REMARKS	FOR CONSTRUCTION IMPLEMENTATION, SEE REF. NO. 31

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IMPLEMENTATION MATRIX - MODULE 06

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			DES CON IGN ST.	CURRENT AS OF:			
11.01 FSAR	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS - CRITERIA FOR SAFETY-RELATED ELECTRICAL POWER SYSTEMS FOR NUCLEAR POWER PLANTS	RG 1.32 (FSAR 8.1.4.3)	X	06-22-87	DC-1000-E, REV. 6, 8-29-8 5, PG. 16, DC-1801, REV. 3, 7-19-83, C.S., DC-1804, R EV. 5, 10-2-85, C.S., DC-1 805, REV. 5, 8-6-85, C.S., DC-1806, REV. 5, 8-23-85, C.S., DC-1807, REV. 3, 8-2 3-85, C.S., DC-1815, REV. 2, 5-18-83, C.S.		
8. 1. 4. 3							
11.02 FSAR	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS - CRITERIA FOR SAFETY-RELATED ELECTRICAL POWER SYSTEMS FOR NUCLEAR POWER PLANTS	RG 1.32 (FSAR 8.1.4.3)	X	06-22-87	DC-1821, REV. 5, 5-2-83, C.S., DC-1823, REV. 3, 2-3-84, C.S., DC-1826, REV. 1, 9-18-78, C.S.		
8. 1. 4. 3							
11.03 FSAR	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS - CRITERIA FOR SAFETY-RELATED ELECTRIC POWER SYSTEMS FOR NUCLEAR POWER PLANTS	RG 1.32 (FSAR 8.1.4.3)	X	06-22-87	DC-1816, REV. 3, 9-3-85, C .S., DC-1818, REV. 3, 8-22 -85, C.S.		
8. 1. 4. 3							
13.00 FSAR	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS - PREOP TESTING OF ONSITE POWER SYSTEMS TO VERIFY LOAD GROUP ASSIGNMENTS	RG 1.41 (FSAR 8.1.4.3)	X	06-22-87	DC-1000-E, REV. 6, 8-29-8 5, PG. 16, DC-1804, REV. 5, 10-2-85, C.S., DC-1806, R EV. 5, 8-23-85, C.S.		
8. 1. 4. 3							
14.00 FSAR	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS - BYPASSED AND INOPERABLE STATUS INDICATION FOR SAFETY SYSTEMS	RG 1.47 (FSAR 8.1.4.3)	X	06-22-87	DC-1000-E, REV. 6, 8-29-8 5, PG. 17, DC-1801, REV. 3, 7-19-83, C.S., DC-1804, R EV. 5, 10-2-85, C.S., DC-1 805, REV. 5, 8-6-85, C.S., DC-1625, REV. 1, 8-2-83, C .S.		
8. 1. 4. 3							

PLANT VOGTLE UNIT 2 READINESS REVIEW PROGRAM
IMPLEMENTATION MATRIX - MODULE 06

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			DES CON IGN ST.	CURRENT AS OF:			
15.00 FSAR 8. 1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS - APPLICATION OF SINGLE FAILURE CRITERION	RG 1.53 (FSAR 8.1.4.3)	X	06-22-87	DC-1000-E, REV. 6, 8-29-8 5, PG. 17, DC-1605, REV. 1, 3-29-83, C.S.		
17.00 FSAR 8. 1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS - PENETRATION ASSEMBLIES	RG 1.63 (FSAR 8.1.4.3)	X	06-22-87	DC-1000-E, REV. 6, 8-29-8 5, PG. 17, DC-1805, REV. 5, 8-6-85, C.S., DC-1818, RE V. 3, 8-22-85, C.S.		
18.00 FSAR 8. 1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS - PHYSICAL INDEPENDENCE OF ELECTRICAL SYSTEMS	RG 1.75 (FSAR 8.1.4.3)	X X	06-22-87	DC-1000-E, REV. 6, 8-29-8 5, PG. 17, DC-1804, REV. 5, 10-2-85, C.S., DC-1805, R EV. 5, 10-2-85, C.S., DC-1 805, REV. 5, 8-6-85, C.S., DC-1806, REV. 5, 8-23-85, C.S. 5C-1807, REV. 3, 8-23 -85, C.S., DC-1816, REV. 3 , 9-3-85, C.S., DC-1818, R EV. 3, 8-22-85, C.S.	05-21-87 SEE REMARKS	FOR CONSTRUCTION IMPLEMENTATION SEE REF. NO. 35
19.00 FSAR 8. 1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS - SHARED EMERGENCY AND SHUTDOWN SYSTEMS FOR MULTI-UNIT NUCLEAR POWER PLANTS	RG 1.81 (FSAR 8.1.4.3)	X	06-22-87	DC-1000-E, REV. 6, 8-29-8 5, PG. 17, DC-1801, REV. 3, 7-19-83, C.S., DC-1804, R EV. 5, 10-2-85, C.S., DC-1 805, REV. 5, 8-6-85, C.S., DC-1806, REV. 5, 8-23-85, C.S., DC-1807, REV. 3, 8-2 3-85, C.S.		
20.00 FSAR 8. 1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS - QUALIFICATION FOR CLASS 1E EQUIPMENT	RG 1.89 (FSAR 8.1.4.3)	X	06-22-87	DC-1000-E, REV. 6, 8-29-8 5, PG. 17, DC-1805, REV. 5, 8-6-85, PG. 10, DC-1816, R EV. 3, 9-3-85, C.S., DC-10 07, REV. 6, 3-24-86, C.S., DC-1010, REV. 5, 2-7-86, P GS. 90-98		DC-1010 APPLIES DC-1007 CRITERIA TO SAFETY-RELATED ELECTRICAL EQUIPMENT

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21.00 FSAR B. 1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS - AVAILABILITY OF ELECTRIC POWER SOURCES	RG 1.93 (FSAR B.1.4.3)	X	06-22-87	DC-1000-E, REV. 6, 8-29-85, PG. 17		
22.00 FSAR B. 1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS - SEISMIC QUALIFICATION OF ELECTRIC EQUIPMENT	RG 1.100 (FSAR B.1.4.3)	X	06-22-87	DC-1000-E, REV. 6, 8-29-8 5, PG. 17, DC-1816, REV. 3, 9-3-85, C.S., DC-1005, RE V. 1, 4-4-83, C.S., DC-101 0, REV. 5, 2-7-86, PGS. 90- 98, APPENDIX TO SPEC. 'QG,' REV. 0, PG. QG. 2		DC-1010 APPLIES DC-1005 CRITERIA TO CAT. I ELECTRICAL EQUIPMENT
23.00 FSAR B. 1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS - THERMAL OVERLOAD PROTECTION FOR MOV MOTORS	RG 1.106 (FSAR B.1.4.3)	X	06-22-87	DC-1000-E, REV. 6, 8-29-8 5, PG. 18, DC-1805, REV. 5, 8-6-85, C.S., DC-1806, RE V. 5, 8-23-85, C.S., DC-18 23, REV. 3, 2-3-84, C.S.		
24.00 FSAR B. 1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS - INSTALLATION DESIGN AND INSTALLATION OF LARGE LEAD STORAGE BATTERIES	RG 1.128 (FSAR B.1.4.3)	X X	06-22-87	DC-1000-E, REV. 6, 8-29-8 5, PG. 18, DC-1806, REV. 5, 8-23-85, C.S.	05-21-87 SEE REMARKS	FOR CONSTRUCTION IMPLEMENTATION SEE REF. NO. 36
26.01 FSAR B. 1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS - SINGLE FAILURE, REDUNDANCY & INDEPENDENCE CRITERIA	IEEE 279-1971 (FSAR X B.1.4.3)	X	06-22-87	DC-1000-E, REV. 6, 8-29-8 5, PG. 13, DC-1804, REV. 5, 10-2-85, PG. 1, DC-1805, R EV. 5, 8-6-85, PG. 1, DC-18 06, REV. 5, 8-23-85, PG. 1, DC-1807, REV. 3, 8-23-85, PG. 1, DC-1816, REV. 3, 9-3 -85, PG. 2, DC-1823, REV. 3 , 2-3-84, PG. 1		

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			DES CON IGN ST.	CURRENT AS OF:			
26.02 FSAR 8.1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS - SINGLE FAILURE, REDUNDANCY & INDEPENDENCE CRITERIA	IEEE 279-1971 (FSAR X 8.1.4.3)	X	06-22-87	DC-1009, REV. 2, 6-3-83, P G.1, DC-1605, REV. 1, 3-29 -83, PG. 1		
27.01 FSAR 8.1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS - CLASS 1E POWER SYSTEMS	IEEE 308-1974 (FSAR X 8.1.4.3)	X X	06-22-87	DC-1000-E, REV. 6, 8-29-8 5, PG. 13, DC-1801, REV. 3, 7-19-83, PG. 1, DC-1804, R EV. 5, 10-2-85, PG. 1, DC-1 805, REV. 5, 8-6-85, PG. 1, DC-1806, REV. 5, 8-23-85, PG. 1, DC-1807, REV. 3, 8-2 3-85, PG. 1, DC-1816, REV. 3, 9-3-85, PG. 2	05-21-87 *X3AR01-E2, REV. 16, 3-13-86 ED-T-04, REV. 9, 1-6-87	REF. RRF 6-49 *X3AR01-E2 DID NOT ADDRESS LABELS UNTIL ISSUE OF E-FCRB 19,674 APPROVED 4-7-87 (NO RETROFIT REQUIRED)
27.02 FSAR 8.1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS - CLASS 1E POWER SYSTEMS	IEEE 308-1974 (FSAR X 8.1.4.3)	X X	06-22-87	DC-1821, REV. 5, 5-2-83, P G.1, DC-1823, REV. 3, 2-3- 84, PG. 1	05-21-87 SEE REMARKS	SEE REF. NO. 27.01 FOR CONSTRUCTION
28.00 FSAR 8.1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS - ELECTRICAL PENETRATION ASSEMBLIES	IEEE 317-1976 (FSAR X 8.1.4.3)	X X	06-22-87	DC-1000-E, REV. 6, 8-29-8 5, PG. 14, DC-1818, REV. 3, 8-22-85, PG. 1	05-21-87 X3AR01-E3, REV. 5, 1-10-86, ED-T-1S, REV. 2, 5-19-86	
29.00 FSAR 8.1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS - QUALIFYING CLASS 1E EQUIPMENT	IEEE 323-1974 (FSAR X 8.1.4.3)	X	06-22-87	DC-1000-E, REV. 6, 8-29-8 5, PG. 14, DC-1804, REV. 5, 10-2-85, PG. 1, DC-1805, R EV. 5, 8-6-85, PG. 1, DC-18 06, REV. 5, 8-23-85, PG. 1, DC-1807, REV. 3, 8-23-85, PG. 1, DC-1816, REV. 3, 9-3 -85, PG. 2, DC-1818, REV. 3 , 8-22-85, PG. 1		DC-1010 APPLIES DC-1007 CRITERIA TO SAFETY-RELATED ELECTRICAL EQUIPMENT.

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			DES CON IGN ST.	CURRENT AS OF:			
29.02 FSAR 8.1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS - QUALIFYING CLASS 1E EQUIPMENT	IEEE 323-1974 (FSAR X 8.1.4.3)	X	06-22-87	SPEC. APPENDIX 'EA', REV. 3		
29.03 FSAR 8.1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS - QUALIFYING CLASS 1E EQUIPMENT	IEEE 323-1974 (FSAR X 8.1.4.3)	X	06-22-87	DC-1821, REV. 5, 5-2-83, P G.1, DC-1823, REV. 3, 2-3- 84, PG.1, DC-1007, REV. 6, 3-24-86		
31.01 FSAR 8.1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS - INSTALLATION, INSPECTION, & TESTING REQUIREMENTS FOR INSTRUMENTATION AND ELECTRICAL EQUIPMENT DURING CONSTRUCTION	IEEE 336-1971 (FSAR X 8.1.4.3)	X X	06-22-87	DC-1000-E, REV. 6, 8-29-8 5, PG.14, DC-1806, REV. 5, 8-23-85, PG.1, DC-1807, R EV. 3, 8-23-85, PG.1, DC-1 816, REV. 3, 9-3-85, PG.3, DC-1818, REV. 3, 8-22-85, PG.1	05-21-87 ED-T-04 R/9, 1-6-86 ED-T-19 R/2, 5-19-86 ED-T-34 R/0, 1-23-87 GD-A-04 R/12, 3-17-86 GD-A-08 R/17, 10-2-86 GD-A-30 R/13, 11-26-86 GD-T-01 R/15, 1-29-87 CM-T-03 R/0, 5-23-86 GD-T-31 R/2, 11-7-86 DC-A-06 R/11, 5-7-86 QC-A-01 R/5, 4-6-87	
31.02 FSAR 8.1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS - INSTALLATION, INSPECTION, & TESTING REQUIREMENTS FOR INSTRUMENTATION AND ELECTRICAL EQUIPMENT DURING CONSTRUCTION	IEEE 336-1971 (FSAR X 8.1.4.3)	X X	06-22-87	SEE REMARKS	05-21-87 X3AR01-E2 R/16, 3-13-86 X3AR01-E3 R/5, 1-10-86 X3AR01-E12 R/B, 3-5-87	SEE REF. NO. 31.01 FOR DESIGN
32.01 FSAR 8.1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS - SEISMIC QUALIFICATION OF CLASS 1E EQUIPMENT	IEEE 344-1975 (FSAR X 8.1.4.3)	X	06-22-87	DC-1000-E, REV. 6, 8-29-8 5, PG.14, DC-1804, REV. 5, 10-2-85, PG.1, DC-1805, R EV. 5, 8-6-85, PG.1, DC-18 06, REV. 5, 8-23-85, PG.1, DC-1807, REV. 3, 8-23-85, PG.2, DC-1816, REV. 3, 9-3 -85, PG.3, DC-1818, REV. 3 , 8-22-85, PG.1		

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32.02 FSAR 8.1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS - SEISMIC QUALIFICATION OF CLASS 1E EQUIPMENT	IEEE 344-1975 (FSAR X 8.1.4.3)		06-22-87	DC-1005, REV. 1, 4-4-83, PG. 3A, DC-1010, REV. 5, 2-7-86, PGS. 90-98, SPEC. APPENDIX 'QG', REV. 0, SPEC. APPENDIX 'EA', REV. 3		DC-1010 APPLIES DC-1005 CRITERIA TO CAT. I ELECTRICAL EQUIPMENT
32.03 FSAR 8.1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS - SEISMIC QUALIFICATION OF CLASS 1E EQUIPMENT	IEEE 344-1975 (FSAR X 8.1.4.3)		06-22-87	DC-1821, REV. 5, 5-2-83, P G.1, DC-1823, REV. 3, 2-3- 84, PG. 1		
33.00 FSAR 8.1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS - APPLICATION OF SINGLE FAILURE CRITERION	IEEE 379-1972 (FSAR X 8.1.4.3)		06-22-87	DC-1000-E, REV. 6, 8-29-8 5, PG. 14, DC-1804, REV. 5, 10-2-85, PG. 1, DC-1806, R EV. 5, 8-23-85, PG. 1, DC-1 807, REV. 3, 8-23-85, PG. 2 , DC-1818, REV. 3, 8-22-85 , PG. 1, DC-1823, REV. 3, 2- 3-84, PG. 1, DC-1009, REV. 2, 6-3-83, PG. 1		
35.01 FSAR 8.1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS - CRITERIA FOR INDEPENDENCE OF CLASS 1E EQUIPMENT AND CIRCUITS	IEEE 384-1974 (FSAR X 8.1.4.3)	X	06-22-87	DC-1000-E, REV. 6, 8-29-8 5, PG. 15, DC-1804, REV. 5, 10-2-85, PG. 1, DC-1805, R EV. 5, 8-6-85, PG. 1, DC-18 06, REV. 5, 8-23-85, PG. 1, DC-1807, REV. 3, 8-23-85, PG. 2, DC-1816, REV. 3, 9-3 -85, PG. 3, DC-1821, REV. 5 , 5-2-83, PG. 1	05-21-87 X3AR01-E8 REV. 24, 2-11-87 X3AR01-E9 REV. 19, 2-5-87 ED-T-08 REV. 9, 7-31-86	
35.02 FSAR 8.1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS - CRITERIA FOR INDEPENDENCE OF CLASS 1E EQUIPMENT AND CIRCUITS	IEEE 384-1974 (FSAR X 8.1.4.3)	X	06-22-87	DC-1823, REV. 3, 2-3-84, PG. 1	05-21-87 SEE REMARKS	SEE REF. NO. 35.01 FOR CONSTRUCTION

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36.00 FSAR 8. 1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS - INDEPENDENCE OF CLASS 1E EQUIPMENT AND CIRCUITS	IEEE 484-1975 (FSAR X X 8.1.4.3)	06-22-87	DC-1000-E, REV. 6, 8-29-85, PG. 15, DC-1806, REV. 5, 8-23-85, PG.2	05-21-87	GD-A-30, REV. 13, 11-26-86 ED-T-04, REV. 9, 1-6-86 ED-T-09, REV. 6, 5-19-86 X3AR01-E2, REV. 16, 3-13-86	
37.00 FSAR 8. 2. 1. 1	DESIGN OF TRANSMISSION LINE STRUCTURES FOR OFFSITE SOURCES	NATIONAL BUREAU OF X STANDARDS HANDBOOK NO. 8 (NATIONAL ELECTRICAL SAFETY CODE PART 2) (FSAR 8.2.1.1)	06-22-87	DC-1826, REV. 1, 9-18-78			
38.00 FSAR 8. 2. 1. 1	CAPACITY OF OFFSITE SOURCES	OFFSITE POWER SYSTEM X HAS THE CAPACITY AND CAPABILITY TO SUPPLY THE POWER NECESSARY FOR THE SAFETY LOADS OF ONE UNIT WHILE PLACING THE OTHER UNIT IN COLD SHUTDOWN (FSAR 8.2.1.1)	06-22-87	DC-1801,REV.3,7-19-83, PG.4			
41.00 FSAR 8. 2. 2. 4	CONFORMANCE TO CRITERIA (OFFSITE POWER SOURCES)	10CFR50, APP. A, GDC X 4 (FSAR 8.2.2.4)	06-22-87	SEE REMARKS			SEE REF. NO. 2
42.01 FSAR 8. 2. 2. 4	CONFORMANCE TO CRITERIA - OFFSITE ELECTRIC POWER SYSTEMS	10CFR50, APP. A, GDC X 17 (FSAR 8.2.2.4)	06-22-87	DC-1000-E,REV.6,8-29-8 5,C.S.,DC-1801,REV.3,7 -19-83,C.S.,DC-1804,RE V.5,10-2-85,C.S.,DC-18 05,REV.5,8-6-85,C.S.,D C-1806,REV.6,7-28-85,C .S.,DC-1809,REV.4,1-21 -82,C.S.,DC-1815,REV.2 ,5-18-83,C.S.			

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42.02 FSAR 8. 2. 2. 4	CONFORMANCE TO CRITERIA - OFFSITE ELECTRIC POWER SYSTEMS	10CFR50, APP. A, GDC X 17 (FSAR 8.2.2.4)		06-22-87	DC-1823, REV. 3, 2-3-84, C.S., DC-1826, REV. 1, 9-18-78, C.S., DC-1009, REV. 2, 6-3-83, C.S.		
42.03 FSAR 8. 2. 2. 4	CONFORMANCE TO CRITERIA - OFFSITE ELECTRIC POWER SYSTEMS	10CFR50, APP. A, GDC X 17 (FSAR 8.2.2.4)		06-22-87	DC-1816, REV. 3, 9-3-85, C .S., DC-1821, REV. 5, 5-2- 83, C.S.		
43.00 FSAR 8. 2. 2. 4	CONFORMANCE TO CRITERIA (OFFSITE POWER SOURCES)	10CFR50, APP. A, GDC X 18 (FSAR 8.2.2.4)		06-22-87	SEE REMARKS		SEE REF. NO. 4
44.00 FSAR 8. 2. 2. 5.B	STANDARDS AND GUIDES - AC HIGH VOLTAGE CIRCUIT BREAKERS	ANSI C37.010-1972 X (FSAR 8.2.2.5.B)		06-22-87	DC-1000-E, REV. 6, 8-29-8 5, PG. 3, DC-1804, REV. 5, 1 0-2-85, PG. 1, DC-1825, RE V. 2, 9-24-85, PG. 1, DC-18 26, REV. 1, 9-18-78, PG. 1		
45.00 FSAR 8. 2. 2. 5.C	STANDARDS AND GUIDES - RELAYS AND RELAY SYSTEMS	ANSI C37.90-1971 X (FSAR 8.2.2.5.C)		06-22-87	DC-1000-E, REV. 6, 8-29-8 5, PG. 4, DC-1804, REV. 5, 1 0-2-85, PG. 2, DC-1805, RE V. 5, 8-6-85, PG. 2, DC-180 7, REV. 3, 8-23-85, PG. 1, D C-1816, REV. 3, 9-3-85, PG .2		
46.00 FSAR 8. 2. 2. 5.D	STANDARDS AND GUIDES - GENERAL REQUIREMENTS FOR DISTRIBUTION, POWER, REGULATING TRANSFORMERS, AND SHUNT REACTORS	ANSI C57.12.00-1973 X (FSAR 8.2.2.5.D)		06-22-87	DC-1000-E, REV. 6, 8-29-8 5, PG. 4, DC-1801, REV. 3, 7 -19-83, PG. 1, DC-1802, RE V. 1, 11-7-80, DC-1805, RE V. 5, 8-6-85, PG. 1, DC-180 7, REV. 3, 8-23-85, PG. 1, D C-1826, REV. 1, 9-18-78, P G. 1		DC-1802 REFERENCES THE C57 SERIES

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53.00 FSAR	DESIGN CRITERIA FOR CLASS 1E EQUIPMENT - SWITCHGEAR MEDIUM VOLTAGE SHORT CIRCUIT INTERRUPTING CAPACITY	ANSI C37.010 - 1972 (FSAR 8.3.1.1.8.G)	X	06-22-87	SEE REMARKS		SEE REF. NO. 44
8. 3. 1. 1. 8.G							
54.00 FSAR	DESIGN CRITERIA FOR CLASS 1E EQUIPMENT - SWITCHGEAR HIGH VOLTAGE SHORT CIRCUIT INTERRUPTING CAPACITY	ANSI C37.06-1971 (FSAR 8.3.1.1.8.G)	X	06-22-87	DC-1000-E, REV. 6, 8-29-8 5, PG. 3, DC-1804, REV. 5, 1 0-2-85, PG. 1, DC-1825, RE V. 2, 9-24-85, PG. 1		
8. 3. 1. 1. 8.G							
55.00 FSAR	DESIGN CRITERIA FOR CLASS 1E EQUIPMENT - SYMMETRICAL SHORT CIRCUIT INTERRUPTING CAPACITY	ANSI C37.13-1973 (FSAR 8.3.1.1)	X	06-22-87	DC-1000-E, REV. 6, 8-29-8 5, PG. 3, DC-1805, REV. 5, 8 -6-85, PG. 1		
8. 3. 1. 1							
56.00 FSAR	DESIGN CRITERIA FOR CLASS 1E EQUIPMENT - SYMMETRICAL SHORT CIRCUIT CURRENT FOR MOLDED CASE CIRCUIT BREAKERS	NEMA AB 1-1975 (FSAR X 8.3.1.1.8)	X	06-22-87	DC-1000-E, REV. 6, 8-29-8 5, PG. 8, DC-1805, REV. 5, 8 -6-85, PG. 12, DC-1806, RE V. 5, 8-23-85, PG. 2, DC-18 07, REV. 3, 8-23-85, PG. 1		
8. 3. 1. 8							
63.00 FSAR	RESIDUAL HEAT REMOVAL ISOLATION VALVE POWER SUPPLY	IEEE 323-1974 (FSAR X 8.3.1.1.)	X	06-22-87	SEE REMARKS		SEE REF. NO. 29
8. 3. 1. 1							
64.00 FSAR	RESIDUAL HEAT REMOVAL ISOLATION VALVE POWER SUPPLY	IEEE 344-1975 (FSAR X 8.3.1.1)	X	06-22-87	SEE REMARKS		SEE REF. NO. 32
8. 3. 1. 1							
82.00 FSAR	CABLE ROUTING - CABLE SEPARATION WITHIN PANELS AND CONTROL BOARDS	WITHIN PANELS AND CONTROL BOARDS, 6 IN. MINIMUM SPATIAL SEPARATION OR BARRIERS ARE PROVIDED BETWEEN COMPONENTS OR CABLES OF DIFFERENT SEPARATION GROUPS OR ANALYSIS IS PERFORMED (FSAR 8.3.1.4)	X X	06-22-87	DC-1000-E, REV. 6, 8-29-85, PG. 26, DC-1816, REV. 3, 9-3-85, PG. 7	05-21-87 X3AR01-E8, REV. 24, 2-11-87 X3AR01-E9, REV. 19, 2-5-87 ED-1-09, REV. 9, 7-31-86	SEE REF. NO. 35. USE OF ANALYSIS (WYLE LABS) ADDED BY AMENDMENT 25.
8. 3. 1. 4. 3							

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94.00 FSAR	NO SHARING OF ONSITE POWER SYSTEMS BETWEEN UNITS	10CFR50, APP. A, GDC X 5 (FSAR 8.1.4.2.E)		06-22-87	SEE REMARKS		SEE REF. NO. 3
8. 1. 4. 2.E							
95.00 FSAR	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS DESIGN BASES FOR PROTECTION AGAINST NATURAL PHENOMENA	10CFR50, APP. A, GDC X 2 (FSAR 8.1.4.3)		06-22-87	DC-1000-E, RV. 6, 8-29-85, CS, DC-1806, RV. 5, 8-23-85, CS, DC-1816, RV. 3, 9-3-85, CS, DC-1818, RV. 3, 8-22-85, CS, DC-1821, RV. 5, 5-2-83, CS, DC-1005, RV. 1, 4-4-83, CS, DC-1010, RV. 5, 2-7-86, PGS. 90-94, DC-1004, RV. 3, 8-23-83, CS		DC-1010 APPLIES DC-1005 CRITERIA TO CAT. I ELECTRICAL EQUIPMENT. SEE RRF 6-56 AND 6-61
8. 1. 4. 3							
96.00 FSAR	AC POWER SYSTEMS CLASS IE QUALIFICATION-INTERC ONNECTIONS	IEEE 323 (FSAR 8.3.1.1.2.E)	X	06-22-87	SEE REMARKS		SEE REF. NO. 29
8. 3. 1. 1. 2.E							
97.00 FSAR	AC POWER SYSTEMS CLASS IE QUALIFICATION-INTERC ONNECTIONS	IEEE 344 (FSAR 8.3.1.1.2.E)	X	06-22-87	SEE REMARKS		SEE REF. NO. 32
8. 3. 1. 1. 2.E							
98.00 FSAR	AC POWER SYSTEMS CLASS IE INTERCONNECTIONS	RG 1.75 (FSAR 8.3.1.1)	X	06-22-87	SEE REMARKS		SEE REF. NO. 18
8. 3. 1. 1							
99.00 FSAR	AC POWER SYSTEM CLASS IE -SHARING OF SYSTEM BETWEEN UNITS	RG 1.32 (FSAR 8.3.1.1)	X	06-22-87	SEE REMARKS		SEE REF. NO. 11
8. 3. 1. 1							
100.00 FSAR	AC POWER SYSTEM, CLASS IE, SHARING OF SYSTEMS BETWEEN UNITS	RG 1.81 (FSAR 8.3.1.1)	X	06-22-87	SEE REMARKS		SEE REF. NO. 19
8. 3. 1. 1							
104.00 FSAR	AC POWER CONTAINMENT ELECTRICAL PENETRATIONS	10CFR50, APP. A, GDC X 50 (FSAR 8.3.1.1)		06-22-87	SEE REMARKS		SEE REF. NO. 5
8. 3. 1. 1							

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			DES CON	CURRENT IGN ST. AS OF:			
108.00 FSAR 1. 2. 12. 1	SINGLE FAILURE, REDUNDANCY & INDEPENDENCE CRITERIA	IEEE 279-1971 (FSAR X 1.2.12.1)	X	06-22-87	SEE REMARKS		SEE REF. NO. 26
126.00 FSAR 1. 9. 29	SEISMIC DESIGN CLASSIFICATION	EG 1.29, REV. 3, 9/78 (FSAR 1.9.29)	X	06-22-87	SEE REMARKS		SEE REF. NO. 9
131.00 FSAR 1. 9. 32	CRITERIA FOR SAFETY-RELATED ELECTRIC POWER SYSTEMS FOR NUCLEAR POWER PLANTS	EG 1.32, REV. 2, 2/77 (FSAR 1.9.32)	X	06-22-87	SEE REMARKS		SEE REF. NO. 11
132.00 FSAR 1. 9. 32	CRITERIA FOR SAFETY-RELATED ELECTRIC POWER SYSTEMS FOR NUCLEAR POWER PLANTS	IEEE 308-1974 (FSAR X 1.9.32)	X	06-22-87	SEE REMARKS		SEE REF. NO. 27
133.00 FSAR 1. 9. 32. 1	CRITERIA FOR SAFETY-RELATED ELECTRIC POWER SYSTEMS FOR NUCLEAR POWER PLANTS	10CFR50, APP. A, GDC X 17 (FSAR 1.9.32)	X	06-22-87	SEE REMARKS		SEE REF. NO. 42
134.00 FSAR 1. 9. 32. 1	CRITERIA FOR SAFETY-RELATED ELECTRIC POWER SYSTEMS FOR NUCLEAR POWER PLANTS - INSPECTION AND TESTING OF ELECTRIC POWER SYSTEMS	10CFR50, APP. A, GDC X 18 (FSAR 1.9.32.1)	X	06-22-87	SEE REMARKS		SEE REF. NO. 4
157.00 FSAR 1. 9. 63	PENETRATION ASSEMBLIES	EG 1.63, REV. 2, 7/78 (FSAR 1.9.63)	X	06-22-87	SEE REMARKS		SEE REF. NO. 17

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			DES	CON		CURRENT	IMPLEMENTATION	
IGN	ST.	AS OF:						
160.00 FSAR	PHYSICAL	RG 1.75, REV. 2,	X	X	06-22-87	SEE REMARKS	SEE REMARKS	SEE REF. NO. 18
1. 9. 75	INDEPENDENCE OF	9/78 (FSAR 1.9.75)						FOR DESIGN, SEE
	ELECTRIC SYSTEMS							REF. NO. 35 FOR
								CONST.
171.00 FSAR	SHARED EMERGENCY AND	RG 1.81, REV. 1,	X		06-22-87	SEE REMARKS		SEE REF. NO. 19
1. 9. 81	SHUTDOWN SYSTEMS FOR	1/75 (FSAR 1.9.81)						
	MULTI-UNIT NUCLEAR							
	POWER PLANTS							
172.00 FSAR	QUALIFICATION FOR	RG 1.89, REV. 0,	X		06-22-87	SEE REMARKS		SEE REF. NO. 20
1. 9. 89	CLASS 1E EQUIPMENT	11/74 (FSAR 1.9.89)						
173.00 FSAR	QUALIFICATION FOR	IEEE 323-1974 (FSAR	X		06-22-87	SEE REMARKS		SEE REF. NO. 29
1. 9. 89. 1	CLASS 1E EQUIPMENT	1.9.89.1)						
174.00 FSAR	COMBINING MODAL	RG 1.92, REV. 1,	X		07-15-87	DC-1000-E, REV. 6, 8-29-8		DC-1010 APPLIES
1. 9. 92	RESPONSES AND	2/76 (FSAR 1.9.92)				5, PG. 17, DC-1005, REV. 1,		DC-1005 CRITERIA
	SPATIAL COMPONENTS					4-4-83, C.S., DC-1010, RE		TO CAT. I
	IN SEISMIC RESPONSE					V. 5, 2-7-86, PGS. 90-94, A		ELECTRICAL
	ANALYSIS					PPENDIX TO SPEC		EQUIPMENT
						'QG', REV. 0, PG. QG-2		
175.00 FSAR	SEISMIC	RG 1.100 REV. 1,	X		06-22-87	SEE REMARKS		SEE REF. NO. 22
1. 9. 100	QUALIFICATION OF	8/77 (FSAR 1.9.100)						
	CLASS 1E ELECTRIC							
	EQUIPMENT							
177.00 FSAR	THERMAL OVERLOAD	RG 1.106, REV. 1,			06-22-87	SEE REMARKS		SEE REF. NO. 23
1. 9. 106	PROTECTION FOR	3/77 (FSAR 1.9.106)						
	ELECTRIC MOTORS ON							
	MOTOR OPERATED							
	VALVES.							
182.00 FSAR	INSTALLATION DESIGN	RG 1.128, REV. 1,	X		06-22-87	SEE REMARKS	05-21-87 SEE REMARKS	SEE REF. NO. 24
1. 9. 128	AND INSTALLATION OF	10/78 (FSAR 1.9.128)						
	LARGE LEAD STORAGE							
	BATTERIES							

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			DES CON	IGN ST.			
			CURRENT	AS OF:			
264.00 FSAR 5. 4. 1. 1	DESIGN BASES	TMI ACTION ITEM 11.K.3.25	X	06-22-87	DC-1217 5.0, ITEM 12, REV. 1, 3-9-83		
686.00 FSAR 1. 9. 30	Q.A. REQUIREMENTS FOR INSTALL., INSP., & TESTING OF INSTRUMENTATION & ELECTRIC EQUIPMENT	RG 1.30, 8/72 (FSAR 1.9.30)	X	X	06-22-87 SEE REMARKS	05-21-87 SEE REMARKS	SEE REF. NO. 10 FOR DESIGN, SEE REF. NO. 31 FOR CONSTRUCTION
687.00 FSAR 1. 9. 30	Q.A. REQUIREMENTS FOR INSTALL., INSP., & TESTING OF INSTRUMENTATION & ELECTRIC EQUIPMENT	ANSI N45.2.4-1972 (IEEE 336-1971) (FSAR 1.9.30.1)	X	X	06-22-87 SEE REMARKS	05-21-87 SEE REMARKS	SEE REF. NO. 31
688.00 FSAR 1. 9. 30	Q.A. REQUIREMENTS FOR INSTALL., INSP., & TESTING OF INSTRUMENTATION & ELECTRIC EQUIPMENT	IEEE 336-1971 (FSAR 1.9.30.1)	X	X	06-22-87 SEE REMARKS	05-21-87 SEE REMARKS	SEE REF. NO. 31
754.00 FSAR 17A. 1	QUALITY ASSURANCE REQ. FOR INST. AND INSP. OF ELECT. EQUIP.	RG 1.30, 8/11/72 (FSAR 17.A.1)	X	X	06-22-87 SEE REMARKS	05-21-87 SEE REMARKS	SEE REF. NO. 10 AND NO. 31
835.00 FSAR 3. 2. 2-1	SEISMIC CLASSIFICATION OF STRUCTURES, COMPONENTS, SYSTEMS	RG. 1.29-NOTE (e) (FSAR 3.2.2-1)	X		06-22-87 SEE REMARKS		SEE REF. NO. 9
849.00 FSAR 3. 2. 2-1	REDUNDANCY AND SEPARATION OF OFFSITE POWER SYS.	OFFSITE POWER EQUIPMENT IS DESIGNED AND ARRANGED TO PROVIDE REDUNDANCY AND SEPARATION FOR INCREASED RELIABILITY (TABLE 3.2.2-1, NOTE n, SH. 95)	X		06-22-87 DC-1000 R, REV. 6, 8-29-8 5, PG. 20, DC-1801, REV. 3, 7-19-83, PG. 1, DC-1815, R EV. 2, 5-18-83, PG. 1, DC-1 826, REV. 1, 9-18-78, PG. 1		

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			DESIGN IGN ST.	CURRENT AS OF:			
981.00 FSAR 3. 7.B. 1. 3	SEISMIC DAMPING VALUES FOR ITEMS OTHER THAN CABLE TRAYS AND SUPPORT SYSTEM	RG 1.61 (FSAR 3.7.B.1.3)	X	06-22-87	DC-1005, REV. 1, 4-4-83, C .S., DC-1010, REV. 5, 2-7- 86, PGS. 90-94		DC-1010 APPLIES DC-1005 CRITERIA TO CAT. I ELECTRICAL EQUIPMENT
1016.00 FSAR 3. 7.B. 3. 6	THREE COMPONENTS OF EARTHQUAKE MOTION	IEEE 344-1975 FOR QUALIFICATION BY TESTING. (FSAR 3.7.B.3.6)	X	06-22-87	SEE REMARKS		SEE REF. NO. 32
1113.00 FSAR 3. 8. 2. 4. 3	DESIGN OF ELECTRICAL PENETRATION ASSEMBLIES	ASME III, 1977 THROUGH SUMMER 1979 ADDENDA (FSAR 3.8.2.4.3)	X	06-22-87	DC-1818, REV. 3, 8-22-85, PG. 1		SEE RRF 6-34
1117.00 FSAR 3. 8. 2. 8	ELECTRICAL PENETRATION - STANDARD REVIEW PLAN EVALUATION	ELECTRICAL PENETRATION LOADING COMBINATIONS DIFFER FROM STANDARD REVIEW PLAN. (FSAR 3.8.2.8)	X	06-22-87	SEE REMARKS		SEE REF. NO. 1113
1199.00 FSAR 3.10.B. 2. 1	MEANS OF SEISMIC QUALIFICATION	SEISMIC- THE OBEs SHALL CONTAIN A MINIMUM OF 50c OF MAXIMUM STRESS (FSAR 3.10.B.2.1)	X	06-22-87	SPEC. APPENDIX 'QG', REV. 0		
1202.00 FSAR 3.10.B. 1	SEISMIC QUAL. AND DOCUMENTATION FOR SAFETY RELATED EQUIP. AND SUPPORTS.	IEEE 344-1975 (FSAR 3.10.B.1)	X	06-22-87	SEE REMARKS		SEE REF. NO. 32
1203.00 FSAR 3.10.B. 1	SEISMIC QUALIFICATION AND DOCUMENTATION FOR SAFETY RELATED EQUIP., AND SUPPORTS	RG 1.100 (FSAR 3.10.B.1)	X	06-22-87	SEE REMARKS		SEE REF. NO. 22

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1206.00 FSAR 3.10.B. 2. 1	MEANS OF SEISMIC QUALIFICATION OF MECH. & ELECT. EQUIP.	IEEE 344-1975 (FSAR 3.10.B.2.1)	X	06-22-87	SEE REMARKS		SEE REF. NO. 32
1207.00 FSAR 3.10.B. 2. 1	MEANS OF SEISMIC QUALIFICATION OF MECH. & ELECT. EQUIP.	RG 1.100 (FSAR 3.10.B.2.1)	X	06-22-87	SEE REMARKS		SEE REF. NO. 22
1210.00 FSAR 3.10.B. 2. 1	MEANS OF SEISMIC QUALIFICATION	SEISMIC-ALL INTERFACES AND THE EFFECTS OF THE AMPLIFICATION WITHIN THE EQUIPMENT DUE TO THE INTERFACES AND SUPPORTING STRUCTURES ARE CONSIDERED IN THE SEISMIC QUALIFICATION. (FSAR 3.10.B.2.1)	X	06-22-87	SPEC. APPENDIX 'QG', REV. 0		
1213.00 FSAR 3.10.B. 2. 2	MEANS OF SEISMIC QUALIFICATION TESTING BY MULTI-FREQ. OR SINGLE FREQ. INPUTS	RG 1.100 (FSAR 3.10.B.2.2)	X	06-22-87	SEE REMARKS		SEE REF. NO. 22
1215.00 FSAR 3.10.B. 2. 2	METHOD OF SEISMIC QUAL. ANALYSIS W/O TESTING	IEEE 344-1975, SECT. X 5 (FSAR 3.10.B.2.2)	X	06-22-87	SEE REMARKS		SEE REF. NO. 32
1216.00 FSAR 3.10.B. 2. 2	ANALYSIS METHOD OF SEISMIC QUALIFICATION	SEISMIC-WHEN AN EQUIVALENT STATIC COEFFICIENT ANALYSIS IS PERFORMED, JUSTIFICATION FOR ITS USE IS PROVIDED BY THE SUPPLIER (FSAR 3.10.B.2.2)	X	06-22-87	SEE REMARKS		SEE REF. NO. 32

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			DES CON	CURRENT DESIGN			
			IGN ST.	AS OF:			
1217.00 FSAR	COMBINED ANALYSIS AND TEST METHOD OF 3.10.B. 2. 2. 3 EQUIP. QUALIFICATION	IEEE 344-1975, SECTION 7 (FSAR 3.10.B.2.2.3)	X	06-22-87	SEE REMARKS		SEE REF. NO. 32
1219.00 FSAR	METHOD OF SEISMIC QUALIFICATION TEST 3.10.B. 2. 2. 4 SEQUENCE VERIFICATION	IEEE 323-1974, SECT. X 6 (FSAR 3.10.B.2.4)	X	06-22-87	SEE REMARKS		SEE REF. NO. 29
1220.00 FSAR	METHOD OF SEISMIC QUALIFICATION 3.10.B. 2. 2. 2 TESTING	IEEE 344-1975, SECT. X 6 (FSAR 3.10.B.2.2)	X	06-22-87	SEE REMARKS		SEE REF. NO. 32
1228.00 FSAR	QUALIFICATION AND DOCUMENTATION PROCEDURES FOR ELECTRICAL EQUIPMENT 3.10.B. 4. 1	RG 1.100 (FSAR 3.10.B.4.1)	X	06-22-87	SEE REMARKS		SEE REF. NO. 22
1229.00 FSAR	QUALIFICATION AND DOCUMENTATION PROCEDURES FOR ELECTRICAL EQUIPMENT 3.10.B. 4. 1	IEEE 344-1975 (FSAR 3.10.B.4.1)	X	06-22-87	SEE REMARKS		SEE REF. NO. 32
1231.00 FSAR	STANDARD REVIEW PLAN EVALUATION-EQUIP. 3.10.B. 4. 2 SEISMIC QUAL.-MULTI-MODAL RESPONSES	BC-TOP-4A (FSAR 3.10.B.4.2)	X	06-22-87	SEE REMARKS		SEE REF. NO. 174
1262.00 FSAR	ACCEPT. CRIT. ENV. QUAL. SAFETY RELATED EQUIPMENT 3.11.B. 2	RG 1.89 (FSAR 3.11.B.2)	X	06-22-87	SEE REMARKS		SEE REF. NO. 20
1263.00 FSAR	QUALIFICATION TESTS AND ANALYSES. TYPE TESTING. 3.11.B. 2	IEEE 323-1974 (FSAR 3.11.B.2)	X	06-22-87	SEE REMARKS		SEE REF. NO. 29
1264.00 FSAR	QUALIFICATION TESTS AND ANALYSES - SEISMIC QUALIFICATION OF ELECTRICAL EQUIPMENT 3.11.B. 2	RG 1.100 (FSAR 3.11.B.2)	X	06-22-87	SEE REMARKS		SEE REF. NO. 22

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1268.00 FSAR 3.11.B. 2	QUALIFICATION TESTS AND ANALYSES. ACCEPT. CRIT. FOR ENV. QUAL. SAFETY REL. EQUIPMENT	IEEE 323-1974 (FSAR 3.11.B.2)	X	06-22-87 SEE REMARKS			SEE REF. NO. 29
1269.00 FSAR 3.11.B. 2	ACCEPTANCE CRITERIA FOR ENVIRONMENTAL QUALIFICATION OF EQUIPMENT	NUREG-0588 (FSAR 3.11.B.2.)	X	06-22-87 DC-1000-E, REV. 6, 8-29-8 5, PG. 18, DC-1805, REV. 5, 8-6-85, PG. 9, DC-1818, RE V. 3, 8-22-85, PG. 1, DC-10 07, REV. 6, 3-24-86, PG. 1, DC-1010, REV. 5, 2-7-86			
1491.00 FSAR 1. 2. 12. 1. 2.1	SINGLE FAILURE, REDUNDANCY AND INDEPENDENCE CRITERIA	IEEE 279-1971	X	06-22-87 DC-1009, REV. 2, 6-3-83			
1503.00 FSAR 1. 3. 2-1	BATTERY SIZING	BATTERIES SIZED TO PROVIDE DC POWER FOR 2 3/4 HOUR @ 55 DEGREES F (FSAR 1.3.2-1)	X	06-22-87 DC-1806, REV. 5, 8-23-85, PG. 5			
1551.00 FSAR 1. 9. 53. 2	APPLICATION OF SINGLE FAILURE CRITERION	RG 1.53, REV. 0, 6/73 (FSAR 1.9.53)	X	06-22-87 SEE REMARKS			SEE REF. NO. 15
1601.00 FSAR 1. 9. 6. 2	INDEPENDENCE BETWEEN REDUNDANT STAND-BY (ON-SITE) POWER SOURCES AND THEIR DISTRIBUTION SYSTEM	RG 1.6, REV. 0, 3/71 X (FSAR 1.9.6)	X	06-22-87 SEE REMARKS			SEE REF. NO. 6
1602.00 FSAR 1. 9. 22	PERIODIC TESTING OF PROTECTION SYSTEM ACTUATION FUNCTIONS	RG 1.22, REV. 0 (FEB. 72) EXCEPT AS INDICATED IN FSAR SECTION 1.9.22.2 AND 7.1.2.5 (FSAR 1.9.22)	X	06-22-87 SEE REMARKS			SEE REF. NO. 8

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1610.00 FSAR 1. 9.106	THERMAL OVERLOAD PROTECTION FOR ELECTRIC MOTORS ON MOTOR OPERATED VALVE.	RG 1.106/IEEE 279-1971, SECTION 4.1, 4.2, 4.3, 4.4, 4.5, 4.10 AND 4.13 (FSAR 1.9.106)	X	06-22-87	SEE REMARKS		SEE REF. NO. 23
1978.00 FSAR 3. 8. 2. 3	ELECTRICAL PENETRATION - LOAD & LOAD COMBINATION, CLASS MC ITEMS	ASME III (FSAR 3.8.2.3)	X	06-22-87	SEE REMARKS		SEE REF. NO. 1113
1984.00 FSAR 3. 8. 2. 3	ELECTRICAL PENETRATION - LOAD AND LOAD COMBINATIONS	RG 1.57 (FSAR 3.8.2.3)	X	06-22-87	DC-1000-B, REV. 6, 8-29-8 5, PG. 17, DC-1818, REV. 3, 8-22-85, C.S.		
1991.00 FSAR 3. 8. 2. 6	ELECTRICAL PENETRATION - MATERIALS	ASME III (FSAR 3.8.2.6)	X	06-22-87	SEE REMARKS		SEE REF. NO. 1113
1993.00 FSAR 3. 8. 2. 7	ELECTRICAL PENETRATION - TESTING	10CFR50, APP. J.	X	06-22-87	SEE REMARKS		SEE REF. NO. 1113
1994.00 FSAR 3. 8. 2. 8	ELECTRICAL PENETRATION - CLASS MC ITEMS, LOAD & LOAD COMBINATION	ASME III (FSAR 3.8.2.8)	X	06-22-87	SEE REMARKS		SEE REF. NO. 1113
1995.00 FSAR 3. 8. 2. 8	ELECTRICAL PENETRATION - CLASS MC ITEMS, LOAD & LOAD COMBINATION	RG 1.57 (FSAR 3.8.2.8)	X	06-22-87	SEE REMARKS		SEE REF. NO. 1984
2007.00 FSAR 3.10.B. 1	SEISMIC QUALIFICATION OF CATEGORY I MECHANICAL & ELECTRICAL BOP EQUIPMENT, CRITERIA	SEISMIC CATEGORY I SAFETY RELATED MECHANICAL & ELECTRICAL EQUIPMENT IS QUALIFIED TO WITHSTAND THE EFFECTS OF SEISMIC LOADS RESULTING FROM OBE AND SSE (FSAR 3.10.B.1)	X	06-22-87	DC-1005, REV. 1, 4-4-83, PG. 3A, PARA. 3.6.3		

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2180.00 FSAR 8. 1. 4. 2.A	ONSITE POWER SYSTEM - INDEPENDENCE BETWEEN UNITS	10CFR50, APP. A, GDC X 17 (FSAR 8.1.4.2.A)		06-22-87	SEE REMARKS		SEE REF. NO. 42
2181.00 FSAR 8. 1. 4. 2.G	ONSITE POWER SYSTEM - BATTERY SIZING	BATTERIES ARE SIZED X FOR 165 MINUTES OF OPERATION WITHOUT SUPPORT OF BATTERY CHARGERS (FSAR 8.1.4.2.G)		06-22-87	DC-1806, REV. 5, 8-23-85, PG. 11		
2188.00 FSAR 1. 9. 61	DAMPING VALUES FOR SEISMIC DESIGN	RG 1.61, 10/73 (FSAR X 1.9.61)		06-22-87	SEE REMARKS		SEE REF. NO. 981
2319.00 FSAR 10A. 2. 6	AUX. FEEDWATER SYSTEM PHYSICAL SEPARATION BETWEEN ELECTRICAL COMPONENTS.	PHYSICAL SEPARATION X (AUX. FEEDWATER SYSTEM) RG 1.75		06-22-87	DC-1302-3.1.1M, REV. 5, 4-18-83		
2320.00 FSAR 10A. 2. 6	AUX. FEEDWATER SYSTEM PHYSICAL SEPARATION BETWEEN ELECTRICAL COMPONENTS	PHYSICAL SEPARATION X (AUX. FEEDWATER SYSTEM) IEEE 384		06-22-87	DC-1000E-2.0.D1, REV. 5, 8-29-85		
2343.00 FSAR 5. 4. 1. 3. 8	RCP OVERSPEED CONSIDERATION	RCP OVERSPEED-FOR X TURBINE TRIPS BY REACTOR TRIP SYSTEM OR TURBINE PROTECTION SYSTEM, GENERATOR AND RCP's REMAIN CONNECTED FOR 30 SECONDS (FSAR 5.4.1.3.8)		06-22-87	DC-1825, REV. 2, 9-24-85, PG. 3		
2352.00 FSAR 8. 1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS - ELECTRIC POWER SYSTEMS	10CFR50, APP. A, GDC X 17 (FSAR 8.1.4.3)		06-22-87	SEE REMARKS		SEE REF. NO. 42

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2354.00 FSAR B. 1. 4. 3	COMPLIANCE WITH RG & IEEE STANDARDS - PERIODIC TESTING OF POWER & PROTECTION SYSTEMS	RG 1.118 (FSAR 8.1.4.3)	X	06-22-87	DC-1000-E, REV. 6, 8-29-8 5, PG. 18, DC-1804, REV. 5, 10-2-85, C.S., DC-1806, R EV. 5, 8-23-85, C.S., DC-1 807, REV. 3, 8-23-85, C.S. , DC-1816, REV. 3, 9-3-85, C.S., DC-1818, REV. 3, 8-2 2-85, C.S., DC-1823, REV. 3, 2-3-84, C.S.		
2355.00 FSAR B. 1. 4. 3	COMPLIANCE WITH RG & IEEE STANDARDS - MAINTENANCE AND TESTING - PERIODIC BATTERY CAPACITY TESTS	RG 1.129 (FSAR 8.1.4.3)	X	06-22-87	DC-1000-E, REV. 6, 8-29-8 5, PG. 18, DC-1806, REV. 5, 8-23-85, C.S.		
2356.00 FSAR B. 1. 4. 3	COMPLIANCE WITH RG & IEEE STANDARDS - PERIODIC TESTING OF CLASS 1E PROTECTION SYSTEMS	IEEE 338-1977 (FSAR X 8.1.4.3)		06-22-87	DC-1000-E, REV. 6, 8-29-8 5, PG. 14, DC-1806, REV. 5, 8-23-85, PG. 1, DC-1807, R EV. 3, 8-23-85, PG. 1, DC-1 816, REV. 3, 9-3-85, PG. 3		
2360.00 FSAR B. 1-1	ACCEPTANCE CRITERIA/GUIDELINES FOR ELECTRIC POWER SYSTEMS - DESIGN BASES FOR PROTECTION AGAINST NATURAL PHENOMENA	10CFR50, APP. A, GDC X 2 (FSAR 8.1-1)		06-22-87	SEE REMARKS		SEE REF. NO. 95
2361.00 FSAR B. 1-1	ACCEPTANCE CRITERIA/GUIDELINES FOR ELECTRIC POWER SYSTEMS - ENVIRONMENTAL AND MISSILE DESIGN BASES	10CFR50, APP. A, GDC X 4 (FSAR 8.1-1)		06-22-87	SEE REMARKS		SEE REF. NO. 2

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			DES CON IGN ST.	CURRENT AS OF:			
2362.00 FSAR B. 1-1	ACCEPTANCE CRITERIA/GUIDELINES FOR ELECTRIC POWER SYSTEMS - SHARING OF STRUCTURES, SYSTEMS, AND COMPONENTS	10CFR50, APP. A, GDC X 5 (FSAR TABLE B.1-1)		06-22-87	SEE REMARKS		SEE REF. NO. 3
2363.00 FSAR B. 1-1	ACCEPTANCE CRITERIA/GUIDELINES FOR ELECTRIC POWER SYSTEMS	10CFR50, APP. A, GDC X 17 (FSAR B.1-1)		06-22-87	SEE REMARKS		SEE REF. NO. 42
2364.00 FSAR B. 1-1	ACCEPTANCE CRITERIA/GUIDELINES FOR ELECTRIC POWER SYSTEMS - INSPECTION AND TESTING OF ELECTRIC POWER SYSTEMS	10CFR50, APP. A, GDC X 18 (FSAR B.1-1)		06-22-87	SEE REMARKS		SEE REF. NO. 4
2365.00 FSAR B. 1-1	ACCEPTANCE CRITERIA/GUIDELINES FOR ELECTRIC POWER SYSTEMS - CONTAINMENT DESIGN BASES	10CFR50, APP. A, GDC X 50 (FSAR B.1-1)		06-22-87	SEE REMARKS		SEE REF. NO. 5
2366.00 FSAR B. 1-1	ACCEPTANCE CRITERIA/GUIDELINES FOR ELECTRIC POWER SYSTEMS - INDEPENDENCE BETWEEN REDUNDANT STAND-BY (ON-SITE) POWER SOURCES AND THEIR DISTRIBUTION SYSTEM	RG 1.6 (FSAR B.1-1) X		06-22-87	SEE REMARKS		SEE REF. NO. 6
2368.00 FSAR B. 1-1	ACCEPTANCE CRITERIA/GUIDELINES FOR ELECTRIC POWER SYSTEMS	RG 1.32 (FSAR B.1-1) X		06-22-87	SEE REMARKS		SEE REF. NO. 11

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REF. SOURCE AND NUMBER SECTION	SUBJECT	DOCUMENT/FEATURE	DESIGN		CONST CURRENT AS OF:	CONSTRUCTION IMPLEMENTATION	REMARKS
			DES CON IGN ST.	CURRENT AS OF:			
2369.00 FSAR 8. 1-1	ACCEPTANCE CRITERIA/GUIDELINES FOR ELECTRIC POWER SYSTEMS	RG 1.47 (FSAR 8.1-1) X		06-22-87	SEE REMARKS		SEE REF. NO. 14
2370.00 FSAR 8. 1-1	ACCEPTANCE CRITERIA/GUIDELINES FOR ELECTRIC POWER SYSTEMS - PENETRATION ASSEMBLIES	RG 1.63 (FSAR 8.1-1) X		06-22-87	SEE REMARKS		SEE REF. NO. 17
2371.00 FSAR 8. 1-1	ACCEPTANCE CRITERIA/GUIDELINES FOR ELECTRIC POWER SYSTEMS	RG 1.75 (FSAR 8.1-1) X		06-22-87	SEE REMARKS		SEE REF. NO. 18
2372.00 FSAR 8. 1-1	ACCEPTANCE CRITERIA/GUIDELINES FOR ELECTRIC POWER SYSTEMS - SHARED EMERGENCY AND SHUTDOWN SYSTEMS FOR MULTI-UNIT NUCLEAR POWER PLANTS	RG 1.81 (FSAR 8.1-1) X		06-22-87	SEE REMARKS		SEE REF. NO. 19
2373.00 FSAR 8. 1-1	ACCEPTANCE CRITERIA/GUIDELINES FOR ELECTRIC POWER SYSTEMS	RG 1.106 (FSAR 8.1-1)	X	06-22-87	SEE REMARKS		SEE REF. NO. 23
2375.00 FSAR 8. 1-1	ACCEPTANCE CRITERIA/GUIDELINES FOR ELECTRIC POWER SYSTEMS - PERIODIC TESTING OF POWER AND PROTECTION SYSTEMS	RG 1.118 (FSAR 8.1-1)	X	06-22-87	SEE REMARKS		SEE REF. NO. 2354

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REF. SOURCE AND NUMBER SECTION	SUBJECT	DOCUMENT/FEATURE	DESIGN		CONST CURRENT AS OF:	CONSTRUCTION IMPLEMENTATION	REMARKS
			DES CON	CURRENT IGN ST. AS OF:			
2376.00 FSAR 8. 1-1	ACCEPTANCE CRITERIA/GUIDELINES FOR ELECTRIC POWER SYSTEMS - INSTALLATION DESIGN AND INSTALLATION OF LARGE LEAD STORAGE BATTERIES	RG 1.12B (FSAR 8.1-1)	X	X 06-22-87	SEE REMARKS	05-21-87 SEE REMARKS	SEE REF. NO. 24
2380.00 FSAR 8. 1-1	ACCEPTANCE CRITERIA/GUIDELINES FOR ELECTRIC POWER SYSTEMS - STABILITY OF OFFSITE POWER	BTP ICSB 11(PSB)(FSAR 8.1-1)	X	06-22-87	DC-1000-E, REV. 6, 8-29-85, C.S., DC-1801, REV. 3, 7-19-83, C.S., DC-1815, REV. 2, 5-18-83, C.S.		
2382.00 FSAR 8. 1-1	ACCEPTANCE CRITERIA/GUIDELINES FOR ELECTRIC POWER SYSTEMS - SAFETY SYSTEM BYPASSED AND INOPERABLE STATUS INDICATION	BTP ICSB 21 (FSAR 8.1-1)	X	06-22-87	DC-1000-E, REV. 6, 8-29-85, C.S., DC-1605, REV. 1, 3-29-83, C.S., DC-1625, REV. 1, 8-2-83, C.S., DC-1801, REV. 3, 7-19-83, C.S.		
2383.00 FSAR 8. 1-1	ACCEPTANCE CRITERIA/GUIDELINES FOR ELECTRIC POWER SYSTEMS - ADEQUACY OF STATION DISTRIBUTION SYSTEM VOLTAGES	BTP PSB-1 (FSAR 8.1-1)	X	06-22-87	DC-1000-E, REV. 6, 8-29-85, C.S., DC-1804, REV. 5, 10-2-85, C.S., DC-1816, REV. 3, 9-3-85, C.S., DC-1821, REV. 5, 5-2-83, C.S., DC-1823, REV. 3, 2-3-84, C.S.		
2390.00 FSAR 6. 1. 1. 1. 1	SPEC. FOR PRINCIPAL PRESSURE RETAINING MATERIAL FOR ESF SYSTEMS	ASME III, NE-2000 (CONT. PENETRATING MATERIALS) (FSAR 6.1.1.1.1)	X	06-22-87	SEE REMARKS		SEE REF. NO. 1113

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			DES CON	CURRENT				
			IGN ST.	AS OF:				
2399.00 FSAR 6. 2. 2. 1. 1. BASES 1. G	CONTAINMENT COOLING SYSTEM SAFETY DESIGN	BG 1.32	X	06-22-87	DC-1206, REV. 2, 4-28-83			
2445.00 FSAR 6. 2. 5. 2. 1	ELECTRIC HYDROGEN RECOMBINER	EACH RECOMBINER IS POWERED FROM A SEPARATE SAFEGUARD BUS AND IS PROVIDED WITH A SEPARATE POWER PANEL AND CONTROL PANEL	X	06-22-87	DC-1513-3.3.1, REV. 0, 6-3-83			
2968.00 FSAR 17A. 0	Q.A. REQUIREMENTS FOR INSTALL., INSP., & TESTING OF INSTRUMENTATION & ELECTRICAL EQUIPMENT	ANSI N45.2.4-1972 (IEEE 336-1971)(FSAR 17.A.0)	X	X	06-22-87 SEE REMARKS	05-21-87 SEE REMARKS		SEE REF. NO. 31
3527.00 FSAR 9. 2. 1-3	NSCW COMPONENT DATA	CLASS 1E POWER SUPPLY.	X	06-22-87	DC-1202-3.1D, REV. 5, 4-19-83			
4114.00 FSAR 3. 1. 1	CONFORMANCE WITH NUCLEAR REGULATORY COMMISSION GENERAL DESIGN CRITERIA, OVERALL REQUIREMENTS - DESIGN BASES FOR PROTECTION AGAINST NATURAL PHENOMENA	10CFR50, APP. A, GDC X 2 (FSAR 3.1.1)	X	06-22-87	SEE REMARKS			SEE REF. NO. 95
4115.00 FSAR 3. 1. 1	CONFORMANCE WITH NUCLEAR REGULATORY COMMISSION GENERAL DESIGN CRITERIA, OVERALL REQUIREMENTS - ENVIRONMENTAL AND MISSILE DESIGN BASES	10CFR50, APP. A, GDC X 4 (FSAR 3.1.1)	X	06-22-87	SEE REMARKS			SEE REF. NO. 2

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			DES CON IGN ST.	CURRENT AS OF:			
4116.00 FSAR 3. 1. 1	CONFORMANCE WITH NUCLEAR REGULATORY COMMISSION GENERAL DESIGN CRITERIA, OVERALL REQUIREMENTS - SHARING OF STRUCTURES, SYSTEMS, AND COMPONENTS	10CFR50, APP. A, GDC X 5 (FSAR 3.1.1)		06-22-87	SEE REMARKS		SEE REF. NO. 3
4118.00 FSAR 3. 1. 2	PROTECTION BY MULTIPLE FISSION PRODUCT BARRIERS - ELECTRIC POWER SYSTEMS	10CFR50, APP. A, GDC X 17 (FSAR 3.1.2)		06-22-87	SEE REMARKS		SEE REF. NO. 42
4119.00 FSAR 3. 1. 2	PROTECTION BY MULTIPLE FISSION PRODUCT BARRIERS - INSPECTION AND TESTING OF ELECTRIC POWER SYSTEMS	10CFR50, APP. A, GDC X 18 (FSAR 3.1.2)		06-22-87	SEE REMARKS		SEE REF. NO. 4
4132.00 FSAR 3. 1. 5	REACTOR CONTAINMENT - DESIGN BASES	10CFR50, APP. A, GDC X 50 (FSAR 3.1.5)		06-22-87	SEE REMARKS		SEE REF. NO. 5
4181.00 NRC QUEST. CORRES. Q430. 69	QUALIFICATION OF LOAD SEQUENCER, PROTOTYPE TEST	IEEE 344-1975 (FSAR X Q430.69)		06-22-87	SEE REMARKS		SEE REF. NO. 32
4272.00 NRC QUEST. CORRES. Q430. 5-1	MAIN CONTROL BOARD & REMOTE SHUTDOWN PANEL ILLUMINATION LEVELS	THE EMERGENCY LIGHTING POWER DISTRIBUTION SYSTEM IS CLASS 1E FROM 4.16KV TO 480-V LEVEL. (FSAR Q430.5-1)	X	06-22-87	DC-1808, REV. 4, 11-7-85, PG. 3		

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4274.00 NRC QUEST. CORRES. Q430. 59	POWER SUPPLY TO CLASS 1E BUSES	10CFR50, APP. A, GDC-17 (FSAR Q430.59)	X	06-22-87	SEE REMARKS			SEE REF. NO. 42
4275.00 NRC QUEST. CORRES. Q430. 59	POWER SUPPLY TO CLASS 1E BUSES	IEEE 308-1974 (FSAR Q430.59)	X	06-22-87	SEE REMARKS			SEE REF. NO. 27
4276.00 NRC QUEST. CORRES. Q430. 59	POWER SUPPLY TO CLASS 1E BUSES	RG 1.32 (FSAR Q430.59)	X	06-22-87	SEE REMARKS			SEE REF. NO. 11
4277.00 NRC QUEST. CORRES. Q430. 61	120V AC POWER SUPPLIES	RG 1.75 (FSAR Q430.61)	X	06-22-87	SEE REMARKS			SEE REF. NO. 18
4280.00 NRC QUEST. CORRES. Q430. 64	MOV OL PROTECTION PER RG POS. C.1(*)	RG 1.106 (FSAR Q430.64)	X	06-22-87	SEE REMARKS			SEE REF. NO. 23
4281.00 NRC QUEST. CORRES. Q430. 64	MOV OVERLOAD ANNUNCIATION	MOV MOTOR OVERLOAD IS ANNUNCIATED IN CONTROL ROOM (FSAR Q430.64)	X	06-22-87	1X3D-BG-C01G, REV. 3, 1X3D-BG-C01X, REV. 3, 1X3D-BG-C01V, REV. 1, DC-1805, DM CN 1805-5			SEE FINDING 2RRF-006-013
4283.00 NRC QUEST. CORRES. Q430. 68	QUALIFICATION OF DEGRADED VOLTAGE PROTECTION EQUIPMENT	IEEE 323-1974 (FSAR Q430.68)	X	06-22-87	SEE REMARKS			SEE REF. NO. 29
4284.00 NRC QUEST. CORRES. Q430. 68	QUALIFICATION OF DEGRADED VOLTAGE PROTECTION EQUIPMENT	IEEE 344-1975 (FSAR Q430.68)	X	06-22-87	SEE REMARKS			SEE REF. NO. 32
4286.00 NRC QUEST. CORRES. Q430. 69	QUALIFICATION OF LOAD SEQUENCERS, PROTOTYPE TEST	IEEE 323-1974 (FSAR Q430.69)	X	06-22-87	SEE REMARKS			SEE REF. NO. 29
4289.00 NRC QUEST. CORRES. Q260. 61	PRESSURIZER RELIEF VALVES, BLOCK VALVES, LEVEL INDICATORS	PRESSURIZER RELIEF VALVES, BLOCK VALVES LEVEL INDICATORS POWERED FROM CLASS 1E AC/DC SYSTEMS	X	06-22-87	DC-1201, COVER PAGE, REV. 2, 3-9-84, DC-1010-T1, REV. 5, 2-7-86, DWGS. 2X3D-BD-B02A, -B02B, -B03H, -B03F, 2X6AV01-287, -317, -346, 2X3D-AA-G02A			

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4310.00 NRC QUEST. CORRES. Q420. 10	ISOLATION DEVICES	IEEE 472 (FSAR Q420.10)	X	06-22-87	DC-1000-E, REV. 6, 8-29-8 5, PG. 15, DC-1816, REV. 3, 9-3-85, PG. 3			
4319.00 NRC QUEST. CORRES. Q420. 46	BALANCE OF PLANT INTERFACE WITH WESTINGHOUSE DESIGN	WCAP 8760 (FSAR Q420.46)	X	06-22-87	DC-1009, REV. 2, 6-3-83, P G. 3			INTERFACE REFERENCE TO DC-1009 IN DC-1825
4329.00 NRC QUEST. CORRES. Q430. 75	QUALIFICATION OF FIRE-RESTRAINT MATERIAL USED AS SEPARATION BARRIERS WITHIN PANELS AND CONTROL BOARDS	ASTM E-119 (FSAR Q430.75)	X	06-22-87	DC-1000-E, REV. 6, 8-29-85, PG. 7, IEEE-384			
4370.00 FSAR 3. 7.B. 1-1	DAMPING VALUES FOR FIXED BASE STRUCTURES AND COMPONENTS	SEISMIC PERCENT OF CRITICAL DAMPING PER MODE (FSAR 3.7.B.1-1)	X	06-22-87	SEE REMARKS			SEE REF. NO. 2188
4483.00 FSAR 7. 1. 2. 1. 3.E	INSTRUMENTATION AND CONTROL POWER SUPPLY SYSTEM - RTS	IEEE STD. 308-1974 SECT. 5.4 (FSAR 7.1.2.1.3.8)	X	06-22-87	SEE REMARKS			SEE REF. NO. 27
4549.00 FSAR 7. 6. 1. 2	I & C POWER SUPPLY SYSTEM ANALYSIS	IEEE 308-1974 (FSAR 7.6.1.2)	X	06-22-87	SEE REMARKS			SEE REF. NO. 27
4668.00 I.E.B. CORRES. C-79/12/28	WESTINGHOUSE ELECTRIC RELAYS	MEASURES WILL BE TAKEN TO ENSURE THAT DEFECTIVE W-BFD RELAYS ARE NOT USED (IEB CORRES. C-79/12/28)	X	06-22-87	DC-1804, REV. 5, 10-2-85, PG. 10, DC-1805, REV. 5, 8- 6-85, PG. 13, DC-1825, REV .2, 9-24-85, PG. 5			FILE: IEB 79-25
4688.00 FSAR 3. 7.B. 3. 6	SEISMIC SUBSYSTEM ANALYSES - THREE COMPONENTS OF EARTHQUAKE MOTION.	COMPONENT EARTHQUAKE X EFFECTS COMBINED BY SRSS METHOD (FOR QUAL. BY ANALYSIS)(FSAR 3.7.B.3.6)	X	06-22-87	SPEC. APPENDIX 'QG,' REV. 0			

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			DES CON	CURRENT IGN ST. AS OF:			
4808.00 FSAR 7. 6. 1. 2	I & C POWER SUPPLY SYSTEM ANALYSIS	RG 1.6 (FSAR 7.6.1.2)	X	06-22-87	SEE REMARKS		SEE REF. NO. 6
4809.00 FSAR 7. 6. 1. 2	I & C POWER SUPPLY SYSTEM - ANALYSIS	VITAL AC-NO SINGLE FAILURE IN THE I & C POWER SUPPLY SYSTEM OR ASSOCIATED POWER SUPPLIES CAN CAUSE LOSS OF POWER TO MORE THAN ONE OF THE REDUNDANT LOADS. (FSAR 7.6.1.2)	X	06-22-87	DC-1000-E, REV. 6, 8-29-85, PGS. 22, 24 & 25, DC-1807, REV. 3, 8-23-85, PG. 2		
4810.00 FSAR 8. 1. 4. 2.B	ONSITE POWER SYSTEM - CAPABILITY OF EACH ONSITE 1E AC POWER SYSTEM TO MAINTAIN ONE UNIT SAFE CONDITIONS	10CFR50, APP. A, GDC X 17 (FSAR 8.1.4.2.B)	X	06-22-87	SEE REMARKS		SEE REF. NO. 42
4813.00 FSAR 8. 1. 4. 2.F	ONSITE POWER SYSTEM-SINGLE FAILURE CRITERIA	10CFR50, APP. A, GDC X 17 (FSAR 8.1.4.2.F)	X	06-22-87	SEE REMARKS		SEE REF. NO. 42
4814.00 FSAR 8. 1. 4. 2.L	ONSITE POWER SYSTEM - PERIODIC TEST CAPABILITIES OF CLASS 1E EQUIPMENT.	10CFR50, APP. A, GDC X 18 (FSAR 8.1.4.2.L)	X	06-22-87	SEE REMARKS		SEE REF. NO. 4
4815.00 FSAR 8. 3. 1. 1	CLASS 1E BUS UNDERVOLTAGE PROTECTION SENSORS	IEEE 279 (FSAR 8.3.1.1)	X	06-22-87	SEE REMARKS		SEE REF. NO. 26
4817.00 FSAR 8. 3. 1. 1. 2	CLASS 1E SYSTEMS EQUIPMENT LAYOUT	ALL SAFETY RELATED EQUIPMENT HOUSED IN SEISMIC CAT. I STRUCTURES (FSAR 8.3.1.1.2)	X	06-22-87	DC-1005, REV. 1, 4-4-83, PG. 2, PARA. 3.4		

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			DES CON IGN ST.	CURRENT AS OF:			
4824.00 FSAR B. 3. 2. 1	125-V DC SAFETY FEATURES SYSTEMS - DESIGNATION AS 1B	IEEE 308 (FSAR 8.3.2.1)	X	06-22-87	SEE REMARKS		SEE REF. NO. 27
4825.00 FSAR B. 3. 2. 1	SINGLE FAILURE IN 125-V DC SAFETY FEATURES SYSTEMS	NO SINGLE FAILURE IN X ANY 125-V DC SYSTEM WILL RESULT IN CONDITIONS THAT WILL PREVENT SAFE SHUTDOWN (FSAR 8.3.2.1)	X	06-22-87	DC-1000-E, REV. 6, 8-29-8 5, PG. 24, DC-1806, REV. 5, 8-23-85, PG. 4		
4826.00 FSAR B. 3. 2. 1	SIZING OF BATTERIES	IEEE 485-1978 (FSAR X 8.3.2.1)	X	06-22-87	DC-1000-E, REV. 6, 8-29-8 5, PG. 15, DC-1806, REV. 5, 8-23-85, PG. 2		
4827.00 FSAR B. 3. 2. 1. 1	SIZING OF BATTERIES	BATTERIES SIZED AT X MIN. TEMP. OF 55 DEGREES F (FSAR 8.3.2.1.1)	X	06-22-87	DC-1806, REV. 5, 8-23-85, PG. 5		
4828.00 FSAR B. 3. 2. 1	SIZING OF BATTERIES	BATTERY CAPACITY IS X INCREASED BY 10% FOR LOAD GROWTH AND 25% FOR AGING (FSAR 8.3.2.1)	X	06-22-87	DC-1806, REV. 5, 8-23-85, PG. 5		
4829.00 FSAR B. 3. 2. 1	SIZING OF BATTERIES	BATTERY MIN. VOLTAGE X DESIGN LIMIT IS 1.80-V/CELL OR 106.2-V/BATTERY (FSAR 8.3.2.1)	X	06-22-87	X3ADO1, REV. 10, PG. 5, PARA. 3.2.1.1B		
4830.00 FSAR B. 3. 2. 1	125V-DC SAFETY FEATURES SYSTEMS SIZING OF BATTERY CHARGERS	IEEE 308 (FSAR X 8.3.2.1)	X	06-22-87	SEE REMARKS		SEE REF. NO. 27

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			DES CON IGN ST.	CURRENT AS OF:			
4831.00 FSAR	125V-DC SAFETY FEATURES SYSTEMS SIZING OF BATTERY CHARGERS	RG 1.32 (FSAR 8.3.2.1)	X	06-22-87	SEE REMARKS		SEE REF. NO. 11
8. 3. 2. 1							
4832.00 FSAR	125V-DC SAFETY FEATURES SYSTEMS SIZING OF BATTERY CHARGERS	CHARGERS SPECIFIED TO MAINTAIN OUTPUT VOLTAGE REQUIRED + OR - 1% FROM NO LOAD TO FULL LOAD (FSAR 8.3.2.1)	X	06-22-87	X3AD01, REV. 10, PG. 6, PARA. 3.2.1.2.2		
8. 3. 2. 1							
4833.00 FSAR	125V-DC SAFETY FEATURES SYSTEMS SIZING OF BATTERY CHARGERS	CHARGER OUTPUT FILTERED TO LIMIT RIPPLE VOLTAGE TO MAX. 3% RMS WITH BATTERY DISCONNECTED (FSAR 8.3.2.1)	X	06-22-87	X3AD01, REV. 10, PG. 6, PARA. 3.2.1.2.2		
8. 3. 2. 1							
4836.00 FSAR	ANALYSIS - TRAIN C&D BATTERY CHARGERS QUALIFIED AS ISOLATION DEVICES	IEEE 384 (FSAR 8.3.2.2)	X	06-22-87	SEE REMARKS		SEE REF. NO. 35
8. 3. 2. 2							
4837.00 FSAR	ANALYSIS - TRAIN C&D BATTERY CHARGERS QUALIFIED AS ISOLATION DEVICES	RG 1.75 (FSAR 8.3.2.2)	X	06-22-87	SEE REMARKS		SEE REF. NO. 35
8. 3. 2. 2							
4838.00 FSAR	MAINTENANCE AND TESTING - PERIODIC BATTERY CAPACITY TESTS	RG 1.129 (FSAR 8.3.2.1)	X	06-22-87	SEE REMARKS		SEE REF. NO. 2355
8. 3. 2. 1							
4839.00 FSAR	DC POWER SYSTEM - MAINTENANCE AND TESTING-PERIODIC CAPACITY TESTS	IEEE 450-1975 (FSAR 8.3.2.1)	X	06-22-87	DC-1000 E, REV. 6, 8-29-85, PG. 15, DC-1806, REV. 5, 8-23-85, PG. 2		
8. 3. 2. 1							

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REF. SOURCE AND NUMBER SECTION	SUBJECT	DOCUMENT/FEATURE	DESIGN DES CON IGN ST.	DESIGN CURRENT AS OF: DESIGN IMPLEMENTATION		CONST CURRENT AS OF:	CONSTRUCTION IMPLEMENTATION		REMARKS
4936.00 NRC QUEST. CORRES. Q430. 75(E)	HIGH ENERGY EQUIP. IN CABLE SPREADING ROOMS	RG 1.75 (FSAR Q430.75(E)	X	06-22-87	SEE REMARKS				SEE REF. NO. 18
4937.00 NRC QUEST. CORRES. Q430. 75(E)	HIGH ENERGY EQUIP. IN CABLE SPREADING ROOMS	IEEE 384 (FSAR Q430.75(E)	X	06-22-87	SEE REMARKS				SEE REF. NO. 35
5019.00 I.E.B. CORRES. C-77/06/27	ITE IMPERIAL PNEUMATIC TIME DELAY RELAYS	PNEUM. TIME DELAY RELAYS WITH A REPEAT ACCUR. RANGE OF + OR - 15% OR GREATER WILL NOT BE USED. SOLID STATE T.D.R. OR PNEUM. T.D.R. WITH A REPEAT ACCUR. RANGE BETTER THAN + OR - 15% WILL BE USED	X	06-22-87	SEE REMARKS				FILE: IEB 77-01, REFER TO BECHTEL LETTER B,S 760, 6-22-77
5020.00 I.E.B. CORRES. C 77/11/11	USE OF WESTINGHOUSE TYPE AR RELAY	NO WESTINGHOUSE TYPE X "AR" RELAYS WILL BE USED IN THE B.O.P. SAFETY CIRCUITS (I.E.B. CORRES. C-77/11/11)		06-22-87	DC-1805,REV.5,8-6-85,P G.13				FILE: IEB 77-02

4 PROGRAM DESCRIPTION

4.1 DESIGN

This portion of the module describes the processes and controls utilized by Project Engineering and Georgia Power Company (GPC) during generation of the various design documents used to facilitate procurement, construction, and licensing activities. The design and layout of electrical equipment was based upon the design and operational requirements delineated in the Vogtle Project Design Manual and described in the Final Safety Analysis Report (FSAR). The Project Reference Manual (PRM) contains the procedures that control the design, review, and revision process.

Design control and review are performed in accordance with applicable sections of the Vogtle Electric Generating Plant (VEGP) PRM, part C. The design documents and drawings for equipment covered by this module were developed by the Bechtel Western Power Company (BWPC) project Electrical, Plant Design, Control Systems, and Architectural Design Disciplines under the direction of the respective engineering group supervisor (EGS). Upon initial preparation and development, the documents/drawings were reviewed by onproject reviewers (other disciplines, Quality Assurance for Q-class items, Quality Engineering, etc.) to ensure proper implementation of project requirements and by offproject reviewers, including the discipline chief engineer, as required by the Design Control Check List (DCCL), to ensure technical adequacy.^(a) Documents and drawings describing equipment contained in the Q-list were identified by placing a Q on the cover/title sheet of documents and in the lower right-hand corner of drawings. Requirements for the Q-list are contained in the VEGP PRM, part C, section 14, and the equipment is listed in Table 3.2.2-1 of the FSAR.

The design work flow process has been divided into the following four phases:

1. Development of design criteria.
2. Preliminary design and layout considering the nuclear steam supply system (NSSS) and interface requirement, Codes of Federal Regulations, regulatory guidance, industrial/BWPC standards and guides, and client requirements (includes development and issue of specifications for auxiliary equipment).

a. The DCCL procedure is described in the VEGP PRM, part C, section 20. The DCCL originals are maintained in Project File X7BD68.

3. Detailed design and clarification of technical interfaces and release of revision 0 drawings.
4. Construction support and interface [determining disposition of Field Change Requests (FCRs) and Deviation Reports (DRs)].

Phases 1, 2, and 3 of the design process are substantially complete and engineering drawings, construction specifications, and material specifications have been issued. The current activity of the design engineering groups centers on processing FCRs and DRs and issuing change notices or revisions to engineering design documents and drawings. The final documentation verification of calculations and the issue of as-built drawings conclude the construction support phase.

The following paragraphs describe the processes involved in the development, review, and revision of the documents generated in each of the above stages.

4.1.1 DESIGN CRITERIA DEVELOPMENT

The initial criteria for the design of the safety-related systems and components are contained in the Preliminary Safety Analysis Report, which was submitted to the Nuclear Regulatory Commission (NRC) in August 1972. Detailed design criteria were developed and issued as the Design Manual.

The Design Manual is organized into sections as follows:

- o General Plant Criteria - These criteria provide the overall plant physical protection criteria and the maintenance and serviceability criteria. The protection criteria provide acceptable design bases for the protection of systems and equipment important in safeguarding against postulated events or hazards. The maintenance and serviceability criteria define the design bases pertinent to the development of the general plant arrangement.
- o General Design Criteria - These criteria summarize the principal functions and safety design bases pertaining to the functional parameters of civil, electrical, and mechanical design. DC-1000-E, the general electrical design criteria, identifies the codes, standards, and regulations, including the applicable revisions, that govern the electrical design.
- o Interdiscipline Design Criteria - The interdiscipline design criteria provide the design bases applicable to

all disciplines such as seismic, environmental, etc. Table 4-1 lists the interdisciplinary design criteria applicable to Module 6.

- o System Design Criteria - The systems design criteria provide detailed criteria (e.g., principal function, safety design bases, etc.) for each plant system. The 1800 series criteria specify the detailed design bases for electrical systems. Table 4-2 lists the criteria applicable to the scope of this module.

The design criteria control and review process was performed in accordance with the procedures established in the Design Manual Preface, sections 1, 2, and 3.

Table 4-1 indicates the groups having principal responsibility for the interdisciplinary design criteria applicable to the scope of this module. The electrical design criteria were established through various multidiscipline interactions; were based on applicable licensing commitments, industry codes, and standards; and were implemented in accordance with established and controlled project procedures.

4.1.2 PRELIMINARY DESIGN

The preliminary design of the plant was developed using general arrangement and equipment location drawings which depict plant overall and individual building layouts, location of major equipment, and routing of major piping and raceways. The development of these drawings was the primary responsibility of the Bechtel Plant Design Group which had lead responsibility for a multidiscipline interactive design effort. The electrical group participated in this activity using the various system and interdisciplinary criteria (equipment separation, pipe break, radiation shielding, etc.) to develop the basic layout of each electrical system. This included defining the location of equipment, required structural openings, space required for maintenance, and necessary foundations.

Studies

Electrical equipment/system studies were prepared by the BWPC Electrical discipline and controlled and reviewed in accordance with the procedures established in the VEGP PRM, part C, section 12.

The procedures address initiation and control of studies; documentation of studies; study development; study report review/approval; and study report numbering, filing, and distribution. The project engineer controlled the study and

decided whether it was to be informal^(a) or formal^(b), coordinated with GPC and Southern Company Services (SCS), and determined the extent of study documentation. The electrical EGS performed/evaluated the electrical equipment studies, maintained a study report control log, and assigned numbers to the studies. Studies are listed in the Electrical Studies Control Log.

Sketches

Sketches were generated to identify design concepts, requirements, and configurations. Sketches were not issued or used for fabrication or construction purposes. However, electrical sketches were used with, or attached to, bidding specifications, design proposals, studies, etc.

Engineering sketches were prepared by BWPC and SCS. Sketch control and review were performed in accordance with the procedures established in the VEGP PRM, part C, section 4, subsection 4.3. This section addresses review, approval, issuance, distribution, filing, and numbering of sketches. The originating discipline EGS or designee coordinated, approved, and issued sketches. Data and Document Controls (DDC) input issue dates, distributes and files sketches, and maintains the sketch control log and numbering system, which lists electrical equipment sketches in the electrical design section.

General Arrangement Drawing and Equipment Layout Drawings

General arrangement drawings showing the configuration of the power block, building dimensions, and basic equipment arrangement were the first plant design drawings developed. The basic framework of general arrangement drawings was the structure column grid layout. A set of these drawings consists of plans for each major floor level and enough sections to indicate the essential relationship between floor and equipment.

Equipment layout drawings were later developed to dimensionally locate major equipment in the plant, coordinating inputs of all disciplines. These drawings were generated for each building

- a. Informal studies develop project design within the scope of the contract to define physical aspects; to resolve problem areas; or to investigate new or improved methods, materials, or processes.
- b. Formal Studies investigate concepts or develop criteria that define project scope. They either verify the project scope or recommend a change in scope.

level. In addition to showing location dimensions of major equipment, they also designate equipment laydown or tube pullout space to ensure proper installation and maintenance. The layouts were developed based on equipment, vendor requirements, system process requirement, NRC requirements, and industry/BWPC standards.

One-Line Diagrams

The one-line diagrams show the connection sketches, the power grid, generator, switchgear, motor control centers, and plant loads in simplified form.

They were prepared and controlled jointly by the Electrical Systems and Control/Wiring Groups. They were checked in accordance with the one-line drawing and Controls/Wiring Group one-line diagram checklists (reference BWPC Interoffice Memo (IOM) log No. BB 33958, file No. X3BK14). Coordination prints were reviewed by the Electrical Physical Design Group to coordinate equipment location and cable/raceway interface requirements. Upon incorporation/resolution of comments, the drawings were approved for issue by the Systems and Control/Wiring Groups and the electrical EGS. The one-line diagrams are listed in the Electrical Drawing Control Log.

Procurement Specifications

These specifications provide bases for the procurement of electrical equipment. They conform to the project design criteria and complement other project design documents.

Procurement specifications for electrical equipment are listed in the Electrical Specs/MRs (material requisitions) Control Log.

Procurement specification control and review were performed in accordance with the procedures established in the VEGP PRM, part C, section 8, which addresses the procurement specification control, review, and approval process. The originating discipline EGS (or designee) was responsible for preparing, coordinating, initiating the review cycle, obtaining all signatures and approvals, issuing the specification, and providing input to the specification control log. Procurement specifications are listed in the Electrical Specs/MRs Control Log.

Calculations

Calculations and analyses were prepared during this phase to support the design of electrical systems and the issue of material specifications. Calculations were initially prepared by BWPC and SCS to determine electrical system and subsystem design parameters including electrical equipment ratings and

system capabilities and capacities. Calculations were prepared based on actual conditions, where known; otherwise conservative conditions were assumed. Additional input sources included design criteria, licensing requirements, vendor data, industry standards, and BWPC design guides. The resulting design parameters were used as part of equipment procurement specifications. Those calculations that are common to both units are periodically reviewed to ensure that input data remains conservative when compared to as-built conditions. Where specific Unit 2 data is required due to design differences, the calculations are revised to reflect the Unit 2 uniqueness. Scheduled revisions are tracked in the Discipline Calculation Control Log. The calculations are controlled and reviewed in accordance with the procedures established in the VEGP PRM, part C, section 9. The procedures address calculation numbering, control, format checking, review and approval, microfilming, and transmittal to GPC. The electrical discipline EGS assigned the calculation numbers and provided input to and maintained the Calculation Control Log. The design calculation control, review, and approval process is similar to that for drawings except that calculations are not reviewed by other project disciplines and forms and format are different as shown in the VEGP PRM. Project Administration microfilms and files the originals of calculations. Electrical calculations are listed in the Electrical Calculation Control Log.

Calculations for equipment covered by this module are summarized in Table 4-3.

4.1.3 DETAILED DESIGN

After the system and equipment layout was defined and interface requirements were obtained from the various engineering disciplines and equipment vendors, the detailed design phase began. Since the design criteria were assembled by Project Engineering on a discipline basis during the initial stages of the design work, criteria now had to be maintained current to serve as a basis for the design. System design calculations were completed, logic diagrams for system operations were developed, and elementary and wiring diagrams were issued for construction.

Design drawing control and review are performed in accordance with the VEGP PRM, part C, section 4, which addresses numbering, reviewing, approving, issuing, distributing, and filing drawings. The originating discipline EGS or designee (engineering group leader) is responsible for the preparation, enumeration, coordination, review, and issue of drawings. In addition, the EGS or designee also provides input to the Drawing Control Log. DDC enters the issue dates and distributes and files the drawings. Drawings describing Q-list (safety-related) items are identified with the letter "Q". In addition, Class 1E

electrical drawings are marked "Nuclear Safety Related." The markings are located in the lower right-hand corner of the drawings directly above the title block.

Logic diagrams are prepared and controlled by the Controls Discipline and are discussed in Module 20.

Elementary Diagrams

Elementary diagrams schematically illustrate the control, protection, and monitoring functions of electrical circuits. They also show interconnections and cabling between power sources, apparatus, and device elements of a particular system. Elementary diagrams are prepared based on one-line diagrams, control logic diagrams, and equipment supplier drawings. When issued for equipment procurement, they include information sufficient for the suppliers to select electrical components and prepare equipment internal wiring diagrams.

The diagrams were prepared and controlled by the BWPC Electrical Control Wiring Group. They were checked in accordance with the elementary diagram checklist (reference BWPC IOM log No. BB 33958, file No. X3BK14). Coordination prints were reviewed by the Electrical Physical Design Group to coordinate cable/raceway and junction box location interface requirements and by the EE580 Group for cable routing. Upon incorporation/resolution of comments, the drawings were approved for issue by the Control Wiring Group and the electrical EGS. The elementary diagrams are listed in the Electrical Drawing Control Log.

Wiring Diagrams

Wiring diagrams schematically illustrate the field-installed cable terminations at the equipment or device. Information for internal wiring within the equipment or device is contained on vendor supplied wiring diagrams. Wiring diagrams are prepared based on elementary drawings and vendor wiring diagrams. They were prepared, controlled, and checked in a manner identical to the elementary diagrams.

Hazards Analyses

Hazards analyses for Units 1 and 2 were conducted during this phase to establish pipe whip restraint location, jet impingement loads on pipes (if any) for pipe support design, and maximum flood levels in each room for safety-related component location. A basic design objective was to locate safety-related electrical components in nonhazardous areas. To ensure that all conditions are considered, detailed analyses of all potential hazards are performed to ensure that the functional ability of the equipment is not affected. Specific analyses are conducted to study the effects of:

- o High-energy line breaks (pipe whip and jet impingement).
- o Internally generated missiles.
- o Seismic II/I interaction.
- o Flooding.
- o Fire.

Portions of these analyses are presently ongoing for Unit 2. The structures enclosing the electrical equipment have been designed and analyzed to ensure protection against tornadoes and other external events.

Failure Mode and Effect Analyses

Failure mode and effect analyses (FMEAs) for electrical equipment and systems within the scope of this module were prepared in accordance with the bases established in the Plant Single Failure Criteria (Interdiscipline Design Criteria, DC-1009). FMEAs were conducted to determine the effects of failures of plant components critical to the achievement of overall system safety performance. The failure modes of components that could contribute to unsafe system operation were identified, and corrective action was taken to obtain compliance with the single failure criteria. Information used to prepare the FMEAs included data published by the NSSS supplier, NRC requirements, and industry practices.

FMEAs developed for electrical systems in Unit 1 are also applicable to Unit 2 due to the extreme similarity between Unit 1 and 2 systems and equipment (refer to note b on FSAR Table 8.3.1-3).

FMEA control and review were performed in accordance with the procedures established in the VEGP PRM, part C, section 16, which addresses the processing, documentation, and control of FMEAs. The procedure for numbering, controlling, reviewing, approving, and documenting FMEAs is the same as those for calculations. In addition, FMEAs were reviewed and approved by the Mechanical, Control Systems, and Nuclear Disciplines to ensure that appropriate aspects were included, and that the analyses satisfied licensing requirements. Although not on the DCCL, the current FMEA revisions have been reviewed by the electrical chief engineer. FMEAs are listed in the Electrical Calculation Control Log.

Construction Specifications

During the detailed design phase, engineering construction specifications were developed and issued by Engineering to support construction activities associated with the scope of

this module. Construction specifications for electrical equipment define general construction requirements, the scope of work, governing codes and standards, and provide a complete description of the equipment and tasks to be performed. They provide specific instructions/requirements for handling and installing electrical equipment at the jobsite. Construction specification control and review were performed in accordance with the procedures established in the VEGP PRM, part C, section 26, which addresses procurement specification numbering, review, and approval. The originating discipline EGS was responsible for initially preparing, numbering, coordinating, initiating the review cycle, obtaining approvals, issuing the specification, and providing input to the specification control log. Construction specifications are listed in the Electrical Specs/MRs Control Log.

Conduit and Tray Drawings

Conduit and tray drawings were prepared and controlled by the Electrical Physical Design Group. They were checked in accordance with the physical design checklist (reference BWPC IOM log No. BB 33958, file No. X3BK14). Coordination prints were reviewed by the Electrical Control Wiring Group to ensure selection of optimum locations of junction boxes and by the Civil/Structural Discipline for the development of mounting details (Module 19, Electrical Supports). Additionally, the locations of junction boxes were reviewed by the Electrical Physical Design Group for possible hazards (Module 17, Raceways). Upon incorporation/resolution of comments, the drawings were approved for issue by the Electrical Physical Group and the electrical EGS. The conduit and tray drawings are listed in the Electrical Conduit and Tray Drawing Control Log.

Design Document/Drawing Revisions

The procedures for design document/drawing revisions are essentially identical to the procedures followed for their initial issuance. The major difference is that a different review process may have been followed due to the limited scope of a minor revision or (in the case of incorporating change notices) the change may already have been reviewed.

Design Verification Reviews

Design verification reviews were systematically performed to ensure that equipment, systems, and structures were properly designed and that the designs were properly coordinated. They were performed by BWPC in accordance with the criteria established in the Design Manual, Preface, section 4, Design Verification Review (DVR) of VNP Systems and Structures. This criterion provides guidance supplemental to the VEGP PRM, part C, section 20, procedure providing specific requirements and guidelines for design reviews. The Design Manual criteria

define the review procedures, including requirements establishing the division of responsibility for preparing and reviewing DVR requirements for design review meetings, and requirements for the report documenting the design review. Only safety-related electrical systems were subject to design verification reviews. The review packages for these systems were prepared by the electrical discipline group responsible for preparation of the system design criteria. The package consisted of design criteria, pertinent FSAP sections, one-line/elementary diagrams, specifications, calculations, FMEAs, environmental qualification information, and equipment location drawings. The review was performed by the electrical and other discipline chief engineers, the Nuclear Control System Mechanical, and Civil/Structural Disciplines, the hazard analysis and equipment qualification coordinators, and Quality Assurance.

4.1.4 CONSTRUCTION SUPPORT AND DESIGN FINALIZATION

During this phase, Project Design provided support to the construction discipline groups for design changes, deviation reports, supplier deviation disposition requests, and calculation revisions. These activities assure that consideration of design developments and that the as-built conditions are taken into account.

Design changes for electrical equipment are realized by directly revising the design documents/drawings, by issuing Document Change Notices, by issuing Drawing Change Notices, or by converting FCRs to Change Notices. Ultimately, the design documents/drawings are revised and all changes incorporated therein. The alternate change methods used are interim measures that afford Engineering/Construction greater convenience, flexibility, communication, or speed in achieving the desired results.

Changes may be initiated by Engineering or Construction, or may be the result of a Nonconformance (Deviation) Report. Changes may be approved only by the design engineering organization having responsibility for the document.

Design Manual Change Notices

Design Manual Change Notices (DMCNs) can be processed and issued as part of the manual faster than a design criteria revision, which must go through the full review and approval cycle. DMCNs are controlled in accordance with the procedures established in the Design Manual, Preface, section 3.7.

DMCNs are prepared by the group responsible for the affected design criteria. They are reviewed and approved by the EGS and

project engineer/responsible assistant project engineer. Changes affecting safety-related or safety-impact material in the manual are reviewed and approved by the BWPC project licensing engineer and PQAE.

DMCNs are sequentially numbered (by section/criteria) by Project Administration and controlled by the project engineer through Project Administration. Project Administration maintains the design manual and is responsible for the Design Criteria Status Log, which is used to record and track revisions and changes to the design criteria.

Drawing Change Notices

DCNs afford a convenient method for Design Engineering to make changes to drawings without the immediate need to issue the drawing. DCNs are controlled in accordance with the procedures established in the VEGP PRM, part C, section 4.8.

Either Design Engineering (DE) or Installation Engineering (IE) may initiate a DCN. However, DCNs on electrical equipment design drawings are only issued by DE. Checking, reviewing, and approving is similar to that as for design drawings. The review performed includes a review for hazards and verification of conformance to the FSAR and design criteria.

DCNs are logged in the computerized DCN DDR. The DDR includes the DCN issue date, incorporation date, drawing revision, issuing organization and discipline, and initiating document. Also, the latest approved DCN and the last DCN incorporated into the design drawing are listed in the Drawing Control Log.

Construction Specification Change Notices

CSCNs afford a convenient means for making and documenting changes to construction specifications. CSCNs are controlled by the procedures established in the VEGP PRM, part C, section 26.7.

Preparation, checking, reviewing, and approving CSCNs are essentially identical to those for the construction specifications.

Construction specification change notices are assigned sequential numbers and are logged in the CSCN Register.

Field Change Requests

FCRs afford a means for the field to obtain changes to design drawings or construction specifications. Similarly, Interim Field Change Requests (XFCRs) are used by the field to obtain changes to Interim Design Change Notices (IDCNs) or other

documents in a Change Control Package (CCP). The change may be requested due to interferences, drawing discrepancies, or changes in arrangements required by job conditions, etc. Within the design organization, FCRs are controlled in accordance with the procedures established in the VEGP PRM, part C, section 17.

GPC construction issues FCRs to IE. FCRs received by IE are logged in the FCR Register.

FCRs are reviewed for conformance to the FSAR and design criteria. They may be processed by DE or IE. IE-processed FCRs on design drawings require DE concurrence. Approved FCRs affecting design changes may be converted to DCNs or CSCNs, as appropriate.

Nonconformance (Deviation) Reports

DRs are prepared by GPC disciplines or contractors to report deficiencies in material, documentation, or procedures identified during the construction phase of the project. Within the Design organization, DRs are controlled in accordance with the procedures established in the PRM, part C, section 18.

DRs issued by GPC for Engineering disposition are transmitted to DDC. If the DR cannot be resolved by IE, it is forwarded to DE. For dispositions of use-as-is and repair, a justification is provided. Required design documents are prepared and noted on the DR. Their issuance is tracked via the DR Log. Interdisciplinary review is provided as required, and the DR is reviewed against FSAR licensing commitments. The GPC quality assurance site manager reviews the DR for potential 10 CFR 21 or 10 CFR 55.55(e) reportability. The disposition is approved by the responsible EGS and project engineer. DRs pertaining to Class 1E equipment are also reviewed by the Bechtel PQAE.

Field Equipment Change Orders

Field Equipment Change Orders (FECOs) are for field changes to equipment. They are controlled by the procedures established in the VEGP PRM, part C, section 24.

FECOs are change packages consisting of revised drawings, document change notices, references to purchase documents and special instructions. Supplier drawing revisions are made by Engineering only after the supplier has declined to provide revised drawings.

FECOs for safety-related equipment are identified as Q-class on the cover page. For this equipment, an Equipment Change Approval (ECA) is sent to the original supplier. The ECA describes the proposed change and requests the supplier to

certify acceptance of the change. This certification includes acceptability of the equipment used for the change and seismic and environmental qualification effects, as applicable. The ECA must be closed out before the associated FECO is issued to GPC for construction. Written approval from the GPC project engineering manager is required for any waiver to the ECA requirements.

FECOs are prepared by the electrical group responsible for specification of the equipment. They are approved by the EGS and project engineer; for safety-related equipment the PQAE must provide approval.

FECO log and revision numbers are controlled by the FECO Log which is maintained by Project Administration. Project Administration also files the FECO (including ECA) in the project files.

Change Control Packages

CCPs ensure that design changes requiring physical modification to systems or components that have been or are about to be released to the Startup Group for testing are coordinated with the startup engineer. CCPs are controlled by the procedures established in the VEGP PRM, part C, section 35. CCPs differ from the FECOs in that approval of the Startup Group is required prior to performing the physical modification.

CCPs describe the change and the design basis for the change. They identify the impact of the changes on the Design Manual, supplier technical manuals, hazard analyses, etc. They list the material required to implement the change. Also they include the design change documents (the system design documents are not changed until the physical changes required by the CCP have been completed).

Design document changes are made by IDCNs. IDCN-Suppliers (IDCN-Ss) are used for revisions to vendor documents. ECAs are provided for safety-related equipment modifications, as described in the previous section.

CCPs containing safety-related documents are identified as Q-class on the cover sheet. The cover sheet also identifies the lead discipline. CCPs are approved by the EGS and PE.

Project administration is responsible for issuing CCP numbers and maintaining the CCP and associated documents log.

Upon completion of a CCP, the IDCNs and appropriate XFCRs are converted to DCNs.

Protective Relaying

Calculations for protective relaying setpoints and tripping schemes are unique for each unit and are prepared by the GPC Protection Engineering Section (PES) using the controls imposed by GPC System Protection Section Note 28. The PES utilizes design information provided by the BWPC and SCS design groups to prepare preliminary relaying data sheets, which are transmitted to Nuclear Operations. During the initial test program, the adequacy of the trip setting is confirmed and relays are functionally tested. The preliminary data sheet is signed, dated, and returned to the PES. This information is transferred to the Final Relay Data Sheet which represents the as-installed condition.

Finalization/As-Built Program

The finalization/as-built program defines the methods for providing certain as-constructed design drawings as required for the following:

- o Future operation and maintenance of the plant.
- o To meet the requirements of IE Bulletin 79-14 for piping.
- o To assure that design documents address the effects of cumulative changes to the design.

The administrative controls for this program are contained in the Vogtle Project Policy and Procedures Manual, part B, section 5. As a part of the process for developing the final as-built documents, several areas of the plant will be walked down to observe as-constructed conditions. The procedures for these walkdowns are contained in the Finalization/As-Built Program Manual.

In mid 1987, the Project evaluated the results of the Unit 1 finalization program to identify lessons that could be applied to the Unit 2 program. This effort received input from Project Engineering, Project Construction, and Nuclear Operations, and considered other information such as Unit 1 NRC, Quality Assurance, and Readiness Review evaluations and findings.

The modified finalization programs were reviewed by involved project organizations, including Readiness Review, who provided comments on the proposed modifications. Resolution of these comments and approval of each finalization plan by project management was ongoing at the time this module was prepared.

Finalization programs FP-2, Hazards, FP-6, Cable Separation Within Class 1E Equipment, and FP-14, Seismic Separation, are applicable to the scope of this module and are presently scheduled for the latter part of 1988.

4.2 CONSTRUCTION

This portion of Module 6 contains descriptions of the basic processes that are used for installation and inspection of electrical equipment. The applicable electrical construction specifications, field procedures, design drawings, vendor requirements, and the applicable codes which govern each installation and inspection process are addressed. The prerequisite activities, the movement of equipment and its requirements from issue to placement at the design location, the final assembly process including any required modifications, and the in-place maintenance prior to system turnover are described.

The instructions used in the installation process are contained in Georgia Power Company field procedures, the electrical construction specification, instructions provided by vendors, and procedures generated by the contractor.

Schedules relevant to the installation process are the integrated project schedule, the construction summary schedule and the five-to-eight-week construction schedule.

The accompanying flow charts (Figures 4-1 and 4-2) indicate the flow of activities associated with the installation and inspection of electrical equipment and electrical penetrations. Also shown is the documentation flow associated with each activity and the procedure controlling the inspection and/or documentation flow. Figure 4-3 indicates the activity flow associated with the replacement of components sent to Unit 1 to support startup activity. Table 4-4 lists the specifications and procedures controlling these activities.

4.2.1 ELECTRICAL EQUIPMENT

Electrical equipment installation requirements are contained in Construction Specification X3AR01, sections E2 and E12, and vendor documents. Equipment mounting details are specified on the AX2D11R drawing series. Field Procedures ED-T-04, CM-T-03, CM-T-04 and GD-T-11 were developed from the construction specification and contain installation instructions, responsibilities, inspection attributes, and documentation requirements.

Figure 4-1 illustrates the installation, inspection, and maintenance activities associated with major electrical equipment and the documentation flow corresponding to each activity, along with the procedure controlling each activity. This flowchart contains nine major node points that represent hold points for which preceding inspection activity must be completed in order to continue with the installation process. The flowchart does not illustrate the flow of documents such as Deviation Reports (DRs) or Field Change Requests (FCRs) as they may be generated at any time.

The first and second nodes on the flowchart indicate the activities that the Warehouse, Quality Control (QC) Receipt/Inspection, and Equipment Engineering Groups perform to ensure that the equipment satisfies the requirements of the specification, is placed in the correct level of storage, and is available for issue only when vendor documentation has been received or when a conditional release is written.

The third and fourth nodes on the flowchart track the equipment from the warehouse to storage of the equipment in its permanent area and include the requirements for rigging and handling the equipment and release of the equipment foundation.

The fifth, sixth, and seventh nodes of the flowchart follow the equipment for orientation, assembly of sections, and the final attachment of the equipment to the foundation. These nodes show the requirements for Construction and QC to monitor document handling, location, orientation, bolt torquing, and welding of the equipment.

The final two nodes concern the installation of internal jumpers, tophats, driphoods, and Field Equipment Change Orders (FECOs). The component removal process, discussed below, also occurs at this time. The process of equipment turnover/release to Nuclear Operations is shown along with steps for signing of final documentation, review of DRs, inspection of FECO packages, and listing of punchlist items.

Component Removal

To allow for rapid completion of Unit 1, a program was developed to allow for component transfer from Unit 2 to Unit 1. This program, controlled by Field Procedure GD-T-28 and shown on Figure 4-3, includes provisions for maintaining traceability of the removed component, ensuring that qualified replacement parts were procured in accordance with the original specification requirements, and tracking the re-installation status of the replacement. To ensure that any work performed prior to issue of the procedure was identified, the construction disciplines performed an indepth walkdown during the first quarter of 1987.

4.2.2 ELECTRICAL PENETRATIONS

Containment electrical penetration installation requirements are contained in Construction Specification X3AR01, section E3, and Vendor Manual X3AB03-34. Field Procedure ED-T-19 was developed from the construction specification and vendor manual and contains specific installation instructions, responsibilities, inspection attributes, and documentation requirements. During the development of this module, ED-T-19 was deleted and its requirements incorporated into ED-T-04.

Figure 4-2 illustrates the installation, inspection, and maintenance activities associated with the electrical penetration assemblies in the containment building. Also included is the documentation flow corresponding to each activity along with the procedure that requires the document to be initiated. This flowchart reflects the use of ED-T-04 as the controlling procedure and contains seven major nodes that represent hold points for which preceding activities must be completed prior to continuing the installation process. DRs and FCRs are not represented in the flow of documents as they may be generated at any time.

The first two nodes illustrate the activities that are performed prior to installation of the penetration assemblies. These activities cover the equipment maintenance requirements, the installation and inspection of the penetration nozzle inside and outside mounting rings, the equipment requisition and issue for traceability of equipment, and the equipment maintenance while in storage in the work areas.

The third and fourth nodes illustrate the installation of the penetration feed-through module, enclosure boxes, and pressure switch. The initial leak rate test is performed when the penetration feed-through module is installed. The final leak rate test is performed after the pressure switch and the pressure monitoring pipe are installed. After the successful completion of the final leak rate test, the engineer initiates a request for Nuclear Operations to perform the electrical tests and the leak test. The engineer also notifies the Construction Maintenance Organization to periodically monitor the pressure of the assembly.

The fifth and sixth nodes illustrate the tests performed by Nuclear Operations, the review of the test results by the engineer for acceptability, the QC function for completion of paperwork, and the periodic monitoring of the penetration pressure.

The seventh node represents the cable pulling and termination to the penetration assembly. These functions are covered in Module 12 and are performed prior to turnover of the penetration assembly to Nuclear Operations.

4.3 PROGRAM CHANGES

Several programs have been modified or added since completion of the Unit 1 Readiness Review Program to reflect the effort of management to incorporate lessons learned from Unit 1, and to reflect construction interface with an operating unit.

The major changes affecting the scope of this module are:

- o Initiation of the component removal program to accommodate the immediate needs of the operating unit. (reference 4.2.1).
- o Transfer of design responsibility to personnel located at the jobsite. (reference 2.2).
- o Addition of interdisciplinary separation criteria to upfront installation and inspection activities, and less reliance on after-the-fact finalization walkdowns. (reference 4.1.4).
- o Consolidation of penetration and equipment installation procedures. (references 4.2.2).

TABLE 4-1

INTERDISCIPLINE DESIGN CRITERIA

<u>Designation Number</u>	<u>Title and Description</u>	<u>Principal Responsibility</u>
DC-1001	<u>Separation</u> - This document provides design bases to ensure that systems, components, and structures important to safety are adequately separated.	Plant Design
DC-1002	<u>Fire</u> - This document provides design bases for preventing and mitigating the consequences of fires.	Mechanical
DC-1003	<u>Flooding</u> - This document provides design bases to ensure that safety-related systems and structures are protected against flooding caused by postulated pipe breaks or activation of the fire protection system.	Nuclear
DC-1005	<u>Seismic</u> - This document provides bases for designing systems, structures, and equipment having safety impact to withstand seismic events.	Civil/ Structural
DC-1006	<u>Missiles</u> - This document presents the criteria for analysis of internally generated missile hazards.	Nuclear
DC-1007	<u>Environmental</u> - This document provides design bases for environmentally qualifying safety-related equipment to ensure that it will perform its required safety functions during normal, abnormal, test, accident, and post-accident conditions.	Nuclear
DC-1009	<u>Plant Single-Failure Criteria</u> - These criteria provide design bases to ensure that safety-related systems can perform their safety functions in the event of a single failure.	Nuclear
DC-1010	<u>Project Classification List</u> - This list defines the extent to which components, equipment, and structures are related to nuclear safety and seismic qualification requirements. It also identifies the principle codes and standards.	Nuclear
DC-1018	<u>Pipe Break Criteria</u> - This document defines the criteria to be used for determining the types of pipe breaks, their locations and their effects.	Nuclear

TABLE 4-2 (SHEET 1 OF 2)

SYSTEM DESIGN CRITERIA

<u>Designation Number</u>	<u>Title and Function</u>	<u>Subject</u>
DC-1801	<u>Offsite Power System</u> - The offsite power system provides the normal source of electric power for the Class 1E distribution system and also supplies the non-Class 1E distribution system during startup or shutdown operations.	Reserve auxiliary trans- formers, 4160-V cable bus.
DC-1804	<u>ac System-4160 V</u> - The 4160-Vac system distributes electric power to 4-kV auxiliary loads and to the 480-V subsystem.	4160-V switchgear.
DC-1805	<u>ac System-480 V</u> - The 480-Vac system transforms power from the 4160-V or 13,800-V systems and distributes it to 480-V auxiliary loads.	480-V unit substations, 480-V motor control centers.
DC-1806	<u>dc System-Class 1E</u> - The 125-Vdc Class 1E system provides a reliable source of power for safety-related control, instrumentation and motor loads.	Batteries, battery chargers 125-Vdc switchgear, 125-Vdc
DC-1807	<u>120-Vac Power System</u> - The 120-Vac system consists of vital (Class 1E) and essential (non-Class 1E) power sources providing 120-V power for control/instrumentation.	Inverters, distribution panels, regulated trans- formers.
DC-1809	<u>Cable System</u> - The cable system provides electrical connections for power, control, and instrumentation.	4160-V cable bus, electrical penetration assemblies.
DC-1815	<u>Switchyard Interfaces</u> - The switchyard interface criteria provide the design bases for interfaces between the high-voltage switchyard systems and plant generation and electrical auxiliary systems.	Reserve auxiliary transformers.

TABLE 4-2 (SHEET 2 OF 2)

<u>Designation Number</u>	<u>Title and Function</u>	<u>Equipment Covered</u>
DC-1816	<u>Multisystem Panels and Boards</u> - The multisystem panels and boards provide electrical protection and auxiliary control functions.	Panels: auxiliary relay isolation device, protective relay, local control. Boards: electrical auxiliary, safety features sequencer.
DC-1818	<u>Electrical Penetration System</u> - The electrical penetration system provides electrical connections for power, control, and instrumentation inside the containment, while ensuring containment pressure boundary integrity in the event of an accident.	Electrical penetration assemblies.
DC-1821	<u>Standby Power System</u> - The standby power system provides electrical power to safely shut down and isolate the reactor under any operating and accident condition.	Safety features, sequencer boards.
DC-1823	<u>Electrical Protection Criteria</u> - The electrical protective criteria serve as a guide for determining the protective relaying required for plant electrical equipment.	4160-V switchgear, 480-V switchgear, 480-V motor control centers, 125-Vdc switchgear, 125-Vdc MCCs, 120-Vac distribution panels, protective relay panels.
DC-1825	<u>aC System - 13800 V</u> - This system provides power to the Reactor Coolant Pumps (RCSs) from the Offsite Power System.	13.8-kV RCP switchgear.
DC-1826	<u>High-Voltage Switchyard</u> - The high-voltage switchyard distributes generated power to the transmission grid and supplies offsite power to the plant auxiliaries via the reserve auxiliary transformers.	Switchyard, 500/230-kV auto transformer banks.

TABLE 4-3 (SHEET 1 OF 3)

ELECTRICAL CALCULATIONS

<u>Calculation Designation No.</u>	<u>Calculation Title and Subject</u>
<u>Transformer System</u>	
X3CA02	Unit Auxiliary Transformer Sizing (determines adequacy of transformer tap setting, NVA, and impedance rating)
X3CA03	Reserve Auxiliary Transformer Sizing (determines adequacy of transformer tap setting, MVA, and impedance rating)
X3CA03-1	Auxiliary Power System Voltage Study (determines that the electrical auxiliary system meets the requirements of Branch Technical Position PSB-1, dated July 1981, revision 0)
X3CA04	Load Center Transformer 1NB01 Sizing (typical) (determines adequacy of transformer tap setting)
X3CA05	Main Transformer Sizing (determines adequacy of transformer tap setting, MVA, and impedance rating).
<u>Auxiliary System Short Circuit</u>	
X3CC02	480-V Breaker Short-Circuit Sizing (determines short-circuit ratings of 480-V system power and molded-case circuit breakers)
X3CC14	Bus Transfer - Final Recommendations (finalized bus transfer schemes to be implemented on the non-Class 1E buses and present recommendations for relays to supervise the transfer)

TABLE 4-3 (SHEET 2 OF 3)

<u>Calculation Designation No.</u>	<u>Calculation Title and Subject</u>
<u>Auxiliary System Voltage Regulation Studies</u>	
X3CD04	Station Auxiliary Voltage Regulation (determines tap requirements for the station auxiliary transformers)
<u>Diesel Generator System</u>	
X3CE01	Diesel Generator Loading (tabulates loads on Diesel Generators)
X3CE400	EE-400 Load Study Program (periodically updated calculation that provides a data base of plant ac auxiliary power system loads and totals bus loadings)
<u>120 VAC System</u>	
X3CH01	120 Volt AC Vital Bus Loading (determines acceptability of Vital AC voltage levels)
<u>Battery, Battery Charger, and Inverter Systems</u>	
X3CF02	Class 1E Battery Systems (determines Class 1E battery sizes and charger capacity ratings)
X3CF07	dc Breaker Sizing (determines dc system breaker and bus short-circuit ratings)

TABLE 4-3 (SHEET 3 OF 3)

<u>Calculation Designation No.</u>	<u>Calculation Title and Subject</u>
<u>Cable Bus Sizing</u>	
X3CK04	Cable Bus or Nonsegregated Phase Bus Sizing (13.8-kV and 4.16-kV)
<u>Electrical Penetration</u>	
X3CM01	Electrical Penetrations Short-Circuit Currents (determines acceptability of electrical penetration feedthroughs to withstand fault currents)
<u>Grounding System</u>	
X3CN07	Maximum Line-to-Ground Fault Value 13.8-kV and 4.16-kV System Unit 1
<u>Miscellaneous Systems</u>	
X3CT07	480-V MCC Field Cable Weight
File X3AC01	Plant Vogtle Relay Documentation (calculations and relay set points)

TABLE 4-4
INSTALLATION SPECIFICATIONS AND PROCEDURES

<u>Document Number</u>	<u>Document Title</u>
<u>Construction Specifications</u>	
X3AR01-E2	Station Service Equipment
X3AR01-E3	Reactor Containment Electrical Penetrations
X3AR01-E12	Installation Procedures for Electrical Equipment
<u>GPC Field Procedures</u>	
CM-T-03	Inspection of Items in Storage
CM-T-04	Maintenance of Items in Storage
ED-T-04	Installation of Major Electrical Equipment
ED-T-19	Installation of Electrical Penetration Assemblies (incorporated into ED-T-04 during the assessment)
GD-T-11	Rigging, Hoisting, and Transporting of Permanent Plant Equipment
GD-T-25	Changes to Supplier Equipment at the Jobsite
GD-T-28	Component Removal

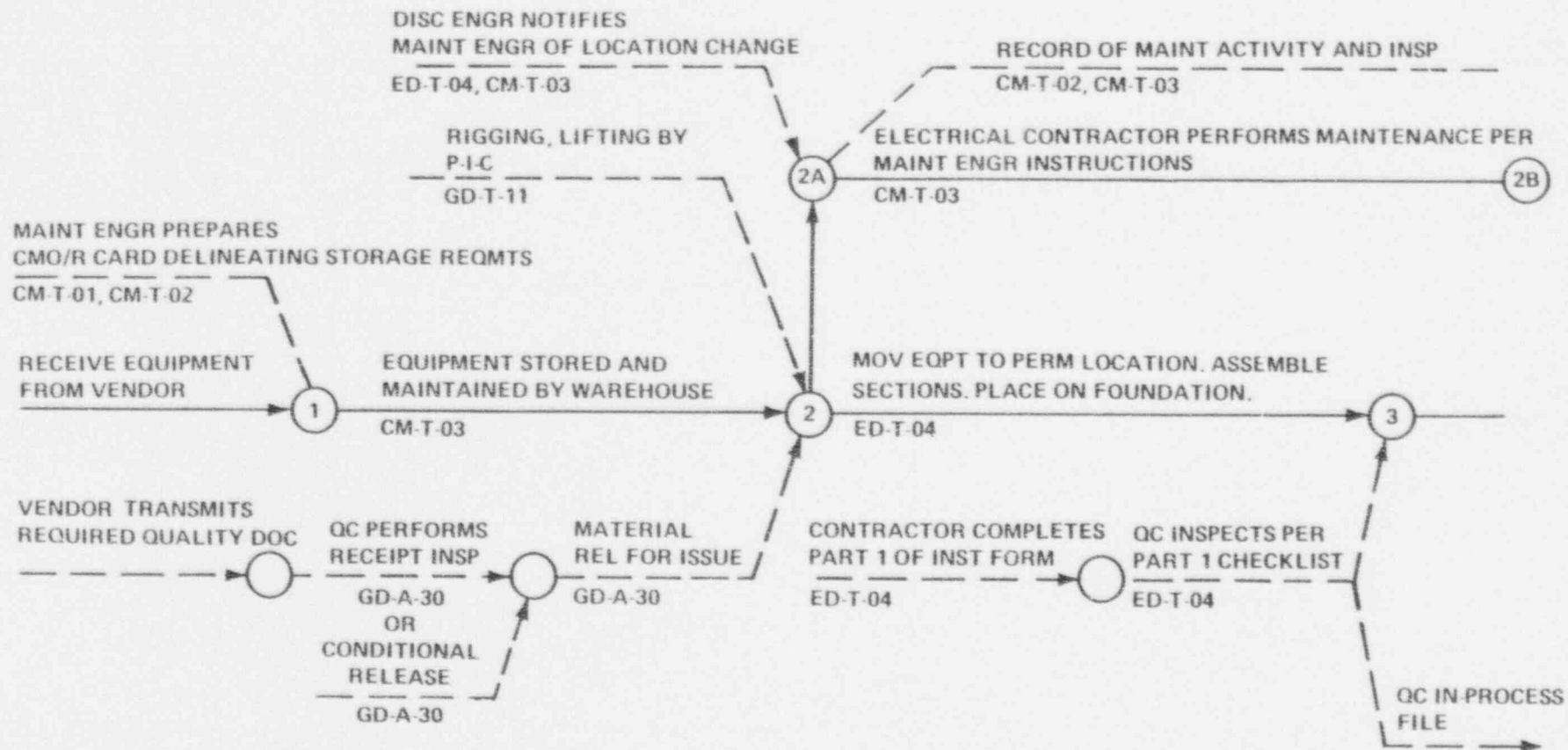


Figure 4-1 Installation of Electrical Equipment (Sheet 1 of 2)

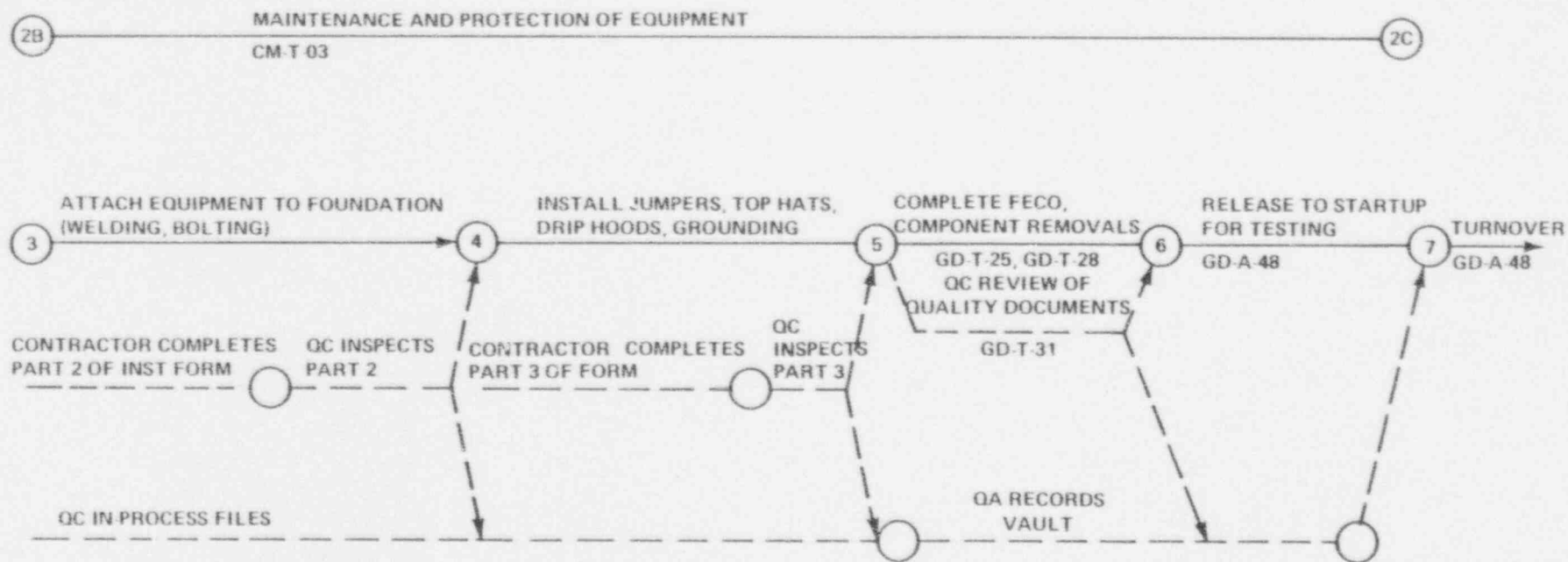


Figure 4-1 Installation of Electrical Equipment (Sheet 2 of 2)

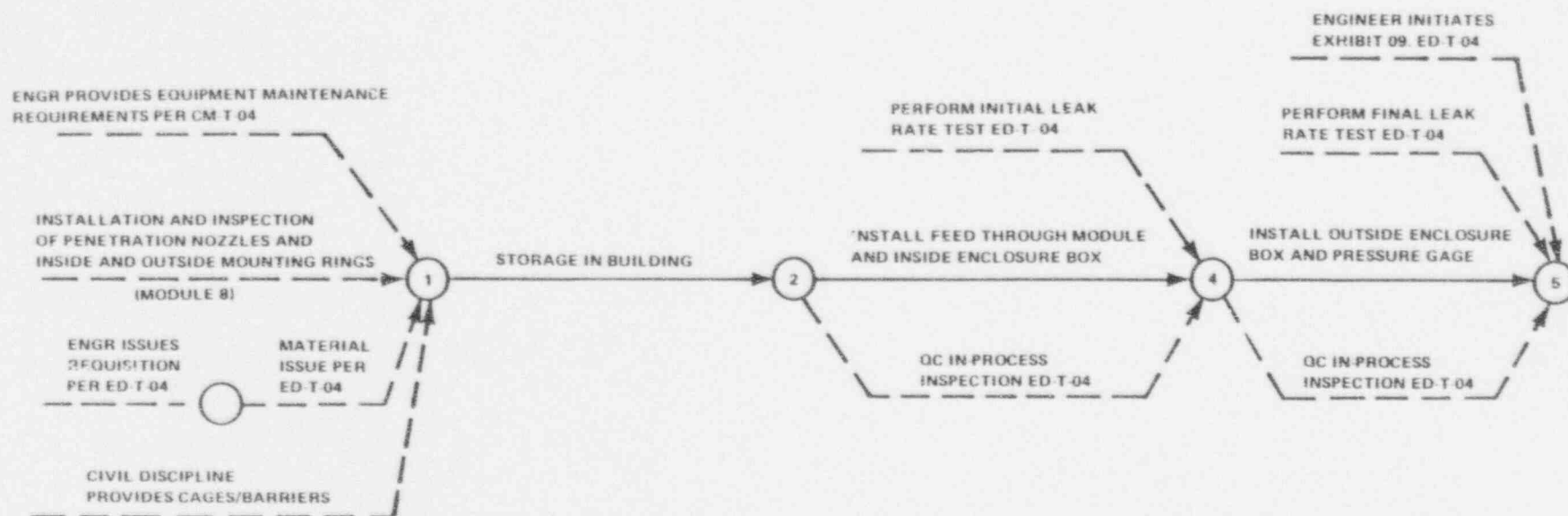


Figure 4-2 Electrical Penetration Equipment Installation (Sheet 1 of 2)

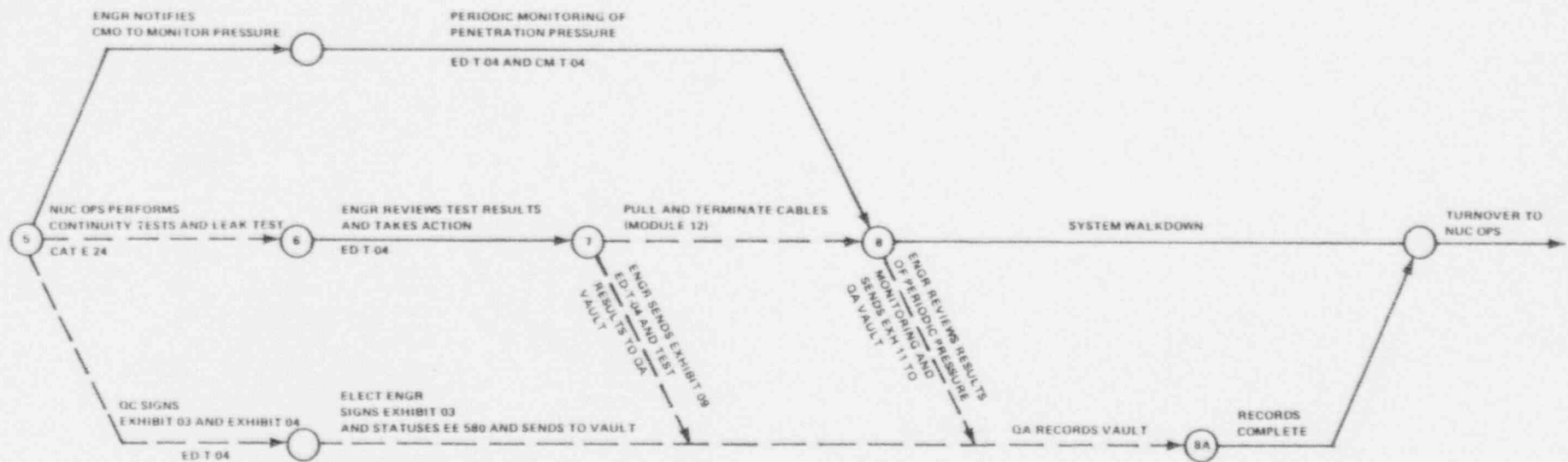


Figure 4-2 Electrical Penetration Equipment Installation (Sheet 2 of 2)

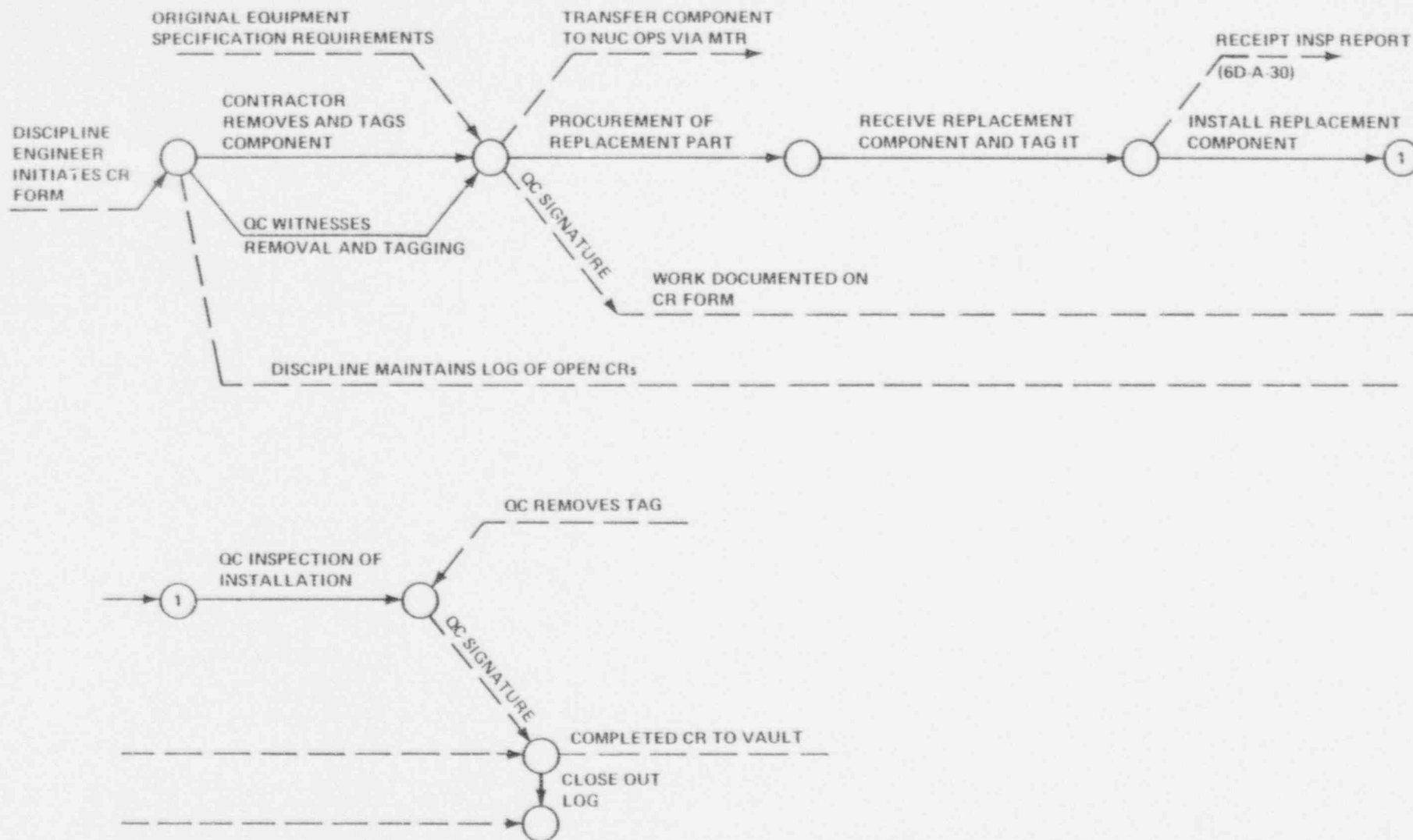


Figure 4-3 Component Removal

5 AUDITS AND INSPECTIONS

5.1 INTRODUCTION

Module section 5 contains a listing of Quality Assurance (QA) audits, Nuclear Regulatory Commission inspections, and special evaluations performed in the area of electrical equipment. These design and/or construction audits were conducted by Georgia Power Company and Bechtel Western Power Company QA personnel in order to provide assurance that design and construction processes function as required by 10 CFR 50, Appendix B; the project QA program; commitments defined in the Final Safety Analysis Report; and the Design (Criteria) Manual. The resulting findings or violations applicable to electrical equipment are listed at the end of this section. These findings were reviewed by the Readiness Review Team and factored into the assessments presented in section 6 of this module.

5.2 PROJECT AUDITS

Project Quality Assurance (QA), consisting of Georgia Power Company (GPC) QA and Bechtel Western Power Company (BWPC) QA, conducts regularly scheduled audits to verify compliance to project requirements. Any finding from an audit is reported to the management of the audited organization for corrective action. The audit report at the end of this section lists the audits conducted and findings issued since completion of the Unit 1 module.

5.2.1 GEORGIA POWER COMPANY AUDITS AND FINDINGS

GPC QA audits are performed in functional areas such as equipment, piping, cable installation, etc., and are readily identifiable to module scopes.

GPC QA conducted 14 audits within the scope of this module. These audits resulted in eight findings, which identified discrepancies in documentation requirements and incidences of hardware nonconformance.

For each finding, the extent and significance of the discrepancy were identified and adequate corrective action was taken to resolve the deficiency.

5.2.2 BECHTEL WESTERN POWER COMPANY AUDITS AND FINDINGS

BWPC QA audits are generally performed in design functional areas such as drawings, calculations, and Field Change Requests, and are applied to all disciplines, rather than a specific discipline or hardware category. Therefore, it is impractical to assign audits to a specific module; however, findings were categorized by module. The three findings within the scope of this module identified only minor documentation discrepancies, were resolved by correction of the appropriate document, and did not affect the adequacy of the design.

5.3 NUCLEAR REGULATORY COMMISSION INSPECTIONS

The Nuclear Regulatory Commission conducted five inspections related to this module. These inspections resulted in three violations. Violation 85-43-01 identified electrical equipment which was not stored in a manner to preclude damage from adjacent construction activity. Violation 85-60-01 addressed the failure to identify Unit 1 design changes which were also applicable to Unit 2. Violation 86-109-01 identified a deficiency in the performance of moment loading calculations for electrical penetration assemblies. Corrective action for all violations was initiated and completed.

5.4 REPORTABLE AND POTENTIALLY REPORTABLE ITEMS

Since completion of the Unit 1 module, 11 deviating conditions in the plant applicable to the scope of this module have required formal evaluation for reportability on Deficiency Evaluation Reports (DERs). Of these, four were determined to be reportable per the requirements of 10 CFR 50.55(e) and assigned three construction deficiency report (CDR) numbers. These are discussed below.

DER-125 (CDR-M103) identified that several regulating transformers used as isolation devices do not have the required six-inch separation between field cabling and the terminal blocks. The evaluation concluded that hardware modification was required to preclude failure of the isolation mechanisms and possible degradation of the Class 1E power sources, and was determined to be reportable under 10 CFR 50.55(e).

DER-141 and -142 (CDR-M104) identified the lack of interdisciplinary seismic separation criteria, resulting in potential seismic interferences with electrical equipment. Evaluation of this condition identified seven pieces of equipment where impact loads would be significant and could possibly cause loss of function. The hardware was modified. This condition was reportable under 10 CFR 50.55(e).

DER-168 (CDR-M126) identified that during the Unit 1 containment integrity testing, electrical penetrations were found to be leaking at a rate in excess of the allowed design leakage rate. The deficiency was determined to be caused by a hole drilled by the vendor in the penetration header plates during manufacturing. The vendor had failed to seal the hole subsequent to factory testing. A Field Change Request was generated to seal the opening with a welded plug per vendor instructions. All affected Unit 2 penetrations were inspected and found to have plugs welded in place as required. This condition was reportable under 10 CFR 50.55(e).

5.5 UNIT 1 FINDING FOLLOWUP

Unit 1 finding followup consisted of identification of all findings and corresponding corrective actions as a result of Unit 1 Readiness Review or Nuclear Regulatory Commission evaluation of the Unit 1 modules. For Unit 2, a list of those findings was compiled and transmitted to the Project to evaluate and to determine the following:

- o If the finding was an isolated occurrence in Unit 1 and did not require Unit 2 action (or was applicable to Unit 1 only).
- o If corrective action taken for Unit 1 remains in place and acceptable.
- o If corrective action in place for Unit 2 has changed from that specified in the Unit 1 module, but is still acceptable.
- o If corrective action taken for Unit 1 has not been entirely effective in Unit 2 and therefore has been modified.

For each finding that the Project determined was applicable to Unit 2, a response was returned to Readiness Review that stated which documents identified the corrective action required, any changes to committed actions, and action taken if corrective action was not effective. The listing at the end of this section presents the findings, the type of action taken for Unit 2, and explanations if corrective action was changed or not entirely effective. Selected findings were included in the assessment discussed in section 6 to provide independent Readiness Review verification of the project evaluation results.

Seventy one Unit 1 findings were identified as applicable to Module 6. The Project Design and Construction Departments evaluation of these findings concluded that all but one, 6-037, were properly addressed in Unit 2 programs.

Unit 1 Readiness Review Finding 6-037 addressed inadequate seismic separation criteria for electrical equipment. The corrective action for this finding involved the revision of appropriate construction specification selections to add or clarify the seismic separation criteria for electrical components. Subsequent to the Unit 1 Readiness Review effort, seismic separation requirements applicable to the installation of certain mechanical equipment were erroneously specified as optional. This resulted in uncertainty concerning the adequacy of seismic separation between mechanical and electrical equipment. Action has been taken to re-establish clear seismic separation criteria to ensure adequate separation as discussed in the response to Finding 2RRF-004-009 in Module 4.

PLANT VOGTLE UNIT 2 READINESS REVIEW PROGRAM
QUALITY ASSURANCE AUDITS
TABLE 5-1

AUDITING ORGANIZATION	AUDIT NUMBER	FINDING NUMBER	LEVEL	DATE	SUBJECT	REMARKS
BWPC CAR		RRF-H-11-86		05/29/86	RR FINDING 6-87, CALC NOT REVISED, FSAR NOT UPDATED, DESIGN CRITERIA NOT REVISED, EVALUATION OF A DER NOT COMPLETED & PROJECT INVESTIGATION OF NON-CLASS IE MOTORS NOT CONCLUDED BY DATES COMMITTED	
BWPC CAR		RRF-H-16-86		07/03/86	RR FINDING 6-92, I&C & C/S NOT ADDED TO REVIEW CYCLE FOR DC-1818 BY DATE COMMITTED	
BWPC CAR		VH-86/102		07/31/86	FAILURE MODE AND EFFECT ANALYSIS (FMEA) NOT PERFORMED AND FSAR NOT REVISED FOR LATEST CHANGES TO FMEA'S	
GPC QA	CP02-85/77			10/31/85	CANNIBALIZATION OF MECHANICAL, ELECTRICAL, AND INSTRUMENT & CONTROL COMPONENTS	
GPC QA	CP02/CP05-86/46	AFR 0963	II	09/10/86	NO OBJECTIVE EVIDENCE OF TESTING ADMINISTERED TO ELECTRICAL FIELD OPERATIONS OR CLEVELAND ELECTRIC PERSONNEL	CP02/CP05-86/46
GPC QA	CP07-87/07			03/09/87	AUDIT OF EFO/CE EQUIPMENT INSTALLATION/PROTECTION	
GPC QA	CP07-87/07	AFR 1006	II	03/09/87	TEN TRAY SECTIONS IN CONTROL BUILDING WERE ACCEPTED AND VAULTED YET THE 6" SEPARATION BETWEEN THE LAST TRAY AND EQUIPMENT WAS NOT IN CONFORMANCE WITH PROJECT REQUIREMENTS	CP07-87/07
GPC QA	CP09-85/86			12/18/85	INSTALLATION OF COMPONENTS IN ELECTRICAL SUBSYSTEM IGA02-03, ESSENTIAL CHILLED WATER-TRAIN B	
GPC QA	CP09-86/14			03/27/86	INSTALLATION OF ELECTRICAL COMPONENTS WITHIN THE CONTAINMENT SPRAY SYSTEM	
GPC QA	CP09-86/60			01/16/87	EVALUATION OF CLEVELAND ELECTRIC'S CONTROLS APPLIED DURING FABRICATION, INSTALLATION, AND INSPECTION OF ELECTRICAL SYSTEMS ON UNIT 2	
GPC QA	CP09-86/60	AFR 0995	II	02/25/87	INVERTER WELDED USING SHIMS NOT SPECIFIED ON DWG. DETAIL PER ED-T-04. ALSO, A FCR (INSTEAD OF A BR, PER GD-T-01) WAS GENERATED TO DOCUMENT COMPLETED WORK ON AN AS-BUILT CONDITION AND TO OBTAIN APPROVAL	

PLANT VOGTLE UNIT 2 READINESS REVIEW PROGRAM
QUALITY ASSURANCE AUDITS
TABLE 5-1
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AUDITING ORGANIZATION	AUDIT NUMBER	FINDING NUMBER	LEVEL	DATE	SUBJECT	REMARKS
GPC QA	CP09-86/60	AFR 0996	III	01/16/87	ALL CRAFT PERSONNEL NOT BEING TRAINED ON INSTALLATION OF EQUIPMENT AS REQUIRED BY PROJECT PROCEDURES	CP09/86/60
GPC QA	CP09-87/12			04/02/87	AUDIT OF RECEIPT INSPECTION THROUGH INSTALLATION OF THE UNIT 2 MAIN CONTROL BOARD INCLUDING AN IN-DEPTH LOOK AT THE STATUS OF ELECTRICAL COMPONENT REMOVALS	
GPC QA	CP09/TP02-86/ 37			08/05/86	INSTALLATION OF ELECTRICAL COMPONENTS WITHIN THE AUXILIARY COMPONENT COOLING WATER (ACCW) SYSTEM	
GPC QA	CP17-86/36			07/17/86	IMPLEMENTATION OF CORRECTIVE ACTIONS PERTAINING TO READINESS REVIEW FINDINGS REGARDING INSTALLATION OF CABLE TRAYS	
GPC QA	CP20-85/76			10/21/85	ELECTRICAL SUPPORTS	
GPC QA	CP20-85/76	AFR 855	II	10/21/85	INADEQUATE CLEARANCE BETWEEN SUPPORTS AND EQUIPMENT	
GPC QA	SP01-86/51			10/09/86	PLANNED AND SYSTEMATIC CONTROLS APPLIED IN FINALIZATION WALKDOWN PROGRAM	
GPC QA	SP01-86/51	AFR 0970	II	10/09/86	INADEQUATE FINALIZATION PROGRAM PROCEDURES	
GPC QA	SP01-87/17			04/28/87	AUDIT OF INSTALLATION AND PROTECTION OF ELECTRICAL EQUIPMENT THAT HAS BEEN DESIGNATED APPLICABLE TO READINESS REVIEW MODULE 6 ASSESSMENT	
GPC QA	SP01-87/37			08/05/87	READINESS REVIEW MODULE 6, PART 3, ELECTRICAL EQUIPMENT INSTALLATION	
GPC QA	SP01/OP24-86/ 10	AFR 0014	II	01/20/87	DISCREPANCIES IN NUMBER & TYPE OF ANCHOR BOLTS USED ON ELECTRIC PENETRATIONS & NSCW PUMPS	
GPC QA	SP01/OP26-86/ 42			08/20/86	IMPLEMENTATION OF CORRECTIVE ACTIONS PERTAINING TO READINESS REVIEW FINDINGS	
GPC QA	SP01/OP26-86/ 42	AFR 0957	II	01/14/87	DRAWINGS AND QC DOCUMENTS NOT ATTACHED TO FECO'S	

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PLANT VOGTLE UNIT 2 READINESS REVIEW PROGRAM
QUALITY ASSURANCE AUDITS
TABLE 5-1
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AUDITING ORGANIZATION	AUDIT NUMBER	FINDING NUMBER	LEVEL DATE	SUBJECT	REMARKS
=====	=====	=====	=====	=====	=====
GPC QA	TP02/OP26-87/ 23		05/27/87	AUDIT OF TURNOVER ACTIVITIES TO ENSURE DEVELOPMENT AND IMPLEMENTATION OF PROCEDURAL CONTROLS FOR A SMOOTH TRANSITION BETWEEN CONSTR. & NUC. OP'S	

PLANT VOGTLE UNIT 2 READINESS REVIEW PROGRAM
NRC INSPECTIONS
TABLE 5-2

ORGANIZATION	INSPECTION NUMBER	FINDING NUMBER	LEVEL	DATE	SUBJECT	REMARKS
NRC INSPECTION	424/85-043,42 5/85-032	VIOL 85-43-01	IV	10/17/85	VALVES AND ELECTRICAL PANEL NOT PROPERLY STORED AND/OR PROTECTED IN UNIT	
NRC INSPECTION	424/86-109	VIOL 86-109-01	IV	12/10/86	TOTAL WEIGHT OF CABLE NOT CONSIDERED IN PERFORMING MOMENT LOADING CALCULATION ELECTRICAL PENETRATION ASSEMBLY	
NRC INSPECTION	424/86-060,42 5/86-027	VIOL 86-60-01	IV	09/04/86	UNIT 1 DESIGN CHANGES IMPROPERLY EVALUATED AS NOT APPLICABLE TO UNIT 2	
NRC INSPECTION	424/87-015, 425/87-011			03/24/87	INSPECTION OF EMPLOYEES CONCERNS, LICENSEE EVENT REPORTS, AND CONSTRUCTION DEFICIENCY REPORTS PERTAINING TO ELECTRICAL EQUIPMENT AND RACEWAYS	
NRC INSPECTION	425/87-022			05/28/87	REVIEW OF UNIT 2 AREAS--FIRE PROTECTION, CONCRETE, REACTOR VESSEL, CONTAINMENT STRUCTURES, PIPING AND SUPPORTS, SAFETY-RELATED COMPONENTS, AUXILIARY SYSTEMS, ELECTRICAL EQUIPMENT, RACEWAYS, INSTRUMENTATION, QUALITY PROGRAMS AND ADMINISTRATIVE CONTROLS	

PLANT VOGTLE UNIT 2 READINESS REVIEW PROGRAM
REPORTABILITY EVALUATIONS
TABLE 5-3

EDIT NO ORGANIZATION	EVALUATION NUMBER	DATE	SUBJECT	REMARKS
114 BPC DER	108 REV. 0	10/03/85	MOV'S PROCURED TO OPERATE FROM 105 TO 140 VDC ON 100 TO 140 VDC POWER SYSTEMS	
125 BPC DER	120 REV. 0	12/12/85	POTENTIALLY DEFECTIVE NAMCO LIMIT SWITCHES ON MOV'S	
129 BPC DER	124 REV. 0	01/20/86	MOTORS FOR OPERATING FISHER BUTTERFLY VALVES FURNISHED WITH INCORRECT OPERATING SPEED	
130 BPC DER	125 REV. 0	02/04/86	INADEQUATE SPACING OF FIELD WIRING ON TERMINAL BLOCKS IN ISOLATION TRANSFORMERS	M103
147 BPC DER	141 REV. 0	03/20/86	UNACCEPTABLE SEISMIC SEPARATION BETWEEN CLASS IE EQUIPMENT AND RACEWAY SUPPORTS	M104
148 BPC DER	142 REV. 0	03/20/86	INADEQUATE CLEARANCES BETWEEN SEISMIC CATEGORY 1 ELECTRICAL PANELS	M104
159 BPC DER	153 REV. 0	05/01/86	FLAKING POSITIVE STRAPS AND DEGRADATION OF CELL VOLTAGE FOUND IN LEAD-CALCIUM TYPE, CLASS IE STATION BATTERIES	
166 BPC DER	159 REV. 0	08/06/86	INADVERTENT SWITCHYARD BREAKER TRIP CAUSED BY AN EXTRA WIRE JUMPER LOCATED IN A WESTINGHOUSE DESIGNED PANEL IN THE CHEMICAL AND VOLUME CONTROL SYSTEM	
175 BPC DER	168 REV. 0	09/12/86	LEAKING ELECTRICAL PENETRATIONS IN CONTAINMENT	M126
185 BPC DER	178 REV. 0	12/19/86	POTENTIALLY DEFECTIVE BATTERY GROUND DETECTOR RELAYS FURNISHED WITH CLASS IE 125 VDC SWITCHGEAR	
191 BPC DER	184 REV. 0	07/08/87	INCORRECTLY DESIGNED POWER CIRCUITS FED FROM 120 VAC DISTRIBUTION PANELS LOCATED IN MCCS.	

READINESS REVIEW PROGRAM
FOLLOW-UP OF UNIT 1 FINDINGS (RR, IDR, NRC)
TABLE 5-4

SOURCE AND FINDING	DESIGN CONST	LEVEL	DESCRIPTION OF FINDING	DESCRIPTION OF UNIT 1 CORRECTIVE ACTION	DESCRIPTION OF UNIT 2 FOLLOW-UP ACTION
IDR 22 F001	X	I	FINAL BATTERY VOLTAGES NOT INCORPORATED INTO CABLE DESIGN CRITERIA	DESIGN CRITERIA REVISED TO INCORPORATE 117V BATTERY VOLTAGE	CORRECTIVE ACTION REMAINS IDENTICAL AND ACCEPTABLE
IDR 22 F008	X	II	INCORRECT USE OF VENDOR DATA IN ELECTRICAL CALCS.	ISOLATED CASE, CALC. REVISED TO REFLECT CORRECT MOTOR HORSEPOWER	ISOLATED INSTANCE/ONE TIME CORRECTIVE ACTION
IDR 22 F010	X	I	DC VALVE SPECIFICATION SPECIFIED INCORRECT MINIMUM DC SYSTEM VOLTAGE	SPECIFICATIONS UPDATED TO INCLUDE REVISED APPENDIX "AD" EQUIPMENT QUALIFICATION DATA REVIEWED TO ENSURE ACTUAL EQUIPMENT PERFORMS OK.	CORRECTIVE ACTION REMAINS IDENTICAL AND ACCEPTABLE
IDR 22 F020	X	II	INCOMPLETE ANALYSIS OF EFFECTS OF JET IMPINGEMENT ON PRESSURIZER HEATER POWER SUPPLIES	NO ADDITIONAL ANALYSIS REQUIRED. COMMITMENT TO CLARIFY FSAR	CORRECTIVE ACTION REMAINS IDENTICAL AND ACCEPTABLE
IDR 22 F026	X	II	THERMAL OVERLOAD SELECTION FOR IE MOV'S WITH MANUFACTURERS RECOMMENDATIONS	ADEQUACY OF DESIGN EXPLAINED BY PROJECT RESPONSE AND VENDOR DOCUMENTATION - NO CORRECTIVE ACTION REQUIRED	ISOLATED INSTANCE/ONE TIME CORRECTIVE ACTION
IDR 22 F030	X	II	AUXILIARY FEEDWATER PUMP MOTOR OVERLOAD MAY REACH THERMAL LIMIT	DESIGN PERSONNEL RETRAINED. ADDITIONAL DOCUMENTATION REQUESTED FROM VENDOR	CORRECTIVE ACTION REMAINS IDENTICAL AND ACCEPTABLE
IDR 22-F033	X	I	INCONSISTENT IDENTIFICATION OF EQUIPMENT FOR IEN 84-68 SOLENOID VALVES NOT IDENTIFIED AS REQUIRING HIGH TEMPERATURE WIRE	NOTES ADDED TO ELEMENTARY DIAGRAMS TO IDENTIFY USE OF ECSA'S TO PROVIDE HIGH TEMPERATURE WIRE	CORRECTIVE ACTION REMAINS IDENTICAL AND ACCEPTABLE
IDR 6 008	X	II	CALCULATION RESULTS NOT IN AGREEMENT WITH FSAR LOAD GROWTH MARGIN	CALCULATION REVISED TO AGREE WITH FSAR	CORRECTIVE ACTION REMAINS IDENTICAL AND ACCEPTABLE
IDR 6 009	X	II	SEQUENCE LOGIC SETPOINTS AND TIME DELAYS DIFFER BETWEEN SPECIFICATION AND FSAR	SPECIFICATION REVISED TO AGREE WITH FSAR	CORRECTIVE ACTION REMAINS IDENTICAL AND ACCEPTABLE
IDR 6 010	X	III	TYPE TEST DATA FOR MOTOR CONTROL CENTERS AND LOAD CENTERS NOT AVAILABLE IN PROJECT VENDOR DATA FILES	TEST DATA RECEIVED FROM VENDORS AND PLACED IN PROJECT FILES	CORRECTIVE ACTION REMAINS IDENTICAL AND ACCEPTABLE

READINESS REVIEW PROGRAM
FOLLOW UP OF UNIT 1 FINDINGS (RR, IDR, NRC)
TABLE 5-4

SOURCE AND FINDING	DESIGN CONST	LEVEL	DESCRIPTION OF FINDING	DESCRIPTION OF UNIT 1 CORRECTIVE ACTION	DESCRIPTION OF UNIT 2 FOLLOW-UP ACTION
IDR 6-013	X	II	FACTORY BATTERY TEST NOT PERFORMED IN ACCORDANCE WITH SPECIFICATION	REVISION TO LOAD CALCULATION ENVELOPES EXISTING TEST	CORRECTIVE ACTION REMAINS IDENTICAL AND ACCEPTABLE
IDR 6-041	X	II	NO GUIDELINES EXIST IN DC-1816 FOR USAGE OF PVC TERMINAL LUGS	DC-1816 REVISED TO REMOVE ANY RESTRICTION ON PVC LUGS	CORRECTIVE ACTION REMAINS IDENTICAL AND ACCEPTABLE
IDR 6-051	X	II	480V FEED DELETED FROM INVERTERS NOT IN AGREEMENT WITH VENDOR REQUIREMENT	VENDOR REVISED DRAWINGS TO ELIMINATE 480V FEED	CORRECTIVE ACTION REMAINS IDENTICAL AND ACCEPTABLE
IDR 6-052	X	II	PROCUREMENT SPECIFICATION X3AD01 SPECIFIES DUTY CYCLES INCONSISTENT WITH THE FSAR	FSAR UPDATED TO AGREE WITH CALCULATION THAT CHANGED SPECIFICATION	CORRECTIVE ACTION REMAINS IDENTICAL AND ACCEPTABLE
IDR 6-076	X	I	CALCULATION DOES NOT INCLUDE SOURCE OF ASSUMED LOADS	SIX CALCULATIONS REVISED TO INCLUDE APPLICABLE SOURCE DATA	CORRECTIVE ACTION REMAINS IDENTICAL AND ACCEPTABLE
RRF 6-001	X	III	PROCEDURE DOES NOT ADDRESS APPROVAL OR PROCESSING OF EQUIPMENT REQUISITIONS	PROCEDURE REVISED TO INCLUDE APPROVAL AND PROCESSING REQUIREMENTS	CORRECTIVE ACTION REMAINS IDENTICAL AND ACCEPTABLE
RRF 6-002	X	III	INSPECTION REPORTS FOR PENETRATIONS ARE NOT PROCESSED PER PROCEDURE	PROCEDURE CHANGED TO REFLECT ACTUAL DOCUMENT FLOW	CORRECTIVE ACTION REMAINS IDENTICAL AND ACCEPTABLE
RRF 6-003	X	III	EE580 CARDS NOT FILED PER PROCEDURE	CARDS RE-FILED	ISOLATED INSTANCE/ONE TIME CORRECTIVE ACTION
RRF 6-004	X	III	NO EVIDENCE EXISTS THAT PENETRATION TEST RESULTS WERE REVIEWED AND ACCEPTED PER PROCEDURE	PROCEDURE REVISED TO REQUIRE SIGNATURE OF ENGINEER	CORRECTIVE ACTION REMAINS IDENTICAL AND ACCEPTABLE
RRF 6-005	X	III	PENETRATION HAS CABLE COILED ON TOP	REMOVED CABLE	ISOLATED INSTANCE/ONE TIME CORRECTIVE ACTION
RRF 6-006	X	III	ED-T-19 CONTAINS CONFLICTING REQUIREMENTS	PROCEDURE REVISED TO AGREE WITH VENDOR REQUIREMENTS	CORRECTIVE ACTION REMAINS IDENTICAL AND ACCEPTABLE
RRF 6-007	X	III	PENETRATIONS ROTATED PRIOR TO DRAWING REVISION	NONE	ISOLATED INSTANCE/ONE TIME CORRECTIVE ACTION

READINESS REVIEW PROGRAM
FOLLOW-UP OF UNIT 1 FINDINGS (RR, IDR, NRC)
TABLE 5-4

SOURCE AND FINDING	DESIGN CONST	LEVEL	DESCRIPTION OF FINDING	DESCRIPTION OF UNIT 1 CORRECTIVE ACTION	DESCRIPTION OF UNIT 2 FOLLOW-UP ACTION
RRF 6-016	X	I	VENDOR AND FIELD WIRING OF REGULATED TRANSFORMERS DO NOT MEET SEPARATION REQUIREMENTS	WIRING ANALYZED, FIELD WIRING MODIFIED	CORRECTIVE ACTION REMAINS IDENTICAL AND ACCEPTABLE
RRF 6-017	X	II	SWITCHGEAR WELD NOT PER VENDOR DRAWING	EXISTING WELDS ANALYZED, ACCEPTED AS IS	CORRECTIVE ACTION REMAINS IDENTICAL AND ACCEPTABLE
RRF 6-020	X	III	INSTALLATION DOCUMENTS MISFILED IN VAULT	DOCUMENTS RE-FILED	CORRECTIVE ACTION REMAINS IDENTICAL AND ACCEPTABLE
RRF 6-021	X	III	DEVIATION REPORTS NOT FIELD WITH ASSOCIATED COMPONENT	PROCEDURE CHANGED, DR'S ENTERED INTO RMS SYSTEM	CORRECTIVE ACTION REMAINS IDENTICAL AND ACCEPTABLE
RRF 6-025	X	III	INSPECTION REPORTS SIGNED OUT OF SEQUENCE	PROCEDURE MODIFIED TO ALLOW CONDITIONAL WORK RELEASE	CORRECTIVE ACTION REMAINS IDENTICAL AND ACCEPTABLE
RRF 6-027	X	II	BATTERIES AND RACKS NOT PERMANENTLY IDENTIFIED	COMPONENTS LABELED WITH PLANT TAG NUMBERS	CORRECTIVE ACTION REMAINS IDENTICAL AND ACCEPTABLE
RRF 6-029	X	III	SIDE PANEL OF SWITCHGEAR DAMAGED	DAMAGE REPAIRED	ISOLATED INSTANCE/ONE TIME CORRECTIVE ACTION
RRF 6-030	X	III	EMSL CARDS NOT ON FILE FOR EQUIPMENT	CARDS LOCATED AND FILED	ISOLATED INSTANCE/ONE TIME CORRECTIVE ACTION
RRF 6-032	X	I	CABLE TRAY SUPPORT HAS INADEQUATE CLEARANCE TO EQUIPMENT	ALL EQUIPMENT WALKED DOWN, FIELD PROCEDURES REVISED TO AGREE WITH SPECIFICATION	CORRECTIVE ACTION REMAINS IDENTICAL AND ACCEPTABLE
RRF 6-034	X	III	DC-1000-E DOES NOT REFER TO ASME III FOR MC COMPONENTS	DC-1000-E REVISED TO INCLUDE ALL REFERENCES FOR CODES/STANDARDS IN ELECTRICAL DESIGN CRITERIA	CORRECTIVE ACTION REMAINS IDENTICAL AND ACCEPTABLE
RRF 6-036	X	III	FCR'S USED IN LIEU OF FECO'S TO MAKE TECHNICAL CHANGES TO EQUIPMENT	FCR'S REVIEWED, PRM REVISED	CORRECTIVE ACTION REMAINS IDENTICAL AND ACCEPTABLE
RRF 6-037	X	I	SEISMIC SEPARATION REQUIREMENTS FOR ELECTRICAL ITEMS OTHER THAN CONTROL PANELS NOT SPECIFIED	ALL EQUIPMENT WALKED DOWN, CONSTRUCTION SPECIFICATION X3A01 SECTIONS E2 & E8 REVISED	CORRECTIVE ACTION NOT ENTIRELY EFFECTIVE SIF SECTION 5.5

READINESS REVIEW PROGRAM
FOLLOW-UP OF UNIT 1 FINDINGS (RR, IDR, NRC)
TABLE 5-4

SOURCE AND FINDING	DESIGN CONST	LEVEL	DESCRIPTION OF FINDING	DESCRIPTION OF UNIT 1 CORRECTIVE ACTION	DESCRIPTION OF UNIT 2 FOLLOW-UP ACTION
RRF 6-039	X	III	NO ANALYSIS PERFORMED FOR USE OF PVC TERMINALS AS REQUIRED BY PROCEDURE	DESIGN CRITERIA REVISED TO ALLOW USE OF PVC TERMINALS	CORRECTIVE ACTION REMAINS IDENTICAL AND ACCEPTABLE
RRF 6-045	X	II	NO PROGRAM CONTROLS EXIST TO ENSURE GROUNDING OF NON-ELECTRICAL INSTALLED EQUIPMENT	PROCEDURE DEVELOPED	CORRECTIVE ACTION REMAINS IDENTICAL AND ACCEPTABLE
RRF 6-046	X	III	FECO PACKAGES NOT CONTROLLED OR PROCESSED PER PROCEDURE	PROCEDURE REVISED TO REFLECT ACTUAL WORK FLOW	CORRECTIVE ACTION REMAINS IDENTICAL AND ACCEPTABLE
RRF 6-047	X	III	DOCUMENT PACKAGES MISFIELD IN VAULT	PACKAGES RE FILED CORRECTLY	CORRECTIVE ACTION REMAINS IDENTICAL AND ACCEPTABLE
RRF 6-048	X	III	DEVIATION REPORTS INCONSISTENTLY HANDLED DURING DISPOSITIONING	PROCEDURE REVISED TO CLARIFY METHODS OF ORIGINATING AND PROCESSING DEVIATION REPORTS	ISOLATED INSTANCE/ONE TIME CORRECTIVE ACTION
RRF 6-049	X	II	PROCEDURE DID NOT INCORPORATE LICENSING COMMITMENT REQUIREMENT	PROCEDURE REVISED TO INCLUDE REQUIREMENT	CORRECTIVE ACTION REMAINS IDENTICAL AND ACCEPTABLE
RRF 6-050	X	II	PROCEDURE DID NOT INCORPORATE LICENSING COMMITMENT REQUIREMENT	PROCEDURE AND SPECIFICATION REVISED TO INCLUDE REQUIREMENT	CORRECTIVE ACTION REMAINS IDENTICAL AND ACCEPTABLE
RRF 6-054	X	III	COVER AND DUST FILTER LOOSE ON EQUIPMENT	PROCEDURE REVISED TO CLARIFY REQUIREMENTS	CORRECTIVE ACTION REMAINS IDENTICAL AND ACCEPTABLE
RRF 6-055	X	III	INTERFACING DESIGN CRITERIA NOT CONSISTENTLY LISTED IN THE DESIGN CRITERIA	DC'S REVIEWED, INTERFACES ADDED	CORRECTIVE ACTION REMAINS IDENTICAL AND ACCEPTABLE
RRF 6-056	X	III	GDC'S 2,4,5 & RG'S 1.29,1.89,1.100 NOT CONSISTENTLY REFERENCED IN THE CLASS IE SYSTEM DESIGN CRITERIA	DC'S REVIEWED, REFERENCES ADDED	CORRECTIVE ACTION REMAINS IDENTICAL AND ACCEPTABLE
RRF 6-057	X	III	REQUIRED LEVEL OF APPROVAL INDICATED ON DESIGN CRITERIA COVER SHEET NOT COMPLIED WITH	ALL ELECTRICAL DESIGN CRITERIA REVIEWED TO ENSURE PROPER APPROVAL WAS PERFORMED	CORRECTIVE ACTION REMAINS IDENTICAL AND ACCEPTABLE

READINESS REVIEW PROGRAM
FOLLOW UP OF UNIT 1 FINDINGS (RR, IDR, NRC)
TABLE 5-4

SOURCE AND FINDING	DESIGN CONST	LEVEL	DESCRIPTION OF FINDING	DESCRIPTION OF UNIT 1 CORRECTIVE ACTION	DESCRIPTION OF UNIT 2 FOLLOW-UP ACTION
RRF 6-060	X	II	CLASS 1E REGULATING TRANSFORMERS NOT SPECIFIED AS ISOLATION DEVICES IN PROCUREMENT SPECIFICATION OR DESIGN CRITERIA	DESIGN CRITERIA AND PROCUREMENT SPEC. REVISED	CORRECTIVE ACTION REMAINS IDENTICAL AND ACCEPTABLE
RRF 6-061	X	III	DESIGN CRITERIA FOR RCP SWITCHGEAR NOT CLASSIFIED AS SAFETY-RELATED	DC-1825 REVISED TO ADD APPROPRIATE SAFETY-RELATED REFERENCES	ISOLATED INSTANCE/ONE TIME CORRECTIVE ACTION
RRF 6-062	X	III	SEE RRF 6-057		ISOLATED INSTANCE/ONE TIME CORRECTIVE ACTION
RRF 6-063	X	III	STANDARDS REFERENCED IN TEXT OF DESIGN CRITERIA NOT LISTED IN PARAGRAPH 2.0	DESIGN CRITERIA REVISED	ISOLATED INSTANCE/ONE TIME CORRECTIVE ACTION
RRF 6-064	X	III	EQUIPMENT LOCATION DRAWING IN ERROR	DRAWING REVISED	ISOLATED INSTANCE/ONE TIME CORRECTIVE ACTION
RRF 6-065	X	III	REGULATORY GUIDE NOT REFERENCED ON DESIGN CRITERIA COVER SHEET	DESIGN CRITERIA REVISED TO ADD REFERENCE	ISOLATED INSTANCE/ONE TIME CORRECTIVE ACTION
RRF 6-066	X	III	RG 1.53 AND IEEE-379 NOT CONSISTENTLY REFERENCED IN THE DESIGN CRITERIA	DESIGN CRITERIA REVISED TO ADD REFERENCE	CORRECTIVE ACTION REMAINS IDENTICAL AND ACCEPTABLE
RRF 6-068	X	II	480V SWGR. HAS LAG BOLTS IN BASE CHANNEL	LAG BOLTS REMOVED	ISOLATED INSTANCE/ONE TIME CORRECTIVE ACTION
RRF 6-071	X	III	DC-1007 AND ATTACHMENT EA INCORRECTLY SPECIFY BATTERY ROOM TEMP. OF 50 DEG.F	DESIGN CRITERIA, SPECIFICATION, AND ARCHITECTURAL DRAWINGS REVISED	CORRECTIVE ACTION REMAINS IDENTICAL AND ACCEPTABLE
RRF 6-072	X	III	DC-1806, REV. 0 NOT APPROVED BY CHIEF ELECTRICAL ENGINEER	SEE 6-057	ISOLATED INSTANCE/ONE TIME CORRECTIVE ACTION
RRF 6-073	X	III	DC-1805 DOES NOT REFERENCE BTP PSB-1	DESIGN CRITERIA DC-1805 REVISED TO ADD REFERENCE	ISOLATED INSTANCE/ONE TIME CORRECTIVE ACTION
RRF 6-074	X	III	DEVIATION REPORT DISPOSITION NOT CLEARLY JUSTIFIED	DEVIATION REPORT RE-DISPOSITIONED	ISOLATED INSTANCE/ONE TIME CORRECTIVE ACTION

READINESS REVIEW PROGRAM
FOLLOW-UP OF UNIT 1 FINDINGS (RR, IDR, NRC)
TABLE 5-4

SOURCE AND FINDING	DESIGN CONST	LEVEL	DESCRIPTION OF FINDING	DESCRIPTION OF UNIT 1 CORRECTIVE ACTION	DESCRIPTION OF UNIT 2 FOLLOW-UP ACTION
RRF 6-079	X	III	SEE RRF 6-057		ISOLATED INSTANCE/ONE TIME CORRECTIVE ACTION
RRF 6-080	X	III	10CFR50, APP. J & ASTM D635 NOT APPROPRIATELY LISTED ON DESIGN CRITERIA COVER SHEETS	DESIGN CRITERIA DC-1000-E & DC-1818 REVISED TO ADD REFERENCE	CORRECTIVE ACTION REMAINS IDENTICAL AND ACCEPTABLE
RRF 6-081	X	III	DESIGN CRITERIA DIFFERS FROM PURCHASE SPECIFICATION	DESIGN CRITERIA REVISED TO MATCH PURCHASE SPECIFICATION	CORRECTIVE ACTION REMAINS IDENTICAL AND ACCEPTABLE
RRF 6-082	X	III	DESIGN CRITERIA DOES NOT SPECIFY PENETRATION CONDUCTOR SIZES	DESIGN CRITERIA DC-1809 REVISED	CORRECTIVE ACTION REMAINS IDENTICAL AND ACCEPTABLE
RRF 6-083	X	III	CRITERIA FOR APPLICATIONS OF ECSA NOT IN DESIGN CRITERIA	DC-1809 REVISED TO ADD ECSA SELECTION CRITERIA	CORRECTIVE ACTION REMAINS IDENTICAL AND ACCEPTABLE
RRF 6-084	X	III	SAFETY CLASS DESIGNATOR CN COVER SHEET OF DC-1818 IS IN ERROR	REVISED DC-1818 COVER SHEET	ISOLATED INSTANCE/ONE TIME CORRECTIVE ACTION
RRF 6-085	X	III	THE EE400 LOAD STUDY PROGRAM IS NOT CONTROLLED BY PRM	EE400 UPGRADED TO CALCULATION	CORRECTIVE ACTION REMAINS IDENTICAL AND ACCEPTABLE
RRF 6-086	X	III	ASSUMPTIONS AND REFERENCES FOR 120 VAC LOAD DATA NOT LISTED ON ONE-LINE	CALCULATION PREPARED TO LIST LOAD DATA AND ASSUMPTIONS	CORRECTIVE ACTION REMAINS IDENTICAL AND ACCEPTABLE
RRF 6-087	X	I	MAXIMUM VOLTAGES DURING NORMAL UNIT OPERATION AND MINIMUM VOLTAGES DURING ALL TRANSIENT VOLTAGE STEPS NOT ANALYZED PER BTP PSB-1	CALCULATION X3CA03-1 REVISED AND FSAR REVISED	CORRECTIVE ACTION REMAINS IDENTICAL AND ACCEPTABLE
RRF 6-088	X	III	CALCULATION IS CLASSIFIED AS NON-SAFETY RELATED BUT AFFECTS SAFETY RELATED ITEMS	PROJECT CLASSIFICATION CHANGED AND BROADNESS REVIEW PERFORMED, PRM REVISED, ENGINEERS TRAINED	CORRECTIVE ACTION REMAINS IDENTICAL AND ACCEPTABLE
RRF 6-090	X	III	THE BATTERY QUALIFICATIONS REPORT SHOWS A QUALIFICATION TEMPERATURE OF 75 DEG.F, WHICH IS LESS THAN THE 80 DEG.F SHOWN IN THE DESIGN CRITERIA AND ENVIRONMENTAL ATTACHMENT EA	SEE 6-071 ADN 21-J4	CORRECTIVE ACTION REMAINS IDENTICAL AND ACCEPTABLE

READINESS REVIEW PROGRAM
FOLLOW UP OF UNIT 1 FINDINGS (RR, IDR, NRC)
TABLE 5-4

SOURCE AND FINDING	DESIGN CONST	LEVEL	DESCRIPTION OF FINDING	DESCRIPTION OF UNIT 1 CORRECTIVE ACTION	DESCRIPTION OF UNIT 2 FOLLOW-UP ACTION
RRF 6-091	X	III	ALL INTERFACE CRITERIA NOT LISTED IN DESIGN CRITERIA	DESIGN MANUAL REVISED TO REQUIRE ONLY MAJOR INTERFACE LISTING	CORRECTIVE ACTION REMAINS IDENTICAL AND ACCEPTABLE
RRF 6-092	X	III	THERE IS NO WRITTEN PROCEDURE REQUIRING INTERDISCIPLINARY REVIEW OF INTERFACE CRITERIA	APPROPRIATE INTERFACE DISCIPLINES ADDED TO REVIEW CYCLE FOR BMCN'S	CORRECTIVE ACTION REMAINS IDENTICAL AND ACCEPTABLE
RRF 6-093	X	III	OUTDATED VENDOR DRAWINGS STILL ACTIVE IN SUPPLIER DOCUMENT REGISTER	ADDITIONAL TRAINING PROVIDED TO ENGINEERS	CORRECTIVE ACTION REMAINS IDENTICAL AND ACCEPTABLE

6 PROGRAM ASSESSMENT

6.1 INTRODUCTION

This section describes the program developed and actions performed to ascertain whether the design and construction activities related to electrical equipment for Vogtle Electric Generating Plant Unit 2 have been adequately controlled in a manner that continues to implement licensing commitments, to ascertain whether the corrective actions resulting from the Unit 1 Readiness Review were applied to Unit 2, and to verify that the results of the design and construction activities conform to project procedures and design requirements.

The Readiness Review Team assembled for Module 6 consisted of two Readiness Review Task Force members and two members of site Quality Assurance with a total of 50 of years of combined nuclear design and construction experience. Table 6-1 lists the members of the assessment team. Approximately 1200 manhours were expended in performance of the module review and assessment activities.

Discrepancies noted during review activities were issued to the Project as findings. The Project was required to respond in a manner that addressed the specific issue identified, addressed project investigative action to determine possible generic implications, and described corrective actions taken.

These project responses were evaluated and the findings were categorized as follows:

- o Level I - Violation of licensing commitments, project procedures, or engineering requirements with indication of safety concern.
- o Level II - Violation of licensing commitments or engineering requirements with no safety concerns.
- o Level III - Violation of project procedures with no safety concerns.

6.2 PROGRAM DESCRIPTION

The Readiness Review Program evaluation of electrical equipment for Vogtle Electric Generating Plant Unit 2 consisted of three major activities. These were the review of commitment implementation; a followup on Unit 1 finding corrective actions as applied to Unit 2; and development and execution of an assessment plan to examine programs, activities, and hardware.

Sections 3 and 5 of this module discuss project actions related to the commitment matrix and Unit 1 finding followup into Unit 2, respectively.

The assessment for Unit 2 electrical equipment was developed to accomplish the following objectives:

- o Provide added assurance that project procedures continue to implement licensing commitments.
- o Verify that actions taken to resolve problems identified during the Unit 1 Readiness Review have been effective in preventing recurrence in Unit 2.
- o Verify that program and organizational enhancements made for Unit 2 have maintained the quality of the design and construction effort.
- o Assess the compliance of design completion and design change activities against engineering procedure controls.
- o Assess the compliance of installed hardware against engineering and vendor requirements.

The assessment and results are discussed in the following sections.

6.3 SUMMARY AND CONCLUSIONS

Module 6 addresses Unit 2 safety-related (Class 1E) electrical equipment. Verification that the design and construction processes and results meet licensing commitments was accomplished by visual examination of a selected hardware sample and by reviewing design and construction documents related to the selected hardware. Plans for selection of a verification sample and verification attributes were developed to ensure comprehensive coverage of the various types of hardware and documents.

The hardware sample selected consisted of seven pieces of equipment and four penetrations. Documentation assessed was directly related to the hardware sample. Design and installation activities were essentially identical to those assessed in Unit 1.

Assessment actions primarily concentrated on:

- o Equipment installation and modification activity.
- o Design change and design completion activity.

The assessment addressed three issues:

- o Implementation of licensing commitment requirements.
- o Unit 2 application of corrective actions resulting from the Unit 1 Readiness Review.
- o Evaluation of the effects of program enhancements and newly developed programs.

The above assessments resulted in nine findings, one of which was classified as Level I, two as Level II, and six as Level III. The Level I finding (Finding 2RRF-006-011) identified a difference between the wiring fire separation criteria stated in the Final Safety Analysis Report and those listed in Construction Specification X3AR01. Preliminary evaluation of this finding resulted in the issuance of Deficiency Evaluation Report (DER) DER-186 and has been reported to the Nuclear Regulatory Commission presently as potentially reportable. Submittal of the final evaluation is scheduled for March, 1, 1988. The Level II and III findings were judged to be instances of procedure noncompliance or inadequate procedures with no safety concern and do not indicate, either individually or collectively, a programmatic concern.

Collective evaluation of the Level II and III findings resulted in no areas of concern beyond the specific findings. With correction of the specific Unit 2 findings identified in this module, design and construction activities within the scope of this module will comply with licensing commitments.

The evaluation and corrective actions that are controlled by the normal project process of resolving DERs ensure that design and construction activities relating to electrical separation (Finding 2RRF-006-011) will comply with licensing commitments.

The individual findings and the Project responses are presented in section 6.5.

6.4 ASSESSMENT ACTIVITIES AND RESULTS

The majority of the Readiness Review activity for this module concerned the development and implementation of an assessment plan to provide a systematic review of activities, programs, and hardware associated with electrical equipment. This assessment was performed to provide added assurance that the Project continued to comply with licensing commitments. This section describes the development and implementation of the plan and the results of the assessment.

The assessment was organized into three parts:

- o Part 1 - Commitment Implementation and Unit 1 Finding Followup.
- o Part 2 - Design and Construction Programs and Activities.
- o Part 3 - Design and Construction Completion.

As a preparatory activity for development of the assessment plan, Readiness Review examined the information presented in Section 5 of this module (audits, Nuclear Regulatory Commission (NRC) items, etc.) to ensure that areas with a past history of deficiency or weakness at Vogtle Electrical Generating Plant or within the industry were factored into the assessment.

The following were evaluated for inclusion in the assessment:

- o Quality Assurance Audit Finding Reports and Corrective Action Requests.
- o NRC Violations.
- o Quality Concerns.
- o Industry Problems (from inspection and enforcement notices and bulletins).
- o Licensee Event Reports form VEGP Unit 1.

This review and evaluation identified the following issues that were included in the assessment plan.

<u>Issue</u>	<u>Source</u>	<u>Where Addressed</u>
Equipment Qualification	QA AFR	Part 2
Field Equipment Change Orders	QA AFR	Parts 2 and 3

Protection of Equipment	NRC Violation Quality Concerns	Parts 2 and 3
Welding of Equipment to Foundations	Quality Concerns	Part 2
Penetration Leakage	Deficiency Evaluation Report Reportable Item	Part 3

A compilation of problems encountered during the Unit 1 startup phase was obtained from Operations and was reviewed to identify those problem areas related to design or construction activities. Additionally, copies of the NRC inspections of Comanche Peak, Browns Ferry, Sequoyah, and Watts Bar for 1985, 1986, and the first quarter of 1987 were obtained from the NRC public document room and were examined to identify any new areas of industry concern. Within the scope of this module, no problem areas were identified from these sources that were not already identified from other sources.

Certain attributes examined during Unit 1 were included in the assessment to demonstrate continuity.

Some aspects of the construction acceptance testing portion of the initial test program were included in part 3 of the assessment. These aspects are discussed in Module 3A, Initial Test Program.

During implementation of the plan, it was discovered that several activities within the scope of the module had not yet started in Unit 2. The program controls for these activities were examined and determined to be in compliance with licensing commitments. Assessment of the performance of the activity and conformance to the program controls has been deferred to other appropriate modules as indicated below:

<u>Activity</u>	<u>Module</u>
Change Control Packages	3A
Construction Specification Change Notices	12
Penetration Weight Loading Calculation	12
Internal Panel Separation (field cable installation)	12

A listing of the sample used for the module assessment is shown on Table 6-1.

6.4.1 PART 1, COMMITMENT IMPLEMENTATION AND UNIT 1 FINDING FOLLOWUP

The objective of part 1 of the assessment was to assess implementation of licensing commitments, with emphasis on those revised or added since Unit 1 Readiness Review by Final Safety Analysis Report (FSAR) amendments or project letters and to assess the adequacy of application of corrective actions resulting from Unit 1 Readiness Review to Unit 2.

6.4.1.1 Commitment Implementation

Design

The commitment matrix that follows section 3.2 contains 186 entries that represent 75 individual design commitments, 25 of which were chosen for assessment. This part of the assessment was controlled by Checklist RR-006-001. The checklist items consisted of individual commitments and were evaluated to ensure that the Project had adequately implemented the commitments in appropriate project design documents. The assessment included reviews of design criteria, calculations, drawings, and construction specifications.

The assessment determined that design licensing commitments had been appropriately and adequately implemented, with one exception. Finding 2RRF-006-011, Level I, identified a difference between the reduced separation criteria based on testing presented in the FSAR and that presented in the Construction Specification X3AR01. Deviation Evaluation Report -186 was initiated and is scheduled for final evaluation by March, 1, 1988. Two other findings, 2RRF-006-008 and 2RRF-006-013, both Level III, identified minor inconsistencies in the method of specifying references to commitment requirements within the design criteria

Construction

The commitment matrix that follows section 3.2 contains 16 entries requiring construction implementation action. Thirteen of these were selected for verification and placed on the construction commitment Checklist RR-006-002. The majority of construction commitments for electrical equipment are contained in several general industry standards, as defined by the project position for the corresponding regulatory guide in section 1.9 of the FSAR. Implementation of these standards was assessed by selecting discrete requirements from within the body of the standards and verifying inclusion within an appropriate construction procedure or identifying documentation demonstrating compliance with the requirement.

All commitment requirements were found to be properly complied with by construction personnel. Findings 2RRF-006-001, (Level II) 2RRF-006-002 (Level III), and 2RRF-006-003 (Level III) were written, however, to identify requirements that were not included in the procedures.

6.4.1.2 Unit 1 Finding Followup

The Unit 1 finding followup consisted of a review of actions taken by the Project to prevent recurrence in Unit 2 of the types of problems identified by Readiness Review during the Unit 1 assessment. A listing of the Unit 1 findings was provided to the Project Engineering and Construction Organizations, a review was performed by these organizations and, information indicating the actions taken to address Unit 2 programs was provided to Readiness Review. Readiness Review evaluated a sample of these responses in parts 1, 2, and 3 to assess the accuracy and adequacy of the information provided. For construction, 18 of 20 actions were examined, for design, 16 of 56 actions were examined. Table 6-2 cross references the finding and checklist numbers.

The findings resulting from part 1, evaluated collectively, do not indicate any problem areas. Only one commitment requirement assessed was less than adequately implemented and was of any safety significance. The Project is taking appropriate corrective action as described above for the Level I finding.

6.4.2 PART 2, IN-PROCESS ACTIVITIES

The objectives of part 2 of the assessment were to examine the design procedures for:

- o Design change control.
- o Calculation updating and revision.
- o Program changes to the design change review program resulting from Unit 1 Readiness Review findings.

and to examine the construction processes for:

- o Component/commodity installation.
- o Component removal/replacement.
- o Changes to equipment internals.
- o Program changes to the controls for in-process installation, maintenance, and protection of equipment.

6.4.2.1 Design Changes

The design portion of part 2 examined the design programs controlling design changes and calculation development. Twenty-seven Field Change Requests (FCRs) and eight Design Change Notices (DCNs) were evaluated using Checklist RR-006-003 to assess compliance with applicable procedures and licensing commitments and control of design changes. The review included an evaluation of interdisciplinary review, evaluation of effects on FSAR statements, incorporation in drawing within procedural limits, impact on previous installations and revision of calculations to support the change. The above attributes of the design change program were assessed and determined to be acceptable. Finding 2RRF-006-012 (Level III) identified minor instances of failure to follow procedure when assigning an approved disposition to FCRs.

Field Equipment Change Orders

Field Equipment Change Orders (FECOs) were evaluated using Checklist RR-006-004. This checklist assessed the following attributes:

- o Authorization by original equipment supplier.
- o References of all drawings required.
- o Specification of material required.
- o Evaluation by Quality Assurance engineer.

Five FECOs were examined and all complied with the above requirements.

Calculations

Two calculations were assessed to evaluate compliance with project calculation control procedures using Checklist RR-006-006. The review addressed conformance to design criteria, reference to appropriate codes and standards, compliance with guidelines for documenting input data, and proper entry in control logs. The calculations were determined to be acceptable. Finding 2RRF-006-010 (Level III) identified a minor discrepancy in the listing scheduling of calculations requiring review.

6.4.2.2 Construction

The construction portion of part 2 examined the process for component removal/replacement, changes to equipment internals performed under the FECO program, in-process equipment installation, and changes resulting from Unit 1 findings that

modified the controls for in-process installation, maintenance and protection of electrical equipment. Seven pieces of equipment and four penetrations were selected for assessment. The component removals and FECO packages examined were those related to the equipment sample. Checklist RR-006-007 was used to assess FECOs and component removals. Checklist RR-006-008A was used to assess in-process installation of equipment and Checklist RR-006-008B for penetrations.

Component Removal

The component removal program was developed subsequent to the Unit 1 assessment and provides a method of obtaining components from Unit 2 to support startup activities in Unit 1. The objectives of the assessment were to verify that the components removed from safety-related equipment were tagged as such, that the equipment from which the component was removed was tagged as requiring a replacement component, and that a tracking mechanism existed to ensure replacement. The method for performing this part of the assessment was to compare selected compartments of pieces of equipment with vendor drawings to identify any missing components. The area where the component was to be located was examined for the presence of a tag. Information from the tag was recorded and the Component Removal Form and Master Tracking System Tracking Log were examined to verify that the documentation agreed with the actual field configuration. Seven component removals were examined during this assessment. All equipment examined during this assessment was found to be properly tagged, all missing components were accounted for, and tracking logs were accurate. It was noted that the Electrical Discipline had performed a comprehensive internal review several months prior to this assessment to ensure all missing components were accounted for, and that considerable attention was focused on maintaining the accuracy of the Component Removal Log. The program controls for procurement of replacement parts specify that the part must either be supplied by the original vendor or by a vendor who meets the original quality program requirements. Although none of the replacement parts examined had been purchased from a substitute vendor, the program controls appear adequate. Replacement components for the equipment examined that had been re-installed had been purchased from the original vendor, conformed with the established project requirements, and had been inspected by Quality Control (QC). The procedure controlling this process, GD-T-28, contains requirements that adequately control the component removal process and personnel were performing the work in accordance with the procedure requirements.

Field Equipment Change Orders

The FECO program controls were modified slightly as a result of a Unit 1 finding. This program is the method by which design changes to equipment are implemented after the equipment is

received on site. The objectives of the assessment were to verify that the FECOs were properly controlled by construction and that the craftsmen performing the modifications were provided a package that contained all applicable drawings, instructions, and material requisitions. Five FECOs were assessed during this part. The assessment was performed by obtaining a copy of the FECO and examining the package assembled by the engineer. The equipment affected was then examined for evaluation of the work performed. In-process performance of work required by a FECO was observed. All FECO packages examined were found to be complete and to contain information required to perform the work. It was noted during the observation of the in-process work that the craftsmen were using the controlled package and were knowledgeable about FECO work. The tracking log was accurate and up-to-date. The controlling procedure, GD-T-25, contained requirements adequate to control the work process, and personnel were conforming with the procedure requirements.

Installation

The program for installation of equipment was essentially the same as that used and assessed in Unit 1. The installation process is separated into three major activities; initial placement into the building, assembly and attachment to foundation, and final inspection and grounding. These activities are recorded on sequential parts of the installation and inspection form. Due to the length of time between initial placement into the building and final completion and release to startup for testing, protection of the equipment and routine maintenance are required in the interim. The objective of the assessment was to determine the adequacy of project actions to prevent recurrence of problem areas identified in Unit 1. The assessment examined the sequence of installation as documented to verify that QC hold points were properly observed. The equipment was examined for proper protection against surrounding construction activity, for evidence of maintenance (internal cleanliness, space heaters energized) and for identification of the equipment by tag number. All equipment was found to be in compliance with the requirements of controlling maintenance procedure CM-T-03.

The Unit 2 program for installation of electrical penetration assemblies was essentially the same as that assessed for Unit 1. The installation process consists of two activities; installation of the penetration module and attachment of the enclosure boxes. Additionally, testing of the electrical continuity of each feed-through device and pressure integrity of each assembly is required prior to final acceptance. The objectives of the assessment were to verify observance of the required QC hold points during the installation process, and to verify proper protection and maintenance of the penetration assemblies. All four penetrations assessed complied with the

requirements of ED-T-19, the procedure controlling penetration installation activity.

The above part 2 of the assessment verified that, with the exception of the findings discussed above, the Project has successfully incorporated corrective actions resulting from the Unit 1 findings and, additionally, has maintained conformance with the requirements of the procedures.

Section 6.5 lists the individual findings, the Project responses, and the Readiness Review conclusions.

6.4.3 PART 3, CONSTRUCTION AND DESIGN COMPLETION

The objectives of part 3 of the assessment were to evaluate the design completion process by examining:

- o incorporation of DCNs and FCRs examined during part 2.
- o updating of calculations as as-built information becomes available.
- o appropriate cross-reference between FECOs and corresponding drawings.

and to evaluate the construction completion process by examining:

- o conformance of installed equipment and penetrations to design requirements.
- o protection of equipment from surrounding construction activity.
- o adequacy of inspection documentation.

The same equipment sample examined during part 2 was used for the sample during part 3.

Assessment of design completion activities was controlled through completion of checklist RR-006-011A. This checklist was developed by selecting requirements from the Project Reference Manual related to incorporation of design changes. The same documents assessed during part 2 were used as the sample. The assessment determined that the design completion activities evaluated were performed adequately and in accordance with applicable procedures. One finding, 2RRF-006-007 (Level II) was written to identify a calculation that had not been updated with available data.

Readiness Review attended presentations on the scopes and plans for finalization walkdowns planned for Unit 2. A brief description of the differences between the walkdowns performed

in Unit 1 and that planned for Unit 2 is presented in Section 4.1. Readiness Review concurs with the proposed plans for Unit 2.

Installed equipment and penetrations were assessed using Checklists RR-006-009A and -009B. The inspection documentation was evaluated using Checklists RR-006-010A and -010B. These checklists were developed by selecting installation attributes from the field procedures that were directly related to licensing commitment requirements.

Examples of these attributes are:

- o Attachment to foundation.
- o Configuration.
- o Clearance from adjacent components or structures.
- o Internal separation.
- o Installation of replacement components.
- o Inspector certification.
- o Conformance of inspection document to hardware.

The assessment compared the installed hardware configuration to the design requirements and noted the installed condition. The inspection documentation was then examined and checked for agreement with the as-found condition. Inspectors' names recorded and their level and area of certification at the time of inspection was verified. Configuration, orientation, location, and identification of all equipment checked was acceptable. All of the equipment was clean, protected, and had space heaters energized where required. All inspectors were properly certified as Level II in equipment installation. All documentation was retrievable and was legible and signed by appropriate personnel.

The Unit 2 findings are tabulated on Table 6-3, and are listed numerically in section 6.5.

6.5 FINDINGS

This section presents, in numerical order, the nine valid findings issued during the assessment; the Project response, including corrective actions taken; and the Readiness Review Task Force conclusions for each finding. Findings 2RRF-006-004, -005, and -006 concerned initial test program activities and were transferred to Module 3A. Findings 2RRF-006-009 and -014 were found to be invalid based on additional information from the Project.

Finding 2RRF-006-001 (Level II)

Requirements: Commitment number 31, IEEE 336-1971,
paragraph 2.2.5(d).
Commitment number 146, ANSI N45.2.2-1972,
paragraph 5.2.2(2).

Documentation demonstrating compliance by the manufacturer to fabrication, testing, and inspection requirements in the purchase specification/purchase order is available prior to installation of the item.

Finding:

- Part 1 - Procedure GD-A-30, revision 13, requires review of vendor documentation but provides no guidelines for the source or selection of these documents.
- Part 2 - Existing procedures do not require a final check of material received versus documentation placed in the vault or other methods to provide assurance that all documents for material shipments have received the proper technical review.

Project Response:

- Part 1 - GD-A-30 requires a copy of either the purchase order or the material requisition be provided to the Material Engineering Receiving Section for preparation of an Inspection Checklist. This checklist is used for receipt inspection of all permanent plant equipment/material. Although not required by procedure, the Material Engineering Receiving Section utilizes one of these two documents to determine the quality documents required to be on the checklist.

Because the proper source has been used for determining the required documents, there has been no detrimental impact as a result of the procedure omission.

Field Procedure Change Notice (FPCN)-58 was issued to specify the source and selection of required quality documents.

The procedure change noted above will ensure that the purchase order or material requisition will continue to be the source document for determining required quality documents.

- Part 2 - A review of the receiving quality program confirmed the possibility that material could be released for

installation without a review of the material documentation if quality documentation was not appropriately transferred from QC receipt inspection to QC document review.

Prior to January 30, 1986, all material received on site would be put on "hold" and released only after a technical review of documentation was performed and accepted. This was changed by revision 11 to procedure GD-A-30 to allow for processing and release of material for installation with technical review of documentation becoming a separate and parallel inspection function. This change negated the programmatic safeguard of insuring all documentation was reviewed for material that was released.

Procedure DC-A-06 requires that the Document Review Section perform a technical review on documents that they receive, and specifies actions to take if the review is unacceptable. The requirements of this procedure are being complied with; therefore, investigative and corrective actions were directed to ensure that the Document Review Section does, in fact, receive the documentation.

To reinstate necessary safeguards of ensuring that required documentation is received by the Document Review Section, revision 14 to GD-A-30 was issued. This revision requires the QC Receipt Inspector to maintain a log containing the necessary information to verify acknowledgement that the supporting documentation for released material was received by the Document Review Section.

An internal audit was conducted by the document review supervisor to assure that required documentation was received by the Document Review Section during the period starting January 30, 1986. One hundred and forty-six safety-related receipt reports were randomly selected from entries in the warehouse Receipt Inspection Log and compared with the documents on file in the vault. All records were on file.

The procedure change noted above will provide further assurance that required documentation is properly accounted for.

Readiness Review Conclusion:

Readiness Review has reviewed the procedure changes and audit results and concurs with the response.

Finding 2RRF-006-002 (Level III)

Requirements: Commitment number 31, IEEE 336-1971, paragraph 2.4

Each report shall identify the item to which it applies, the procedure or instruction followed in performing the work, and

Finding:

The inspection reports generated from the use of procedure ED-T-19 do not reference the procedure.

Project Response:

Vogtle Field Procedure ED-T-19 was reviewed for compliance with IEEE-336.

It was determined that the following attachments in ED-T-19 do not identify the procedure number:

1. EE580 Control and Tracking System Installation Card, exhibit 01.
2. Electric Penetration Assembly Leak Test Inspection Report, exhibit 02.
3. Conax Penetration Loading, exhibit 05.

Although this is a deviation from IEEE-336 requirements, there are no adverse hardware or quality effects from lack of compliance with this requirement. These records are not generated by any other procedures.

Field Procedure ED-T-19 was incorporated into Field Procedure ED-T-04, revision 10, issued July 27, 1987. FPCN-29 was issued immediately thereafter, addressing the requirements as follows:

1. The quality control inspector will enter "Inspected/Accepted per ED-T-04, revision ____" in the "Remarks" block of the exhibit 01 card at time of final acceptance.
2. No action will be taken regarding the exhibit 02 record since these records have all been completed and will be filed with the exhibit 01 final acceptance record.
3. The Conax Penetration Loading, exhibit 05, will be revised to have "Inspected/Accepted per ED-T-04, revision ____" in the "Quality Control" signoff block.

Readiness Review Conclusion:

Readiness Review has reviewed the procedure incorporation and changes and concurs with the response.

2RRF-006-003 (Level III)

Requirements: Commitment number 35, IEEE 384-1974, paragraph 5.6.3

Class 1E wire bundles internal to the control boards shall be identified in a distinct permanent manner at a sufficient number of points to readily distinguish between Class 1E and non-Class 1E wiring.

Finding:

This was identified in Unit 1 on RRF 6-50. Corrective action was taken by adding the requirement to X3AR01-E9 on CSCN 358, and by adding paragraph 6.22 to ED-T-08.

Paragraph 5.4.5.4 of ED-T-08, revision 9, imposes this requirement for jumper wires, but does not currently address bundled field cabling within panels.

Project Response:

Vogtle Field Procedure ED-T-08 and Construction Specification X3AR01, section E9, were reviewed for compliance with IEEE-384-1974 requirement for identifying Class 1E/non-Class 1E wiring within panels containing different safety train wiring or safety train and non-safety train wiring.

Review of Construction Specification X3AR01, section E9, confirmed that the requirement was adequately addressed in Attachment 2, paragraph 1.4, of the specification.

It was determined through review of Field Procedure ED-T-08, that revisions 7 and 8 had properly addressed the requirement. In revision 9, the requirement was properly stated, (reference paragraph 5.4.5.4) but was in a section of the procedure that dealt specifically with "jumper" installations. Even though the procedural requirement was not addressed in the cable termination section of the procedure, cable bundles within these panels have been properly identified and comply with the IEEE-384 requirements due to the fact that inspectors were familiar with the requirement and that the correct requirement was referenced on the inspection check list.

FPCN-72 was issued to ED-T-08 to address this requirement in the cable termination section of the procedure. This FPCN will conclude action on this subject and will satisfy the requirements of the IEEE-384.

Readiness Review Conclusion:

Readiness Review has reviewed the procedure change and concurs with the response.

Requirements:

ANSI N45.2.11, paragraph 4.2, requires justification of design analysis assumptions and identification of assumptions which must be verified as the design proceeds.

The Project Reference Manual (PRM), paragraph 9.3.3, requires that calculations be based on actual conditions where known and review of design to determine impact on calculations when actual data becomes available.

Finding:

Calculation X3CC02, 480 Volt Breaker Short Circuit Sizing, does not justify load, load characteristic, and cable assumptions. The calculation has not been updated to reflect available actual data or indicate that a review has been performed or is required. Supplier breaker data used in the calculation is not referenced to documents identified as specifically applicable to the project.

Project Response:

Engineering has analyzed Calculation X3CC02 and has determined.

- a. The load used in the calculation is based on 100 percent of the transformer rating. Since the actual loads were not known and due to the need to permit the orderly progress of design, a conservative load (worst case) was used when the calculation was originated. A motor load is a conservative (worst case) condition due to the fault current contribution made by a motor.

As a part of this review, it was noted that an X/R value of 5.0 was used for the load center transformer instead of the manufacturer's actual test value of 5.77. Since the use of an X/R of 5.0 would result in lower fault current values, the calculation was examined further, with the following results:

- o The actual cable impedance is higher than the assumed cable impedance; therefore, actual fault current would be less than calculated.
- o The load center transformer impedance value of 5.32 percent used in the calculation was lower than the actual impedance value of 5.75 percent; therefore, the actual fault current would be less than calculated.

The above conservative assumptions more than offset the difference in X/R ratios; therefore the original calculation was conservative and acceptable. The calculation will be updated, however, to use the actual data now available.

- b. When the calculation was initiated for the initial design of the 480-volt breaker short circuit sizing, the calculation (including the cable assumptions) was checked. As changes to the design evolved, the design changes were reviewed for conformance with the calculation. The determination to revise the calculation is based on the results of these reviews (reference PRM C-9, paragraph 9.3.3). In essence, if the change does not impact the calculation, a calculation revision is not processed.
- c. Supplier breaker data is utilized in this calculation. The data is of a generic type, readily available from standard supplier documents. The breakers used are also a standard type and have not been specially designed just for this plant. The data is referenced to a document traceable to its source, and the data is explicitly attached to the calculation. The data is specific for the type of breaker used.

Engineering has determined that the data is valid and no further action is necessary.

As a part of the broadness review, it was noted that Calculation X3CM01, Electrical Penetration Short-Circuit Currents, utilized X/R ratios resulting from the above 480-volt calculation. Since some of these ratios are based on industry standard values, rather than actual values, the calculation does not comply with the project position to Regulatory Guide (RG) 1.63. This position, described in Final Safety Analysis Report (FSAR) paragraph 1.9.63.2.2, states that actual X/R ratios are used. The calculation uses actual values, which are based, in part, on industry standards, and values specified by RG 1.63. A Licensing Deviation Document (LDD) and FSAR change notice have been initiated to revise the project position in FSAR paragraph 1.9.63.2.2 to address specifically what X/R ratios have been used.

Although the values selected for the calculation were to provide a conservative design margin, the calculation will be revised to incorporate the as-built transformer data and cable sizes/lengths as currently designed or installed.

The revision to Calculation X3CC02 is scheduled for completion by December 2, 1987. LDD 124 and FSAR Change Notice 612 associated with the X/R ratios for the containment electrical penetration protection calculation was issued by engineering.

The engineering group supervisors (EGSs) have been issued instructions requiring that the Calculation Control Log for each discipline shall be changed to reflect those calculations that require review and the scheduled date for review. The review is to be documented on a calculation review form which is to be included in the calculation package, similar to a supplemental calculation.

Readiness Review Conclusion:

The above reverification and broadness review action adequately resolves the issue.

Requirements:

ANSI N45.2.11.3.1 requires that applicable design requirements such as design bases, regulatory requirements, codes and standards, shall be identified, documented, and their selection reviewed and approved.

Finding:

- A. Design Criteria DC-1807, revision 3, 120 Vac Power System, does not reference the applicable electrical penetration documents RG 1.63 or Institute of Electrical and Electronic Engineers (IEEE) Standard 317.
- B. Documentation of design requirements applicable to design criteria is inadequate in that design criteria reference applicable standards (in paragraph 2.0) without reference to controlling regulatory guides (on cover sheet), which may modify the standard requirements. This condition exists for the following:
 - 1. IEEE-323 is referenced in DC-1804, DC-1805, DC-1806, DC-1807, DC-1818 and DC-823 without reference to RG 1.89.
 - 2. IEEE-344 is referenced in DC-1804, DC-1805, DC-1806, DC-1807, DC-1818 and DC-1823 without reference to RG 1.100.
 - 3. IEEE-379 is referenced in DC-1804, DC-1806, DC-1807, DC-1818 and DC-1823 without reference to RG 1.53.

Project Response:

Engineering has reviewed the procedure for preparation and control of the design criteria manual. The Design Criteria Manual, Preface, section 2, "Organization of the VNP Design Manual" paragraph 2.2, states in part:

"The specific contents and organization of the VNP Design Manual are as follows:

Section II - Design Criteria

Discipline Criteria - includes general design, Bechtel Western Power Company standards, and other references which are peculiar to either a system function or to system design for which the discipline is responsible. The word "system" as used herein includes structures.

System Criteria - includes, as a minimum, the approved design basis for systems which must conform to the design control procedures. The design basis document includes the VEGP design control cover sheet with any attached substantiating documentation."

The above excerpts are the basis used by engineering for determining the need of identifying regulatory guides in the design criteria.

Finding A

The design of the Electrical Penetration assemblies is controlled by DC-1818, Electrical Penetration System, and DC-1823, Electrical Protection Criteria, these criteria properly reference RG 1.63.

Discipline Criteria, DC-1000-E, which provides the general criteria for the design of electrical systems, references RG 1.63 and IEEE-317.

In summary, DC-1807 deals specifically with the design of the 120 Vac Power System. Since DC-1807 references DC-1823, as a system interface, and DC-1823 properly identifies RG 1.63; a designer using DC-1807 would be required to comply with DC-1823 requirements when the design involved a 120 Vac power system passing through an electrical penetration.

Engineering was inconsistent when listing RG 1.63 on the cover sheets of the design criteria, i.e., DC-1805, -1806, -1807, and -1825. However, engineering has reviewed drawings and calculations pertinent to the above criteria (DC-1807) and confirmed that the design conforms to the regulatory guide, with the exception of the condition identified in Deviation Evaluation Report (DER)-184 which was identified by the project. The conditions identified by this finding is not considered to be the cause of the deficiency identified in the DER. The DER condition is a deficiency in cable sizing, which has been corrected.

To provide a uniform design criteria, engineering will issue a Design Manual Change Notice to add RG 1.63 to the cover sheet of DC-1807 by September 15, 1987.

Finding B

For the respective design criteria noted in the finding, RG 1.89, 1.100, and 1.33 are considered to be generic (not system-specific). The Electrical discipline criteria DC-1000E reference these regulatory guides. In addition DC-1005, -1007, and -1009 (interdiscipline) also address these regulatory guides.

Based on the above justification, there is no impact on hardware or documentation and further investigative actions are not required.

Readiness Review Conclusion

Readiness Review concurs with the response.

Requirement:

ANSI N45.10.4.2 states design analysis shall be performed in a planned, controlled, and correct manner.

Finding:

Calculation X3CA03-1, Auxiliary Power System Vogtle Study, is identified as applicable to both units 1 and 2 but contains no input data for Unit 2. The calculation does not indicate that Unit 2 data are identical to Unit 1, that Unit 2 conditions are enveloped by Unit 1 conditions, or otherwise indicate that an evaluation of potential differences in input data has been performed.

Project Response:

Calculation X3CA03-1 was reviewed in response to the finding. The calculation demonstrates the acceptability of the minimum auxiliary power system voltage level from the reserve auxiliary transformers (RATs) to the motor control centers and is applicable to both units. The following discussion provides justification why the calculation conservatively envelopes the design conditions of both units.

- o Both Unit 1 and Unit 2 RATs are tied to a common switchyard, and therefore transmission system data is identical for both units.
- o For Class 1E systems, the impedance data for switchgear and motor control centers is identical for both units.
- o Loads common to both Units 1 and 2, which may be connected to either unit, were assumed to be connected to one unit only, which represents the maximum loading.
- o Cable bus arrangements are similar for both units. Minor length differences are inconsequential. Maximum cable voltage drop was utilized and specified for purposes of cable design.

Specific Unit 2 design changes which may impact the analysis are examined as they become available. If the need for a calculation revision to incorporate these specific Unit 2 changes is indicated, it is entered and tracked in the Calculation Control Log. Additionally, calculations are periodically reviewed to determine if revision is needed. This review is also flagged and tracked in the Calculation Control Log. Reviews which do not result in revisions are documented on a calculation review form and placed with the calculation package.

Readiness Review Conclusion:

Based on the re-examination of the calculation performed by the Project and the correspondence results, Readiness Review agrees with the above response.

Finding 2RRF-006-011 (Level I)

Requirements:

- A. FSAR 8.3.1.4.3.C states that "within panels and control boards, ... where it is not possible to maintain "... separation barriers are installed between components and wiring of different separation groups, or analysis has been performed to determine the minimum separation requirements. Refer to "... Table 8.3.1-4".
- B. FSAR 8.3.1.4.3.C.3.a states that a single barrier is provided with a 1-inch maintained air space between the components or cables of redundant separation groups and the barrier.

Finding:

- A. -1. Construction specification X3AR01, section E9, Attachment 2, Table 1, allows 480 Vac cable separation within enclosures which is less than that allowed by FSAR, paragraph 8.3.1.4.C.
- 2. The specification allows reduced 125 Vdc and 120 Vac cable separation within enclosures for all cable sizes. FSAR Table 8.3.1-4, item 18, restricts reduced separation to cable sizes number 8 AWG or smaller.
- B. Specification X3AR01, section E9, Attachment 2, Figure 2, detail 1, allows cable-to-barrier separation of less than the 1-inch requirement specified in the FSAR.

Project Response:

The FSAR was changed to reflect Wyle Labs Test Report number 48141-02. The construction specification was updated to reflect the Wyle Lab Report and the FSAR; however, additional information was included in the specification that covered situations not explicitly tested. The additional information was not considered as a deviation from the FSAR commitment when the specification was revised; therefore, an FSAR change was not initiated.

Since the change to construction specification is limited to application of the Wyle Lab Test Report, and the test report concerns cable separation, Engineering has conducted a study of X3AR01, sections E8 and E9, and DC-1810 to determine if other similar conditions exist. The review identified separation concerns in the E8 and E9 and DC-1810 documents.

DER-186 has been issued to document that the conditions found as a result of the study are potentially reportable to the Nuclear Regulatory Commission as a 10 CFR 50.55(e) and/or 10 CFR 21.

The corrective actions for the separation concerns identified will be tracked with the DER.

Submittal on the final evaluation and proposed corrective actions for DER-186 is presently scheduled for March, 1, 1987.

Readiness Review Conclusion:

Readiness Review agrees that the evaluation and corrective action that is a part of the normal project process of closing DERs will ensure that the separation discrepancies identified in this finding are properly resolved.

Finding 2RRF-006-012 (Level III)

Requirements:

PRM C17.5.3 requires:

- A. That the equipment qualification (EQ) checklist on the back of the form be used to demonstrate systematic review of the Field Change Request (FCR).
- B. Notation of required calculation revisions in the remarks section of the FCR.

Finding:

- A. EQ checklist completion of FCRs is inconsistent as indicated by the following:
 - o E-FCRB-19,472 and Q-FCRB-351 checklist were marked incorrectly indicating no modification of foundations, supports, or anchors.
 - o M-FCRB-6916F has an incomplete EQ checklist.
- B. E-FCRB-19,472 approves an equipment mounting configuration which is not consistent with the configuration supported by applicable design calculation X2CK2.7.1.1, Control Building Category 1 Equipment Supports, Level B, revision 1. The remarks section of the FCR does not indicate a need to revise the calculation.

Project Response:

- A. Vendor drawing BWPC log 2X6AS01-382-2 requires equipment tag number 2-1602-P5-NDS to be mounted using four 1/2-inch mounting screws. The mounting plate was not specified by the equipment vendor; it is the design of the architect/engineer (A/E); therefore, it is not part of the equipment qualification. The A/E's responsibility is to ensure that the response spectra provided for the qualification of the piece of equipment was valid for the equipment anchorage location. This was done in the original calculation (X2CK2.7.1.1) by showing that the attachment plate was rigid. The same verification of plate rigidity is confirmed for the modified plate size in the justification on the back of the FCR. Since the equipment support still meets the original rigid condition, the E-FCRB-19,472 did not modify the equipment qualification support condition; therefore, there was no need to send the FCR to the EQ group for review.

Q-FCRB-351 provides shimming details for multiplex panels, tag number 2-2501-A1-059 and -60. This equipment is Project Class 62E and does not have safety-related equipment qualification requirements; therefore, there is no impact to

the EQ checklist and all boxes may be checked "No" (reference PRM section C-17, paragraph 17.11).

M-FCRB-6916F relocated an instrument rack on the equipment location drawing. The equipment location drawing dimensionally locates equipment; however, the installation of the equipment is per a specific installation drawing. The location change, per this FCR, is not impacted by Zone-of-influence. Therefore, there is no impact on hardware or documentation by the identified concern.

A random review of 20 FCRs approved by the same individual as MFCRB-6916F was performed and no discrepancies or similar findings were noted. Therefore, this is considered to be an isolated case.

- B. Detail 11 on drawing AX2D11R002 shows mounting details for NIS preamplifiers, BWPC log number 2X6AS01-382-2. The detail shows the equipment attached to a 1/2-inch plate with four 1/4-inch mounting screws as specified by the vendor. The plate is attached to the wall with four 5/8-inch concrete expansion anchors (CEAs). The FCR approves the attachment of the plate to two existing type TT embeds with 1/2-inch threaded rods welded to the embeds. The FCR justification verifies that the 1/2-inch plate remains rigid (natural frequency less than 33 Hz) and that the threaded rods are equal to or stronger than the 5/8-inch CEAs. The FCR reviewer chose to calculate the loads on the threaded rod and compare them with the rod capacity. A statement indicating that the 1/2-inch threaded rods are stronger than the 5/8-inch CEAs would have been sufficient. The calculation results are indicative of a minor change that is applicable to the modification of a single support whose design is governed by a generic calculation. Therefore, the calculations are considered minor, as defined in section 17.6.5.1 of the PRM conditions 1, 2, and 5. Since the acceptability of the proposed change is documented in the FCR justification, the original calculation does not require revision.

During the investigation, it was discovered that a previous FCR (E-FCRB-14,079) revised the same support. E-FCRB-14,079 revised the original support to the extent that the calculation was impacted.

Since the impacted calculation was being maintained by the Home Office, a copy of the FCR was sent to the Home Office requesting that the calculations be revised. A revision to the calculation was prepared in the Home Office; however, page 59A, the sheet impacted by the revision, was inadvertently not replaced in the original calculation file.

A random review of five FCRs which impacted calculations was conducted. As a result, it was concluded that the calculations that were impacted by the five FCRs were revised as required. Based on this review, the condition is considered to be an isolated case.

For E-FCRB-14,079, a memorandum (BB-54052 dated August 18, 1987) has been issued to EGSSs requesting that all Calculation Control Logs be changed to show review required with a scheduled due date.

In addition, a memo (BB-54064 dated August 20, 1987) concerning the processing of design changes with EQ impact has been issued to all EGSSs. The memo clarifies that the EQ group is responsible for justifying or concurring with design changes with EQ impact, prior to the EGS approving the change.

Readiness Review Conclusion:

Readiness Review concurs with the above responses.

Finding 2RRF-006-013 (Level III)

Requirements:

1. The response to FSAR Question Q430.64 states "Motor operated valve motor overload is annunciated in the control room."
2. PRM C17.5.3 requires documentation of required interdisciplinary review.
3. PRM C17.6.2.4 requires completion of the FCR retrofit block to indicate if the change represents a potential retrofit.

Finding:

NOTE: The following discrepancies concern design program deficiencies which are considered minor in nature and not evidence of a generic program deficiency. The required response is limited to:

- A. A brief evaluation of actual or potential impact on hardware, technical adequacy, test results, etc., and,
 - B. A discussion of the remedial action for the specific identified deficiency.
1. While examination of the elementary diagrams for motor operated valves indicates that the above requirement has been implemented by connecting the heater overload contacts to the "MCC TROUBLE" annunciator circuit, the requirement to do so cannot be located in the Design Criteria. This is inconsistent with the method of implementing other specific FSAR commitments.
 2. FCR M-FCRB-13,628 received inadequate interdisciplinary review (NOTE: M-FCRB-6916F supersedes the subject FCR and received more extensive review in which the need to issue a DCN was identified by a reviewer).
 3. Q-FCRB-367 and Q-FCRB-351 were approved without disposition of the retrofit block.

Project Response:

1. The design criteria inconsistency with specific FSAR commitments has no impact on hardware, technical adequacy or test results; however, a potential impact on the design documentation exists.

Paragraph 3.E.2 of DC-1805 will be revised to indicate that overload conditions for Class 1E motor operated valves will be annunciated in the control room.

2. M-FCRB-13,628 was not routed to Civil or Controls for interdisciplinary review.

The mounting details of the rack, which includes the surface mounting plates, were not changed. Civil interdisciplinary review was not required.

The originating engineer inadvertently omitted the routing for Controls interdisciplinary review. A potential impact on hardware and documentation could have existed; however, since M-FCRB-13,628 was superseded by FCR M-FCRB-6916F and M-FCRB-6916F received the needed interdisciplinary review, the potential for impact has been precluded.

The Installation Engineering Plant Design Discipline has conducted a training session emphasizing the importance of FCR interdisciplinary reviews in a training session.

3. Q-FCRB-351 and Q-FCRB-362 were evaluated and no retrofit was required. The retrofit blocks were marked "No" to correct the documentation.

Readiness Review Conclusion:

Readiness Review agrees that the above responses resolve the specific issues identified as requested by the finding

TABLE 6-1

READINESS REVIEW TEAM - MODULE 6

D. L. Edenfield	Readiness Review Task Force
J. A. Lovoy	Readiness Review Task Force
D. G. Lunsford	Quality Assurance
J. L. Taylor	Quality Assurance

TABLE 6-2
ASSESSMENT SAMPLE

	<u>Item</u>	<u>Number Assessed</u>
DESIGN		
	Design Criteria	24
	Calculations	2
	Field Change Requests	27
	Design Change Notices	8
	Field Equipment Change Orders	5
	Licensing Commitments	25
	Unit 1 Findings	16
CONSTRUCTION		
	Field Equipment Change Orders	15
	Component Removal	12
	Equipment	7
	Penetrations	4
	Licensing Commitments	13
	Unit 1 Findings	18

TABLE 6-3 (SHEET 1 OF 2)

UNIT 1 FINDING FOLLOWUP

Unit 1 Finding	Issue	Checklist - Item No.
6-2	Penetration inspection reports not processed per procedure	008B - 03, 05
6-3	EE580 cards not filed per procedure	010B - 01
6-4	Penetration test results not reviewed	010B - 03, 04
6-5	Penetration used as work platform	009B - 01
6-6	Penetration orientation does not match drawing	009B - 02
6-16	Field and vendor wiring does not meet separation requirement	009A - 09
6-17	Switchgear not welded per drawing	009A - 03
6-20	Installation documents misfiled	010A - 01
6-25	Inspection reports signed out-of-sequence	010A - 02
6-27	Batteries and racks not permanently identified	008A - 07
6-29	Damage to switchgear	008A - 03
6-30	EMSL cards not on file	010A - 03 010B - 02
6-32	Inadequate clearance from equipment to tray support	009B - 04, 05 010A - 03
6-36	FCRs used instead of FECOs to make technical changes to equipment	003-08
6-37	Seismic separation for electrical to other disciplines not addressed	009B-06
6-46	FECO packages not processed per procedure	007-10
6-47	Document packages misfiled in vault	010A-01

TABLE 6-3 (SHEET 2 OF 2)

Unit 1 Finding	Issue	Checklist - Item No.
6-49	Procedure did not incorporate licensing commitment	002-01
6-50	Procedure did not incorporate licensing commitment	002-04
6-54	Cover and dust filter loose	008A - 04
6-56	Licensing criteria not consistently referenced in design criteria	001 - 09, 11
6-66	Licensing criteria not referenced in design criteria	001-14
6-68	Switchgear has damaged base channel	009A - 03

TABLE 6-4

UNIT 2 FINDINGS

<u>Number</u>	<u>Level</u>	<u>Description</u>
2RRF-006-001	II	Procedure GD-A-30 requires review of vendor documents but provides no guidelines for the source or selection of these documents. Existing procedure does not require reconciliation of material received with documentation transmitted to vault.
2RRF-006-002	III	Inspection reports in Field Procedure ED-T-19 do not reference the procedure number.
2RRF-006-003	III	Procedure ED-T-08 does not specify that Class 1E wire bundles within multi-train panels be clearly identified.
2RRF-006-007	II	Calculation X3CC02 - "480 Volt Breaker Short Circuit Sizing" does not justify load, load characteristics, and cable assumptions. Actual data available has not been compared to calculation assumptions.
2RRF-006-008	III	Design Criteria DC-1807 - 120 Vac power system does not reference Regulatory Guide 1.63 or IEEE standard 317 for penetration circuits. IEEE standards 323, 344, and 379 are referenced in several DCs without reference to the corresponding Regulatory Guide.
2RRF-006-010	III	Calculation X3CA03-1 - Auxiliary Power System Voltage Study is identified as applicable to both Units 1 and 2 but contains only Unit 1 data.
2RRF-006-011	I	Construction specification X3AR01, Section E9 allows separation between different safety trains less than specified in the FSAR.
2RRF-006-012	III	EQ checklists on FCRs have been completed inconsistently. One FCR was inappropriately noted as not requiring calculation revision.
2RRF-006-013	III	FSAR requirement to annunciate MOV overload in control room is not specified in Design Criteria. One FCR received inadequate interdisciplinary review. Two FCRs were approved without dispositioning of the retrofit block.



Vogtle Project

DATE: November 17, 1987

RE: Plant Vogtle Unit 2
Readiness Review Module 6

FROM: W. C. Ramsey

TO: R. W. McManus

Engineering has reviewed Module 6, Electrical Equipment, for general accuracy and completeness. To the best of our knowledge and belief, the module is a complete and accurate representation of the Electrical Equipment Program, and the engineering processes and commitments related thereto.

W. C. Ramsey, Jr.
Project Engineering Manager

RWM/WCR/bjd



Vogtle Project

November 12, 1987

MEMO TO: R. W. McManus

SUBJECT: Plant Vogtle Unit 2
Readiness Review, Module 6

Nuclear construction has reviewed Module 6. To the best of our knowledge and belief, the module is a complete and accurate representation of the site Electrical Equipment program and commitments related thereto.

R. H. Pinson
Vice President Vogtle Construction

RWM/RHP/bjd

Georgia Power Company
Project Management
Post Office Box 282
Waynesboro, Georgia 30830
Telephone 404 724-8114
404 554-9961



Vogtle Project

DATE: November 17, 1987

RE: Plant Vogtle Unit 2
Readiness Review Module 6

FROM: C. W. Hayes

TO: R. W. McManus

Project Quality Assurance has reviewed Module 6, Electrical Equipment. To the best of our knowledge and belief, the module is a complete and accurate representation of the site Electrical Equipment program and commitments related thereto.

C. W. Hayes
Project Quality Assurance Manager

RWM/CWH/bjd

PLANT VOGTLE UNIT 2
READINESS REVIEW PROGRAM

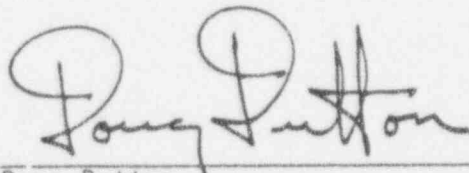
Electrical Equipment - Module 6

Readiness Review Board Acceptance Letter

The Readiness Review Board has been apprised of the scope and content of Module 6, Electrical Equipment.

The Board has reviewed the program verification, as well as corrective actions, both proposed and implemented, by the Vogtle Project. Based upon this review and based upon the collective experience and professional judgement of the members, the Readiness Review Board is of the opinion that the corrective actions proposed are acceptable, and, upon their implementation, the electrical equipment at Plant Vogtle will be sound and comply with commitments set forth in the FSAR.

APPROVED:

A handwritten signature in dark ink, appearing to read "Doug Dutton". The signature is written in a cursive, flowing style with a large initial "D".

Doug Dutton
Chairman, Readiness Review Board
Vogtle Electric Generating Plant

PLANT VOGTLE
READINESS REVIEW PROGRAM
ASSESSMENT PLAN
FOR
MODULE 6
ELECTRICAL EQUIPMENT

ASSESSMENT PLAN APPROVAL

TEAM LEADER:

David Edenfeld

DATE:

7/14/86

RR PROGRAM MANAGER:

W. S. Mann

DATE:

14 JULY 87

(VERBAL APPROVAL 4-22-87)

RR BOARD SPONSOR:

Robert A. Thomas

DATE:

8/13/87

UNIT 2 ASSESSMENT PLAN
MODULE 6, ELECTRICAL EQUIPMENT

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- 2.0 Scope
 - 2.1 Module Scope
 - 2.2 Assessment Scope
- 3.0 Assessment Activity Assignment
 - 3.1 Readiness Review
 - 3.2 Quality Assurance
- 4.0 Assessment Details and Guidelines
 - 4.1 Part 1 - Commitment Implementation and Corrective Action Verification
 - 4.1.1 Design Checklist RR006-001
 - 4.1.2 Construction Checklist RR006-002
 - 4.2 Part 2 - Programs and Activities
 - 4.2.1 Design Checklists RR006-003, -004, 005, and 006
 - 4.2.2 Construction Checklists RR006-007 and -008
 - 4.3 Part 3 - Construction and Design Completion and Construction Acceptance Testing
 - 4.3.1 Design Finalization, Checklists RR006-011A and B
 - 4.3.2 As-built Construction, Checklists RR006-009A, B and RR006-010A, B
 - 4.3.3 Construction Acceptance Testing, Checklist RR006-012
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- 6.0 Item Selection

MODULE 6 SUPPLEMENT
ASSESSMENT PLAN
FOR UNIT 2 ELECTRICAL EQUIPMENT

1.0 OBJECTIVE

This assessment plan provides a means for evaluating the continuing conformance of design, procurement, construction, and testing activities associated with electrical equipment for Vogtle Electric Generating Plant Unit 2 licensing requirements.

2.0 SCOPE

2.1 MODULE SCOPE

The scope of this module covers those design, procurement, installation, and inspection activities associated with safety-related (Class IE) electrical equipment and their respective electrical systems. This equipment is listed in the equipment index under the 18XX series of tag numbers, and consists mostly of large, floor mounted assemblies.

Installation/inspection aspects of electrical instrument/control panels (not containing tubing connections) and design aspects of

Non-IE systems/equipment that interface with or affect safety-related equipment are included in this module.

Internal wiring and modifications to equipment by construction are included in the scope of this module.

Certain components and design activities normally associated with electrical equipment are not discussed in this module, but are included in the scopes of modules closely related to the component use or design activity. Electrical motors are addressed in Modules 4 (pumps), 18A [heating, ventilation, and air conditioning(HVAC)], and 20 (valve operators).

Installation/inspection of wall mounted electrical items, except for regulating transformers, is discussed in Module 17 (due to the similarity of installation). Electrical instruments and local control stations associated with HVAC control are addressed in Module 18A. Other electrical instrumentation, with the exception of the panels discussed above, is discussed in Module 20. Attachment of equipment to its support, or attachment of equipment mounted directly to the building structure is addressed in this module, but support assemblies are addressed in Module 19, embedded plates/struts are addressed in Module 8, and concrete pads/foundations are addressed in Module 1. Other electrical modules are Module 12, Cables and Terminations, Module 17, Raceways, and Module 19, Raceway Supports.

Table 2-1 depicts the assignment of electrical topics and hardware to their associated modules.

2.2 ASSESSMENT SCOPE

The assessment for electrical equipment for Unit 2 is concentrated in the following areas:

- o Changes to the programs examined in Unit 1.
- o Corrective actions taken in response to Unit 1 Readiness Review, Quality Assurance (QA), and Nuclear Regulatory Commission findings.
- o Design change control.
- o Design finalization program scopes, plans, and results.
- o Hardware installation (with checks on deficiencies identified in Unit 1).
- o Documentation.
- o Component removal (CR), replacement, and additions [Field Equipment Change Orders (FECOs) and Change Control Packages (CCPs)].

- o Configuration control after construction turnover.

Initial design, procurement, and receipt activities were essentially complete at the time of the Unit 1 assessment and were performed under the controls of the programs assessed at the time. Assessment of these topics is limited to those activities related to findings issued during the Unit 1 assessment, the FECO and (CCP) program, and the CR program.

A number of checklist items from the Unit 1 assessment are included to enable comparison of the Unit 1 and Unit 2 programs.

3.0 ASSESSMENT ACTIVITY ASSIGNMENT

The organizations responsible for implementing each part of this assessment are delineated in section 4.0 of this plan as each part is discussed. This section provides an overall summary of those responsibilities.

3.1 READINESS REVIEW

Readiness Review selects the commitments and corrective actions to be reviewed for implementation into Unit 2 programs and processes and performs the Part 1 assessment. Readiness Review also provides a listing of hardware items and types of

documentation to be assessed in parts 2 and 3 and participates in the assessments.

3.2 QUALITY ASSURANCE

Quality Assurance performs the verification activities listed on the checklists for parts 2 and 3 of this plan. It may be necessary to utilize personnel from project and/or S aern Company Services design groups to perform design verification activity (personnel selected must not have performed, checked, or approved the design).

4.0 ASSESSMENT DETAILS AND GUIDELINES

This assessment plan is a phased group of activities, consisting of three parts. Parts 1 and 2 contain design verification activities and construction verification activities. Part 3 contains construction completion verification activities and verification activities directed towards the construction acceptance testing portion of the Initial Test Program. The following sections describe each part of the assessment plan and assign the responsibilities for implementing the plan.

Section 5.0 of this plan gives general instructions for utilizing and completing the checklists described in this section.

4.1 PART 1 - COMMITMENT IMPLEMENTATION AND CORRECTIVE ACTION VERIFICATION

Part 1 of this assessment plan consists of two checklists, RR006-001 for design and RR006-002 for construction. Readiness Review selects the items to be verified and performs the assessment.

The Final Safety Analysis Report (FSAR) commitments for the electrical scope of work include designation of a number of general standards. The design checklists contain entries for both the general standard to the extent committed in the FSAR (for first-level verification) and entries for individual requirements out of that standard (for second-level verification). The construction checklist contains individual requirements selected from those general standards for verification into the working-level procedure.

4.1.1 DESIGN CHECKLIST RRO06-001

These checklist entries are selected to allow verification of continuing implementation of both licensing commitments identified during Unit 1 review and revisions or additions since then into design procedures (first-level documents) and design documents (second-level documents), and to verify that committed corrective actions for Unit 1 findings were incorporated into Unit 2 design activities.

The commitment database contains approximately 190 entries which represent 75 individual commitments. The entries on the checklist provide verification of 25 of these commitments.

These were selected as being representative of the major commitments and included those which required corrective action in Unit 1.

The checklist is arranged so that both first-level and second-level implementation is verified.

- o The numbered entries are to be verified as properly referenced in the Design Criteria (first-level).
- o The numerical plus the alphabetical entries are to be verified as being complied with by an actual specification, calculation, or drawing (second-level).

4.1.2 CONSTRUCTION CHECKLIST RR006-002

These checklist entries are selected to allow verification of continuing implementation of both licensing commitments identified during Unit 1 review and revisions or additions to them into construction specifications and field procedures and to verify that committed corrective actions for Unit 1 findings were incorporated into Unit 2 construction procedures.

Eighteen commitments were identified as being applicable to the construction scope of this module. The 10 commitments included in the checklist were selected as representative of both program-related requirements and individual technical requirements.

The corrective action items selected for inclusion on the checklist consist of the more significant actions to allow assessment of the inclusion of these corrective actions into Unit 2 construction procedures.

4.2 PART 2 - PROGRAMS AND ACTIVITIES

Part 2 of this assessment plan consists of six checklists; RR006-003, -004, -005, and -006 are design activity oriented and RR006-007 and -008 are construction oriented. Table 6-1 is a listing of the equipment that is to be used for this part of the

assessment. Specific design and construction documents and activities are to be selected from the listing on Table 6.2 and are to be directly related to the selected hardware sample. Quality Assurance is to perform the assessment for this part and will select specific documents for review based on the guidelines in each checklist section below.

4.2.1 DESIGN CHECKLISTS RRO06-003, 004, 005, AND 006

These checklists are composed of requirements selected from the Project Reference Manual and are structured to allow verification of compliance to the design change program controls required by American National Standards Institute, Inc. (ANSI) N45.2.11. In addition, checklist 007 contains individual technical items to be verified in the appropriate calculations.

4.2.1.1 Checklist RRO06-003, Design Change Control

This checklist is to be used to assess the program controls for the various types of change documents utilized by design. Twenty Field Change Requests, 10 Design Change Notices and 10 Construction Specification Change Notices should be selected from the document types listed on Table 6.2 and assessed using one checklist for each of the above 40 documents. Change

documents that are for specific equipment numbers must be related to those tag numbers listed in Table 6.1.

4.2.1.2 Checklist RR006-004, Field Equipment Change Orders

This checklist is to be used to assess the design program controls for Field Equipment Change Orders (FECOs). One FECO related to each tag number listed in Table 6.1 is to be selected (if available, if not select additional FECOs to a total of 12).

4.2.1.3 Checklist RR006-005, Change Control Packages

This checklist is to be used to assess the design program controls for change control packages. Ten Change Control Packages (CCPs) should be selected that relate to the equipment listed in Table 6.1. One checklist is to be filled out for each CCP.

4.2.1.4 Checklist RR006-005, Calculations

This checklist is to be used to assess both the program controls for and technical adequacy of design calculations. The two calculations to be assessed are listed in Table 6.2.

4.2.2 CONSTRUCTION CHECKLISTS RRO06-007 AND -008

These checklists are composed of requirements selected from the Field Procedures Manual and are structured to allow verification of compliance to the construction program controls of ANSI N45.2.2, N45.2.3, and N45.2.4.

4.2.2.1 Checklist RRO06-007, Equipment Modifications

This checklist contains requirements selected from Field Procedures GD-T-25, GD-T-28, and GD-T-33. Select 15 FECOs, 15 Component Removals (CRs), and 15 CCPs related to any of the hardware listed on Figure 6.1 and use one checklist for a group (one CCP, one CR, one FECO, 15 total checklists).

4.2.2.2 Checklist RRO06-008, In-process Installation

This checklist consists of two parts, 008A for equipment and 008B for penetrations. These checklists contain requirements from ED-T-04, CM-T-02, and GD-T-11 and are intended to assess the in-process program and technical controls imposed by these procedures. Use one checklist for each piece of equipment selected.

4.3 PART 3, CONSTRUCTION AND DESIGN COMPLETION AND CONSTRUCTION ACCEPTANCE TESTING

Part 3 of this assessment plan consists of ten checklists to assess the continuing conformance of the as-built conditions to regulatory requirements. Checklists RRO06-009A and B contain attributes for installed hardware. Checklists RRO06-010A and B contain attributes for completed construction documentation and associated turnover activities. RRO06-011A examines incorporation of design change documents and finalization of calculations. RRO06-011B contains attributes to assess the FP-6 finalization program (FP) for internal electrical separation. Checklist RRO06-012 assesses procedures and activities of the construction acceptance testing program as applied to electrical component testing.

4.3.1 DESIGN FINALIZATION, CHECKLISTS RRO06-011A and B

These checklists are composed of requirements from the Project Reference Manual to allow verification of compliance to the design finalization requirements of ANSI N45.2.5 and to allow assessment of the effectiveness of implementation of corrective actions identified during the Unit 1 review.

4.3.1.1 Checklist RRO06-011A

This checklist is to be used to verify that the change documents assessed in Part 2 have been incorporated into their respective parent documents (drawings, construction specifications) and that as-built information has been properly accounted for in finalized calculations, using the same calculations examined in-process in Part 2.

4.3.1.2 Checklist RRO06-011B

This checklist is to be used to evaluate the preparation, performance, and results of finalization program EP-6.

4.3.2 AS-BUILT CONSTRUCTION, CHECKLISTS RRO06-009A, B, AND RRO06-010A, B

These checklists are composed of requirements from procedures ED-T-04, GD-T-31, GD-A-48 and GD-A-50 and consist of requirements selected to allow verification of the conformance of as-built hardware and related construction generated documentation to procedural requirements.

4.3.3 CONSTRUCTION ACCEPTANCE TESTING, CHECKLIST

RR006-012

This checklist contains attributes to verify that the Startup Manual procedures are utilized by personnel performing Construction acceptance testing activities.

5.0 CHECKLISTS

The checklists were developed by applying the general attributes listed in Table 5.1 to the specific commitments, specifications, procedures, and drawings applicable to electrical equipment and selecting a sufficient number of requirements to perform an assessment. Table 5.2 gives a listing of the checklists described within this plan.

An individual checklist is to be used for each item as described in section 4. The checklist column marked "Item" provides a numerical reference, if needed when corresponding with the project. Numbers in this column in parenthesis () indicate reference to the Master Commitment Tracking List. The column marked "Reference" provides the source of the requirement to be verified. The column marked "Requirement" is repeated from the source document. Parts which have been condensed or paraphrased are delineated with brackets [].

The column marked "Finding/Comment" is for describing the actual condition found. A checkmark in the acceptable column indicates that the condition found is acceptable. An N/A in the acceptable column indicates that the attribute listed is not applicable. An N/V entry in the acceptable column indicates that the attribute was not verified (due to accessibility, work in progress, etc.). N/A and N/V entries require a short explanatory statement in the "Finding/Comment" column.

A checkmark in the "Reject" column indicates that the requirement of the checklist item was not met at the time of assessment. The "Resolution" column is used to indicate whether a Readiness Review Finding or Audit Finding Report was issued, or if the Project was able to provide sufficient information to close the item.

The checklists are to be signed and dated on each page by the person or persons performing the assessment and are to be completed neatly and legibly in black ink.

6.0 ITEM SELECTION

The hardware and software items selected for the part 2 and part 3 assessment are listed in Tables 6-1 and 6-2. Hardware items were selected for the population of Class IE equipment. Software items were selected from those design and construction

procedures/specifications directly applicable to electrical equipment design and installation.

Due to the relatively small total population size, and the number of different types of equipment, statistical sampling methods are not used. The sample was chosen to allow assessment of the types of equipment that had identified discrepancies in Unit 1.

TABLE 2-1 (SHEET 1 OF 2)

ELECTRICAL ITEM/ACTIVITY VS. MODULE

Item	<u>04</u>	<u>06</u>	<u>12</u>	<u>16</u>	<u>17</u>	<u>18A</u>	<u>19</u>	<u>20</u>
Motors	X					X		X
Electrical Systems		X						
Switchgear		X						
MCCs		X						
Distribution Panels		X						
Battery Chargers		X						
Inverters		X						
Batteries		X						
Penetrations		X						
Cable Bus		X						
Transformers		X						
Wire and Cable (All)			X					
Terminations (Field)			X					
Terminations (Vendor)		X						
Jumpers (Field)			X					
Jumpers (Vendor)		X						
Heat-Shrink			X					
Control Panels		X						
Local Control Stations								X
Cable Tray					X			
Conduit					X			
Junction Boxes					X			
Pullboxes					X			
Raceway Fittings					X			

TABLE 2-1 (SHEET 2 OF 2)

Item	<u>04</u>	<u>06</u>	<u>12</u>	<u>16</u>	<u>17</u>	<u>18A</u>	<u>19</u>	<u>20</u>
Special Raceway					X			
Tray Supports							X	
Conduit Supports							X	
Box/Equipment Supports							X	
Electrical Instrumentation (Panel Mounted)		X						
Electrical Instrumentation (Field Mounted)						X		X
Electrical System Design		X						
Cable System Design			X					
Load Calculations		X						
Voltage Drop			X					
Raceway Fill			X		X			
Raceway Support Loading					X		X	

TABLE 5-1 (SHEET 1 OF 2)
MODULE 6 - ELECTRICAL EQUIPMENT
ASSESSMENT SCOPE

SCOPE

Module 6 describes the design, procurement, installation, and inspection of the following Class IE equipment:

- o Transformers.
- o Switchgear.
- o MCCs.
- o Battery Chargers.
- o Batteries.
- o Control Panels and Boards.
- o Distribution Equipment.
- o Inverters.
- o Penetrations.
- o Bus Systems.

Design Aspects:

- o Design Criteria.
- o Studies.
- o Calculations.
- o Failure Mode and Effects Analysis.
- o Hazards Analysis Interface.
- o Drawings.
- o Procurement Specifications.
- o Equipment Lists.
- o Construction Specifications.
- o Relaying Data Sheets.
- o Design Control and Review.
- o Design Change Control.
- o Non-IE systems as the interface with IE.
- o Supplier Quality Program.
- o Supplier Drawings and Data.

TABLE 5-1 (SHEET 2 OF 2)

SCOPE

Procurement Aspects:

- o Supplier Quality.
- o Supplier Drawings.
- o Supplier Deviations.
- o SQR.
- o Supplier Certification Document.

Construction Aspects:

- o Welding.
- o Bolting/Anchors.
- o Internal Wiring.
- o Location/Orientation.
- o FECOs.
- o M&TE.
- o EMSL.
- o Vendor Requirements.
- o Special Requirements.
- o Deviation Reports.
- o Inspector Qualification/Certification.
- o Document Retrievability.
- o Document Accuracy.

TABLE 5-2
MODULE 6 - ELECTRICAL EQUIPMENT CHECKLISTS

Part 1

RR006-001	Design Commitment Implementation
RR006-002	Construction Commitment Implementation

Part 2

RR006-003	Design Change Control
RR006-004	FECOs
RR006-005	CCPs
RR006-006	Calculations
RR006-007	Construction Equipment Modification
RR006-008	Inprocess Installation and Corrective Actions

Part 3

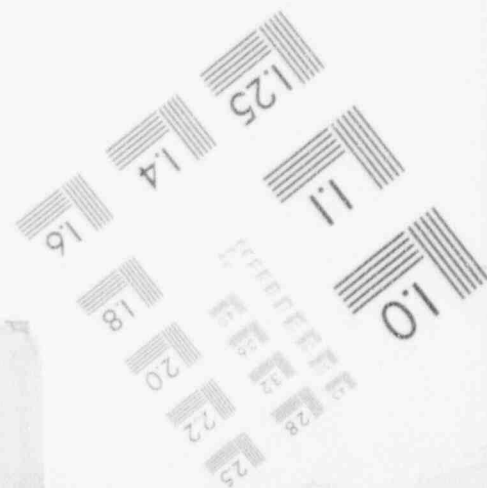
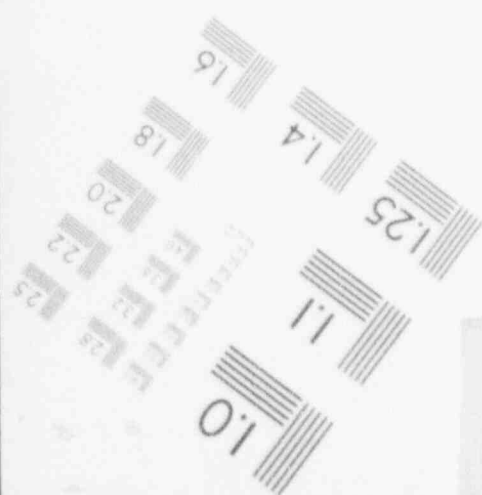
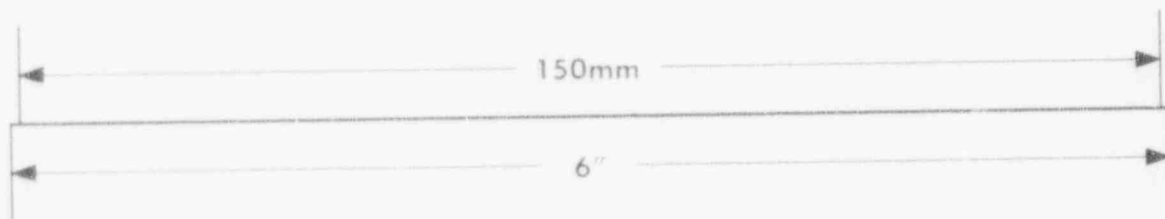
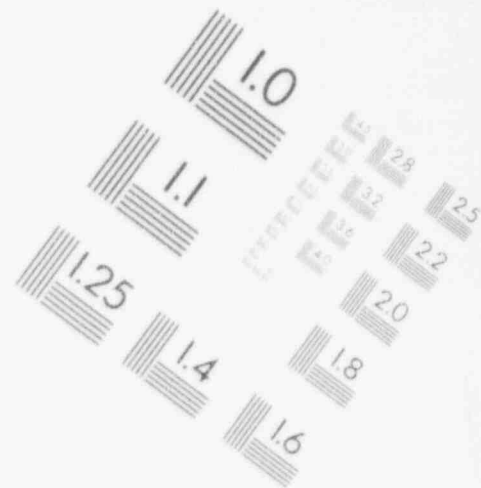
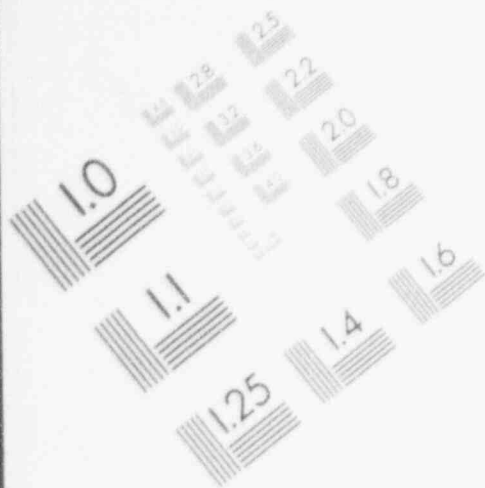
RR006-009A	Installed Equipment
RR006-009B	Installed Penetrations
RR006-010A	Document - Equipment
RR006-010B	Document - Penetrations
RR006-011A	Incorporation of FCRs, DCNs, CSCNs
RR006-011B	Finalization Walkdowns - FP-6
RR006-012	System Turnover/RFT

TABLE 6-1
MODULE 6 - ELECTRICAL EQUIPMENT
HARDWARE SAMPLE

<u>Equipment Tag Number</u>	<u>Description</u>	<u>Plant Location</u>
2-1804-S3-A03	Med. Voltage Swgr. 2BB03	C.B. RA15
2-1805-S3-BBB	480V MCC. 2BBB	Aux. Bldg. R147
2-1806-B3-BYB	125VDC Batt. & Rack 2BD1B	C.B. RB 32
2-1806-B3-RYB		
2-1806-Q3-DA1	125VDC Dist. Panel 2AD11	C.B. RB 29
2-1808-T3-106	120V Isol. XFMR 2BBF13X	D.G. B 'B'
2-1821-U3-001	Safety Feat. Seq. Board Trn. 'A'	C.B. RA 16
2-1601-Q5-MCB	Main Cntl. Board, Section A01	Control Room
2-1818-H3-P13	M.V. Penetration	
2-1818-H3-P29	480V Penetration	
2-1818-H3-P50	Control Penetration	
2-1818-H3-P71	Instrumentation Penetrations	

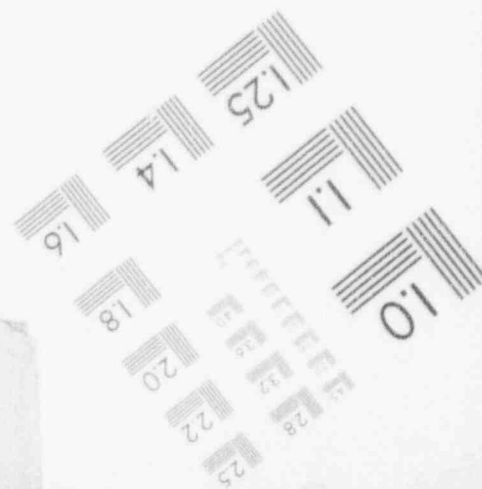
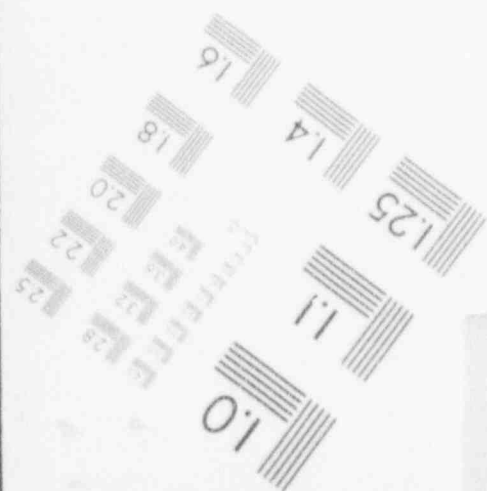
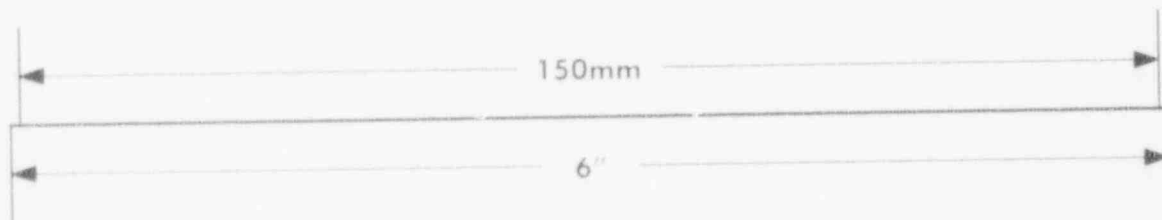
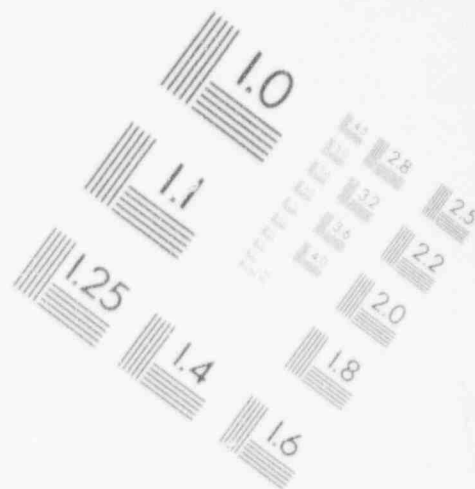
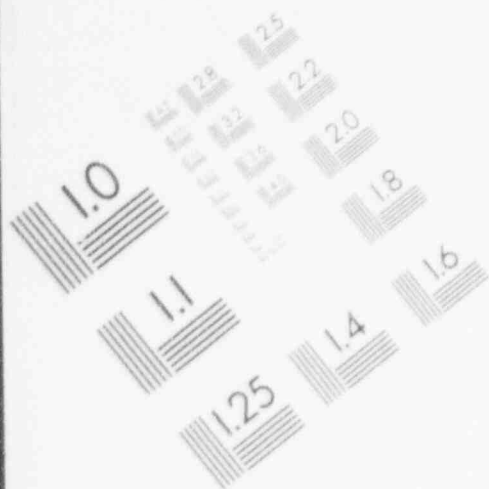
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IMAGE EVALUATION
TEST TARGET (MT-3)



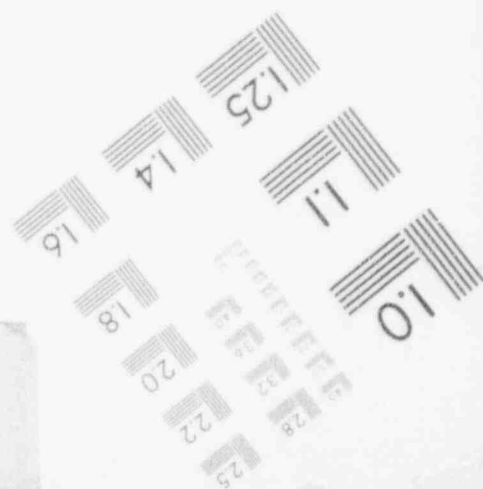
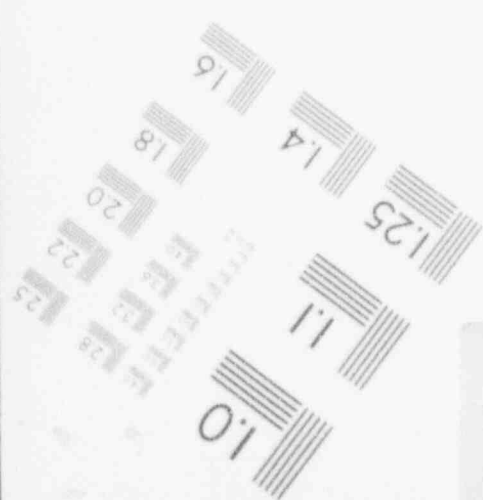
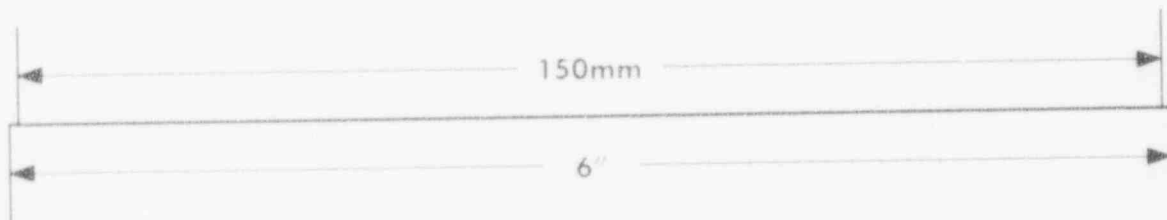
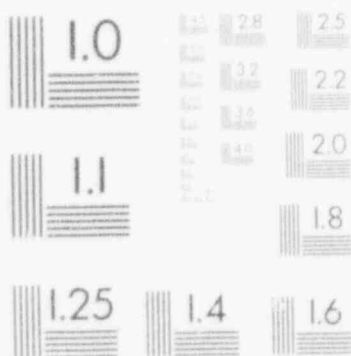
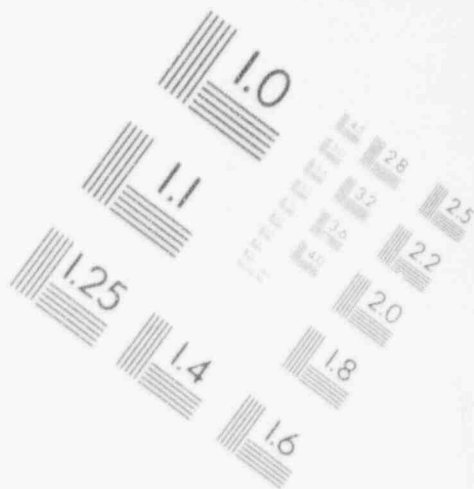
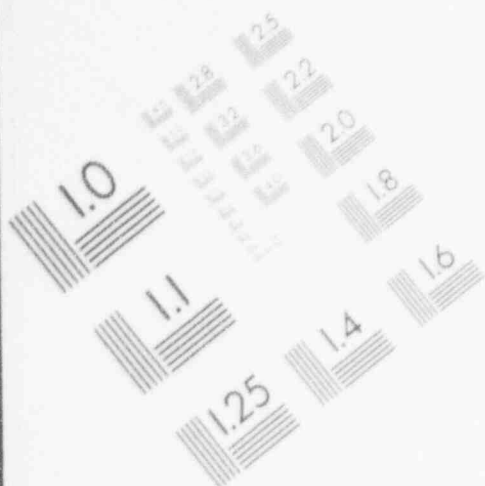
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IMAGE EVALUATION
TEST TARGET (MT-3)



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IMAGE EVALUATION
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IMAGE EVALUATION TEST TARGET (MT-3)

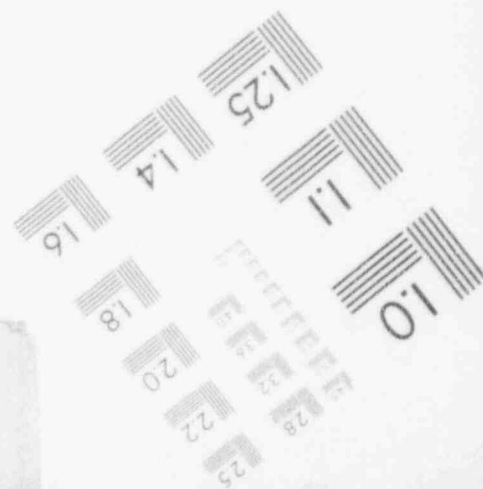
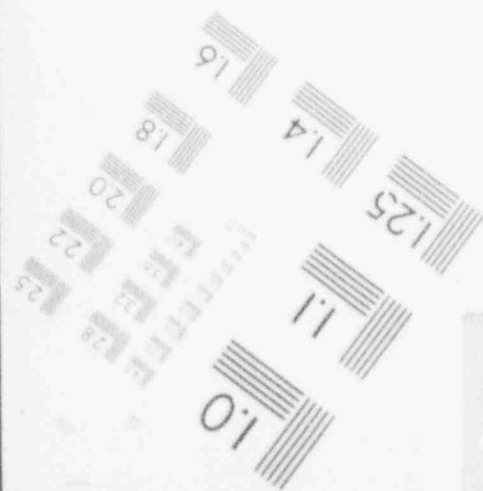
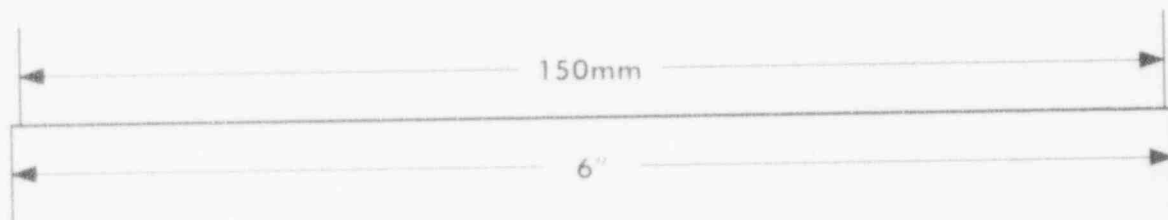
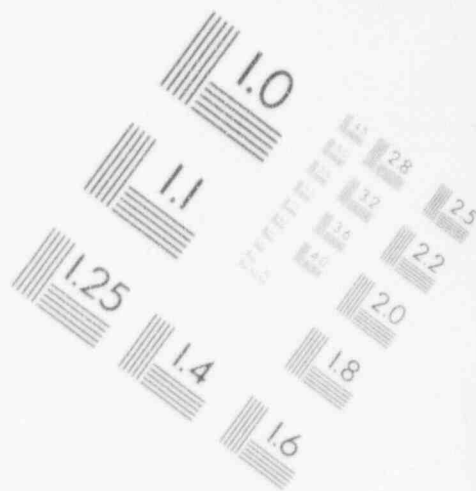
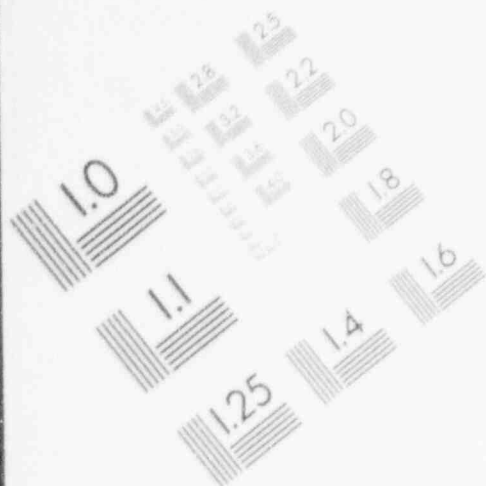


TABLE 6-2
MODULE 6 - ELECTRICAL EQUIPMENT SOFTWARE

Design Criteria

DC-1000E	DC-1807
DC-1804	DC-1816
DC-1805	DC-1825
DC-1806	

Project Reference Manual

C4	Drawings	C17	Field Change Requests
C5	Vendor Data	C24	FECO
C8	Specifications	C26	Construction Specifications
C9	Calculations	C35	CCP
C16	FMEA	C37	Equipment Qualification

Specifications

X3AB03	X3AE03
X3AC01	X3AE06
X3AC02	X3AF04
X3AD01	X3AR01

Calculations

X3CC02
X3CF02

Procedures

CM-T-01	GD-T-11
CM-T-02	GD-T-17
DC-A-06	GD-T-25
ED-T-04	TD-T-28
ED-T-09	GD-T-33
ED-T-19	QC-A-01
ED-T-32	QC-A-02
GD-A-04	

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PREPARED BY DAVID L EDENFIELD	DATE 19 JAN 87	AUDIT NO.	PAGE <u>1</u> OF <u>12</u>
SAMPLE IDENTIFICATION DESIGN COMMITMENTS		AUDIT DATE	AREA
		AUDITORS	

ITEM	REFERENCE	REQUIREMENT	FINDING / COMMENT	ACCEPT	REJECT	RESOLUTION
1 (1651) (6)	FSAR 1.9.6 and 8.1.4.3	RG 1.6 - MARCH 1971 INDEPENDENCE BETWEEN REDUNDANT STANDBY (ONSITE) POWER SOURCES AND BETWEEN THEIR DISTRIBUTION SYSTEMS				
2 (131) (11)	FSAR 1.9.32, 8.1.4.3	RG 1.32 - FEB. 1977 CRITERIA FOR SAFETY- RELATED ELECTRIC POWER SYSTEMS FOR NUCLEAR POWER PLANTS				
3 (27)	FSAR 8.1.4.3,	IEEE 308-1974 CRITERIA FOR SAFETY- RELATED ELECTRIC POWER SYSTEMS FOR NUCLEAR POWER PLANTS.				

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ITEM	REFERENCE	REQUIREMENT	FINDING / COMMENT	ACCEPT	REJECT	RESOLUTION
3A	FSAR 8.1.4.3	IEEE 308-1974; para 4.8 AN ANALYSIS OF THE FAILURE MODES OF CLASS 1E POWER SYSTEMS AND THE EFFECTS OF THESE FAILURES ON THE ELECTRIC POWER AVAILABLE TO CLASS 1E LOADS SHALL BE PERFORMED TO DEMONSTRATE THAT A SINGLE COMPONENT FAILURE DOES NOT PREVENT SATISFACTORY PERFORMANCE OF THE MINIMUM CLASS 1E LOADS REQUIRED FOR SAFE SHUT-DOWN AND MAINTENANCE OF POST-SHUTDOWN OR POST-ACCIDENT STATION SECURITY.				
4 (15) (17)	FSAR 1.9.63, 8.1.4.3	RG 1.63-JULY, 1978 ELECTRIC PENETRATION ASSEMBLIES IN CONTAINMENT STRUCTURES FOR LIGHT-WATER-COOLED NUCLEAR POWER PLANTS.				
5 (20)	FSAR 8.1.4.3, RRF 6-82	IEEE 317-1976 ELECTRIC PENETRATION ASSEMBLIES IN CONTAINMENT STRUCTURES FOR LIGHT-WATER-COOLED NUCLEAR POWER PLANTS.				

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ITEM	REFERENCE	REQUIREMENT	FINDING / COMMENT	ACCEPT	REJECT	RESOLUTION
5A	FSAR 1.9.63, B.1.4.3.	IEEE 317-1976, para 4.2.4 (as modified by FSAR 1.9.63.2.) ; PROTECTION OF SINGLE-RANDOM FAILURE OF CIRCUIT OVERLOAD PROTECTION DEVICES ARE AS FOLLOWS : A) FOR MEDIUM VOLTAGE CIRCUITS, THE CIRCUIT BREAKER ASSOCIATED WITH THE LOAD IS BACKED UP BY A SECOND LOAD BREAKER IN SERIES (WHICH IS CLASS 1E) B) FOR 480-V LOADS FED FROM LOAD CENTERS, THE CIRCUIT BREAKER ASSOCIATED WITH THE LOAD IS BACKED UP BY SERIES FUSES C) FOR 480-V LOADS FED FROM MOTOR CONTROL CENTERS, A SECOND BREAKER IN SERIES WITH THE PRIMARY BREAKER TO EACH LOAD IS USED				

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ITEM	REFERENCE	REQUIREMENT	FINDING / COMMENT	ACCEPT	REJECT	RESOLUTION
5B	FSAR 1.9.63, 8.1.4.3	IEEE 317-1976, para 4.2.4 (as modified by FSAR 1.9.63.2); ACTUAL X/R RATIO OF FAULT AT THE PENETRATION CONDUCTORS IS USED IN DETERMINING THE FAULT CURRENT				
6 (160) (13)	FSAR 1.9.75, 8.1.4.3,	RG 1.75 - SEPT 1978 PHYSICAL INDEPENDENCE OF ELECTRIC SYSTEMS				
7 (35)	FSAR 8.1.4.3.	IEEE 384-1974 IEEE TRIAL-USE STANDARD CRITERIA FOR SEPARATION OF CLASS 1E EQUIPMENT AND CIRCUITS.				

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ITEM	REFERENCE	REQUIREMENT	FINDING / COMMENT	ACCEPT	REJECT	RESOLUTION
7A (493)	FSAR 8.1.4.3, Q430.75(E)	IEEE 384-1974, para 5.1.3 THE CABLE SPREADING AREA SHALL NOT CONTAIN HIGH ENERGY EQUIPMENT SUCH AS SWITCHGEAR, TRANSFORMERS, ROTATING EQUIPMENT OR POTENTIAL SOURCES OF MISSILES OR PIPE WHIP.				
7B (82)	FSAR 8.1.4.3, 8.3.1.4	IEEE 384-1974, para 5.6.2 THE MINIMUM SEPARATION DISTANCE BETWEEN REDUNDANT CLASS 1E EQUIPMENT AND WIRING INTERNAL TO THE CONTROL SWITCHBOARDS CAN BE ESTABLISHED BY ANALYSIS. WHERE THE CONTROL SWITCHBOARD MATERIALS ARE FLAME RETARDANT AND ANALYSIS IS NOT PERFORMED, THE MINIMUM SEPARATION DISTANCE SHALL BE 6 INCHES [OR BARRIERS SHALL BE INSTALLED]				

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ITEM	REFERENCE	REQUIREMENT	FINDING / COMMENT	ACCEPT	REJECT	RESOLUTION
8A (4817)	FSAR 8.3.1.1	ALL SAFETY RELATED EQUIPMENT IS HOUSED IN SEISMIC CATEGORY I BUILDINGS.				
9 (172) (20) (1262)	FSAR 1.9.89, E.1.4.3, 3.11.8.2 RRF 6-56	RG 1.89 - NOV 1974 QUALIFICATION OF CLASS 1E EQUIPMENT FOR NUCLEAR POWER PLANTS.				
10 (29) (1263) (1263)	FSAR 8.1.4.3, 3.11.8.2	IEEE 323-1974 QUALIFICATION OF CLASS 1E EQUIPMENT FOR NUCLEAR POWER PLANTS.				
10A	FSAR 8.1.4.3	IEEE 323-1974, para. 6.2 (CONTINUED NEXT PAGE)				

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ITEM	REFERENCE	REQUIREMENT	FINDING / COMMENT	ACCEPT	REJECT	RESOLUTION
10A	(continued)	ELECTRICAL EQUIPMENT SPECIFICATIONS SHALL DEFINE THE EQUIPMENT'S CLASS IE REQUIREMENTS AND SHALL INCLUDE AS APPLICABLE: 1) PERFORMANCE CHARACTERISTICS UNDER DEFINED NORMAL, ABNORMAL, CONTAMINANT TEST, DESIGN BASE EVENT, AND POST DESIGN-BASIS EVENT CONDITIONS. 2) THE RANGE OF VOLTAGE, FREQUENCY LOAD, ELECTROMAGNETIC INTERFERENCE AND OTHER ELECTRICAL CHARACTERISTICS 3) INSTALLATION REQUIREMENTS INCLUDING MODULAR METHOD AND CONFIGURATIONS. 4) PREVENTIVE MAINTENANCE SCHEDULE FOR THE INSTALLED LIFE OF THE EQUIPMENT 5) THE DESIGN LIFE OF THE EQUIPMENT AND THE DESIGN LIFE OF ANY COMPONENTS WHICH MAY HAVE A LIFE SHORTER THAN THAT OF THE COMPLETE EQUIPMENT.				

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ITEM	REFERENCE	REQUIREMENT	FINDING / COMMENT	ACCEPT	REJECT	RESOLUTION
10A	(Continued)	6) CONTROL, INDICATING, AND OTHER AUXILIARY DEVICES CONTAINED IN THE EQUIPMENT OR EXTERNAL TO THE EQUIPMENT AND REQUIRED FOR PROPER OPERATION 7) THE RANGE, TYPE, AND DURATION OF ENVIRONMENTAL CONDITIONS INCLUDING TEMPERATURE, PRESSURE, HUMIDITY, CHEMICALS AND SEISMIC FORCES. 8) COMPLETE DESCRIPTION AND NUMBER OF OPERATING CYCLES INCLUDING PERIODIC TESTING. 9) QUALIFIED LIFE				
11 (175) (22) (1203)	FSAR 1.9.100, 8.1.4.3, 3.10.8.1 RRFG-56	RG 1.100 - AUG 1977 SEISMIC QUALIFICATION OF ELECTRICAL EQUIPMENT FOR NUCLEAR POWER PLANTS				
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ITEM	REFERENCE	REQUIREMENT	FINDING / COMMENT	ACCEPT	REJECT	RESOLUTION
12 (32) (1202)	FSAR 8.1.4.3, 3.10.8.1	IEEE 344-1975 SEISMIC QUALIFICATION OF ELECTRICAL EQUIPMENT FOR NUCLEAR POWER PLANTS				
12A	FSAR 8.1.4.3, 3.10.8.1	IEEE 344-1975, para 4 THE SEISMIC QUALIFICATION OF CLASS 1E EQUIPMENT SHOULD DEMONSTRATE AN EQUIPMENT'S ABILITY TO PERFORM ITS REQUIRED FUNCTION DURING AND AFTER THE TIME IT IS SUBJECTED TO THE FORCES RESULTING FROM ONE SSE. IN ADDITION, THE EQUIPMENT MUST WITHSTAND A NUMBER OF OBE'S (THE NUMBER OF TESTS SHALL BE JUSTIFIED FOR EACH SITE OR SHALL PRODUCE THE EQUIVALENT OF 5 OBE'S) PRIOR TO THE APPLICATION OF AN SSE.				

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ITEM	REFERENCE	REQUIREMENT	FINDING / COMMENT	ACCEPT	REJECT	RESOLUTION
12B (1216)	FSAR 3.10.B.2.1	WHEN AN EQUIVALENT STATIC COEFFICIENT ANALYSIS IS PERFORMED, JUSTIFICATION FOR ITS USE IS PROVIDED BY THE SUPPLIER.				
12C AL88)	FSAR 3.7.B.3.6	EARTHQUAKE EFFECTS COMBINED BY SRSS METHOD (FOR QUALIFICATION BY ANALYSIS).				
13 (14)	FSAR 1.9.47, 8.1.4.3	RG 1.47 - MAY 1973 BYPASSED AND INOPERABLE STATUS INDICATION FOR NUCLEAR POWER PLANT SAFETY SYSTEMS.				
14 (1551) (15)	FSAR 1.53, 8.1.4.3 RRF 6-66	RG 1.53 - JUNE 1973 APPLICATION OF THE SINGLE- FAILURE CRITERION TO NUCLEAR POWER PLANT PROTECTION SYSTEMS				

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ITEM	REFERENCE	REQUIREMENT	FINDING / COMMENT	ACCEPT	REJECT	RESOLUTION
15 (26)	FSAR 8.1.4.3	IEEE 279-1971 CRITERIA FOR PROTECTION SYSTEMS FOR NUCLEAR POWER GENERATING STATIONS				
15A	FSAR 8.1.4.3	IEEE 279-1971, para. 4.13 IF THE PROTECTIVE ACTION OF SOME PART OF THE SYSTEM HAS BEEN BYPASSED OR DELIBERATELY RENDERED INOPERABLE, FOR THAT PURPOSE, THIS FACT SHALL BE CONTINUOUSLY INDICATED IN THE CONTROL ROOM				
15B	FSAR 8.1.4.3	IEEE 279-1971, para. 4.17 THE PROTECTION SYSTEM SHALL INCLUDE MEANS FOR MANUAL INITIATION OF EACH PROTECTIVE ACTION AT THE SYSTEM LEVEL.				

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ITEM	REFERENCE	REQUIREMENT	FINDING / COMMENT	ACCEPT	REJECT	RESOLUTION
15C	FSAR 8.1.4.3	IEEE 279-1971, para. 4.2.2 THE PROTECTION SYSTEM EQUIPMENT SHALL BE IDENTIFIED DISTINCTLY AS BEING IN THE PROTECTIVE SYSTEM.				
16 (23)	FSAR 8.1.4.3	IEEE 379-1972 APPLICATION OF THE SWELLE-FAILURE CRITERION TO NUCLEAR POWER GENERATING SYSTEM PROTECTION SYSTEMS				
17 (17) (23)	FSAR 1.9.106, 8.1.4.3	RG 1.106, MARCH 1977 THERMAL OVERLOAD PROTECTION FOR ELECTRIC MOTORS ON MOTOR OPERATED VALVES				
17A (423)	FSAR Q450.6.4	MOTOR OPERATED VALVE NORMAL OVERLOAD IS INDICATED IN THE CONTROL ROOM				
18 (184) (14)	FSAR 1.9.128, 8.1.4.3	RG 1.128, OCT 1978 INSTALLATION DESIGN AND INSTALLATION OF LARGE LEAD STORAGE BATTERIES FOR NUCLEAR POWER PLANTS				

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ITEM	REFERENCE	REQUIREMENT	FINDING / COMMENT	ACCEPT	REJECT	RESOLUTION
19	FSAR 8.1.4.3,	IEEE 484-1975 INSTALLATION AND INSTALLATION DESIGN OF LARGE LEAD STORAGE BATTERIES FOR NUCLEAR POWER PLANTS				
20	FSAR 8.3.2.1 REF 6.71	IEEE 485-1978 SIZING LARGE LEAD STORAGE BATTERIES FOR GENERATING STATIONS AND SUBSTANCES				
20A	FSAR 8.1.4.2.6	BATTERIES ARE SIZED FOR 165 MINUTES OF OPERATION WITHOUT SUPPORT OF BATTERY CHARGERS.				
20B	FSAR 8.3.2.1	BATTERY CAPACITY IS INCREASED 21 10% FOR LOAD GROWTH AND 25% FOR ABNORMALS				
21	FSAR 1.9.5.2, 8.1.4.3	RG 1.6.2 - OCT 1993 MINIMUM INITIATION OF PROTECTIVE ACTIONS				

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READINESS REVIEW CHECKLIST

NO. RR- 006-002

PREPARED BY DAVID L. EDENFIELD	DATE 20 JAN 87	AUDIT NO.	PAGE <u>1</u> OF <u>10</u>
SAMPLE IDENTIFICATION CONSTRUCTION COMMITMENTS		AUDIT DATE	AREA
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ITEM	REFERENCE	REQUIREMENT	FINDING / COMMENT	ACCEPT	REJECT	RESOLUTION
1 (27)	FSAR 8.1.4.3 RRF 6-27	IEEE 308-1974, para 4.5 COMPONENTS OF CLASS 1E POWER SYSTEMS SHALL BE MARKED OR LABELED IN A DISTINCTIVE MANNER.				
2A (28)	FSAR 8.1.4.3 RRF 6-2	IEEE 317-1976, para 8.3 A LEAK RATE TEST SHALL BE PERFORMED ON EACH ELECTRIC PENETRATION ASSEMBLY AND APERTURE SEAL FOLLOWING INSTALLATION				
2B (23)	FSAR 8.1.4.3 RRF 6-4	IEEE 317-1976, para 8.4 AFTER THE PENETRATION ASSEMBLY IS INSTALLED. THE FOLLOWING TESTS MAY BE PERFORMED: 1) CONTINUITY 2) INSULATION RESISTANCE TO GROUND				

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ITEM	REFERENCE	REQUIREMENT	FINDING / COMMENT	ACCEPT	REJECT	RESOLUTION
3A (31)	FSAR 8.1.4.3 RRF 6.1	IEEE 336-1971, para 2.2 The following documents relating to the specific equipment to be installed are available at the construction site [prior to installation] a) The latest applicable approved-for-construction drawings b) Installation specifications c) Manufacturers' instructions d) Evidence of compliance by manufacturer with purchase requirements, including quality assurance requirements e) Records of inspections and tests during on-site storage and handling				
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ITEM	REFERENCE	REQUIREMENT	FINDING / COMMENT	ACCEPT	REJECT	RESOLUTION
3B (31)	FSAR B.1.4.3	IEEE 336-1971, para 2.4 INSPECTION AND TEST RESULTS SHALL BE DOCUMENTED IN A SUITABLE TEST REPORT OR DATA SHEET. EACH REPORT SHALL IDENTIFY: 1) THE ITEM TO WHICH IT APPLIES 2) THE PROCEDURES OR INSTRUCTIONS FOLLOWED IN PERFORMING THE TASK 3) CONDITIONS ENCOUNTERED WHICH WERE NOT ANTICIPATED, INCLUDING NONCONFORMANCES 4) IDENTITY OF INSPECTOR OR TESTER 5) COMPLETION DATE TEST REPORTS AND DATA SHEETS SHALL INCLUDE AN EVALUATION OF THE ACCEPT- ABILITY OF INSPECTION AND TEST RESULTS AND PROVIDE EVID- ENCE IDENTIFYING THE INDIVIDUAL WHO PERFORMED THE EVALUATION				

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ITEM	REFERENCE	REQUIREMENT	FINDING / COMMENT	ACCEPT	REJECT	RESOLUTION
3C (31)	FSAR 8.1.4.3	IEEE 336-1971, para 2.5.2 1) MEASURING AND TEST equipment used to determine compliance to specifications shall be adjusted and calibrated at prescribed intervals against certified equipment having known valid relationships to nationally recognized standards 2) Records of the calibration shall be maintained and equipment suitably marked to indicate date of next required calibration 3) When inspection and testing equipment are found to be out of calibration, an evaluation shall be made of the validity of items previously inspected or tested.				

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ITEM	REFERENCE	REQUIREMENT	FINDING / COMMENT	ACCEPT	REJECT	RESOLUTION
3D (31)	FSAR 8.1.4.3	IEEE 336-1977, para 5.1.1 Inspection shall be made to verify that equipment is being located, installed, assembled, and/or connected to comply with latest approved-for-construction drawings, manufacturers instructions and installation specifications [and] shall include, as appropriate, verifications of: 1) Leveling and alignment 2) Clearances and tolerances 3) Proper location and routing of cables and sensing lines 4) Tightness of connections and fastenings 5) Freedom of movement 6) Correct polarity 7) Proper grounding 8) Physical Integrity 9) Identifications				
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ITEM	REFERENCE	REQUIREMENT	FINDING / COMMENT	ACCEPT	REJECT	RESOLUTION
3E (31)	FSAR B.1.4.3 RRE 6-29	IEEE 336-1971, para 5.1.2. Inspections shall be made to verify adequacy of housekeeping in work areas. Adequacy of barriers and protective covers shall be evaluated to assure that items will not be damaged, as a result of adjacent construction activity.				
3F (31)	FSAR B.1.4.3	IEEE 336-1971, para 8. Record copies of completed procedures, reports, personnel qualification records, test equipment calibration records, test deviation or exception records, and inspection and examination records shall be prepared. These shall be placed with other project records as required by code, standard, specification or project procedures.				
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ITEM	REFERENCE	REQUIREMENT	FINDING / COMMENT	ACCEPT	REJECT	RESOLUTION
4 (35)	FSAR 8.1.4.3 REF 6-49	IEEE 384-1974 para 5.6.3 CLASS 1E WIRE BUNDLES OR CABLES INTERVAL TO THE CONTROL BOARDS SHALL BE IDENTIFIED IN A DIS- TINCT MANNER AT A SUFFICIENT NUMBER OF POINTS TO READILY DISTING- UISH BETWEEN CLASS 1E AND MINI-CLASS 1E WIRING				
5 (36)	FSAR 8.1.4.3	IEEE 484-1975, para 3.2 THE FOLLOWING SAFETY PROCEDURES SHALL BE FOLLOWED PRIOR TO AND DURING INSTALLATION OF BATTERIES 1) CONNECT METAL RAILS TO STATION GROUND SYSTEM 2) INSPECT ALL LIFTING EQUIPMENT FOR FUNCTIONAL ADEQUACY 3) RESTRICT ALL UNAUTHORIZED PERSONNEL FROM THE BATTERY AREA 4) PROHIBIT SMOKE, ARCING, AND OPEN FLAME IN THE (continued on p. 8)				

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ITEM	REFERENCE	REQUIREMENT	FINDING / COMMENT	ACCEPT	REJECT	RESOLUTION
5	(continued from p.7)	IMMEDIATE VICINITY OF THE BATTERY				
6A (1146) (5077)	FSAR 1.9.38, 17.1.13	ANSI N45.2.2-1972, para 5.2.1 Preliminary visual inspection or examination shall be performed prior to unloading to determine if any damage occurred during shipping. Observations for unusual conditions shall include: 1) FIRE 2) EXCESSIVE EXPOSURE 3) ENVIRONMENTAL DAMAGE 4) TIE DOWN FAILURE 5) ROUGH HANDLING				
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ITEM	REFERENCE	REQUIREMENT	FINDING / COMMENT	ACCEPT	REJECT	RESOLUTION
08		ANSI N45.2.2-1972, Para 5.2.2 UNLESS PACKAGE MARKING PROHIBITS UNPACKING, THE CONTENT OF ALL SHIPMENTS SHALL BE VISUALLY INSPECTED TO VERIFY THAT THE SPECIFIED PACKAGING AND SHIPPING REQUIREMENTS HAVE BEEN MET. THE INSPECTORS SHALL BE PERFORMED AT AN HPSA EQUIVALENT TO THE LEVEL OF STORAGE REQUIREMENT FOR THE ITEM. THESE INSPECTIONS AND EXAMINATIONS SHALL INCLUDE THE FOLLOWING AS APPROPRIATE: 1) IDENTIFICATION AND MARKING 2) MANUFACTURING DOCUMENTATION 3) PROTECTIVE COVERINGS AND SCAL 4) CONTAINERS AND PRESERVATIONS 5) INERT GAS BLANKET 6) DESICCANT 7) PHYSICAL DAMAGE 8) CLEANLINESS				

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ITEM	REFERENCE	REQUIREMENT	FINDING / COMMENT	ACCEPT	REJECT	RESOLUTION
60		ANSI N45.2.2-1972, para 5.4 A SYSTEM OR METHOD OF IDENTIFYING THE STATUS OF ITEMS (E.G. AN INVENTORY SYSTEM, TAGGING, LABELING, COLOR CODE, [PHYSICAL SEPARATION]) SHALL BE EMPLOYED THAT CLEARLY INDICATES WHETHER ITEMS ARE ACCEPTABLE OR UNACCEPTABLE FOR INSTALLATION. THE SYSTEM USED SHALL BE UNDER THE CONTROL OF THE QUALITY CONTROL ORGANIZATION.				
PERFORMED BY		DATE				

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NO. RR-006-003

PREPARED BY DAVID L. EDENFIELD	DATE 20 JAN 87	AUDIT NO.	PAGE <u>1</u> OF <u>2</u>
SAMPLE IDENTIFICATION DESIGN CHANGES - FCR'S, DCN'S, CSN'S		AUDIT DATE	AREA
AUDITORS			

ITEM	REFERENCE	REQUIREMENT	FINDING / COMMENT	ACCEPT	REJECT	RESOLUTION
1	PRM C4.8 C17.5.3 C26.7.1 RRF 6-92	DOES THE CHANGE AFFECT OTHER DISCIPLINES? IF SO, WAS THE INTERDISCIPLINE REVIEW BLOCK SO MARKED AND ARE THE APPROPRIATE INTERDISCIPLINE SIGNATURES PRESENT?				
2	PRM C4.8 C17.5.3 C26.7.1 IDR 6-8 6-9	DOES THE CHANGE CONFLICT WITH OR DEVIATE FROM THE FSAR OR OLSE? IF SO, WAS AN LDD INITIATED?				
3	PRM C4.7 C17.5.3 C26.7.1	DOES THE CHANGE AFFECT EQUIPMENT QUALIFICATION, HAZARDS, OR FIRE PROTECTION DESIGN WHEN EVALUATED PER THE CHECKLIST ON THE BACK OF AN FCR? WAS THE CHANGE ROUTED TO THE APPROPRIATE DISCIPLINE?				
4	PRM C4.8 C26.8	WERE THE APPROVED CHANGES INCORPORATED INTO THE DESIGN CORRECTLY AND WITHIN THE TIME FRAME STATED IN THE PRM?				

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ITEM	REFERENCE	REQUIREMENT	FINDING / COMMENT	ACCEPT	REJECT	RESOLUTION
5	PRM C4.8 C17.6.2.4 C26.8	DOES THE DESIGN CHANGE REPRESENT POTENTIAL RETROFIT? IS THE CHANGE CORRECTLY INDICATED?				
6	PRM C4.8 C17.6.2 C26.8	DID THE DESIGN CHANGE REQUIRE A CALCULATION REVISION? IS THE PROPER CALCULATION NOTED ON THE CHANGE?				
7	PRM C17.5.2	IF THE FCR IS APPROVED WITHOUT A DESIGN CHANGE (N/A/N/A), DOES IT COMPLY WITH THE PRM GUIDELINES?				
8	PRM C17.8 REF 6-36	IF THE FCR IS WRITTEN AGAINST SUPPLIER EQUIPMENT OR DOCUMENT, IS IT FOR DOUBLE CHANGES ONLY AS SPECIFIED IN THE PRM?				

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PREPARED BY DAVID L EDENFIELD	DATE 20 JAN 87	AUDIT NO.	PAGE <u>1</u> OF <u>2</u>
SAMPLE IDENTIFICATION FECO'S		AUDIT DATE	AREA
AUDITORS			

ITEM	REFERENCE	REQUIREMENT	FINDING / COMMENT	ACCEPT	REJECT	RESOLUTION
1	PRM C24.4	IF THE FECO IS WRITTEN AGAINST A D-CLASS (FIRE PROTECTION), OR RADIOACTIVE COMPONENT, IS THE APPROPRIATE BOX CHECKED ^{AND} WAS THE FECO EVALUATED AND SIGNED BY PROJECT QUALITY ASSURANCE ENGINEERING?				
2	PRM C24.5	IF THE FECO IS WRITTEN AGAINST A D-CLASS (FIRE PROTECTION), OR RADIOACTIVE COMPONENT, WAS AN EQUIPMENT CHANGE AUTHORIZATION (ECA) SENT TO THE ORIGINAL EQUIPMENT SUPPLIER, APPROVED, AND CLOSED OUT PRIOR TO ISSUE OF THE FECO TO GPC CONSTRUCTION?				
3	PRM C24.3, C24.4	ARE ALL DRAWINGS AND/OR DOCUMENTS REQUIRED TO WORK THE FECO REFERENCED ON THE FECO? WERE THE DOCUMENTS ISSUED FOR CONSTRUCTION PRIOR TO OR CONCURRENT WITH THE FECO ISSUE?				

PERFORMED BY	DATE	R.R. TEAM LEADER	DATE
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CONTINUATION SHEET

AUDIT NO.

PAGE 2 OF 2

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PERFORMED BY

DATE _____

READINESS REVIEW CHECKLIST

NO. RR- 006-005

PREPARED BY DAVID L. EDENFIELD	DATE 20 JAN 87	AUDIT NO.	PAGE <u>1</u> OF <u>2</u>
SAMPLE IDENTIFICATION CHANGE CONTROL PACKAGES		AUDIT DATE	AREA
AUDITORS			

ITEM	REFERENCE	REQUIREMENT	FINDING / COMMENT	ACCEPT	REJECT	RESOLUTION
1	PRM C35.5	ARE THE FOLLOWING DOCUMENTS PART OF THE REV.D CHANGE CONTROL PACKAGE? A) CCP COVER SHEET which contains: 1) CCP NUMBER 2) REVISIONS 3) CHANGE DESCRIPTIONS 4) SYSTEMS, DESIGNATORS, T/O DATES 5) APPROVAL SIGNATURES B) CCP DESIGN CHANGE BASIS 1) PROVIDES DETAILED DESCRIPTION OF THE CHANGE 2) ADDRESSES TECHNICAL BASIS FOR MAKING THE CHANGE 3) LIST PCW ITEM NUMBERS FOR ACTIONS REQUIRED: ADDITIONAL FOLLOWUP C) CCP DOCUMENTATION LIST D) CCP MATERIALS LIST E) DESIGN IMPLEMENTATION DOCUMENTS				
PERFORMED BY		DATE	R.R. TEAM LEADER	DATE		

CONTINUATION SHEET

AUDIT NO.

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ITEM	REFERENCE	REQUIREMENT	FINDING / COMMENT	ACCEPT	REJECT	RESOLUTION
2	PRM C35.5.2	DOES THE CCP IMPACT ANY OF THE PROGRAMS LISTED ON SHEETS 2 AND 3 OF THE DESIGN CHANGE BASIS ATTACHMENT? IF SO, IS THE ITEM BEING TRACKED UNDER THE PCW PROGRAM?				
3	PRM C35.5.5	ARE ALL DOCUMENTS REQUIRED TO IMPLEMENT THE CCP REFERENCED ON THE CCP DOCUMENTATION LIST?				
4	PRM C35.7	IS THE CCP NUMBERED CORRECTLY?				
PERFORMED BY		DATE				

READINESS REVIEW CHECKLIST

NO. RR-006-076

PREPARED BY <u>DAVID L. EDENFIELD</u>	DATE <u>20 JAN 87</u>	AUDIT NO.	PAGE <u>1</u> OF <u>3</u>
SAMPLE IDENTIFICATION <u>CALCULATIONS</u>		AUDIT DATE	AREA
AUDITORS			

ITEM	REFERENCE	REQUIREMENT	FINDING / COMMENT	ACCEPT	REJECT	RESOLUTION
1	PRM C9.3.3	DOES THE CALCULATION CONFORM TO THE REQUIREMENTS OF THE APPLICABLE DESIGN CRITERIA?				
2	PRM C9.6	DOES THE CALCULATION COVER SHEET CONTAIN THE FOLLOWING ENTRIES? • QUALITY CLASSIFICATION • TABLE OF CONTENTS (IF THE CALCULATION IS COMPLEX AND DIVIDED INTO SUBCALCULATIONS)				
3	PRM C9.6 REF 6-86 REF 6-87 EDR 6-76	DOES THE CALCULATION LIST THE APPROPRIATE BASIC CRITERIA, DESIGN ASSUMPTIONS, AND APPLICABLE CODES, STANDARDS, AND REFERENCES? ARE THE ISSUE DATES FOR THE CODES AND STANDARDS LISTED AND ARE THE DATES CONSISTENT WITH THOSE SPECIFIED IN THE DESIGN CRITERIA?				

PERFORMED BY

DATE

R.R. TEAM LEADER

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READINESS REVIEW CHECKLIST

NO. RR-006-006

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AUDIT NO.

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ITEM	REFERENCE	REQUIREMENT	FINDING / COMMENT	ACCEPT	REJECT	RESOLUTION
4	PRM C9.6	IS THE CALCULATION CONSISTENT WITH THE REQUIREMENTS OF THE REFERENCED CODES AND STANDARDS?				
5	PRM C9.3.3	IF ENGINEERING JUDGEMENT IS UTILIZED, DOES IT CONFORM TO THE FOLLOWING LIMITATIONS? • BASIS MUST BE DOCUMENTED • RATIONALE CAN BE VERIFIED BY USE OF A SIMPLE HAND CALCULATION, REFERENCE TO ADDITIONAL AVAILABLE DOCUMENTATION, REFERENCE TO INFORMATION WIDELY AVAILABLE TO ANYONE IN THE ENGINEERING DISCIPLINE.				
6	PRM C9.3.3	DOES THE DISCIPLINE THAT PREPARED THE CALCULATION HAVE WRITTEN GUIDELINES FOR DOCUMENTING ADDITIONS AND /OR CHANGES TO INPUT DATA? DO CHANGES IN THE CALCULATION CONFORM TO THESE GUIDELINES?				

PERFORMED BY

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NO. RR-006-006

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ITEM	REFERENCE	REQUIREMENT	FINDING / COMMENT	ACCEPT	REJECT	RESOLUTION
7	PRM C9.3.3	ARE KNOWN REQUIREMENTS FOR CALCULATIONS REVISIONS ENTERED AND SCHEDULED ON THE CALCULATION CONTROL LOG?				
8	PRM C9.6.1	IF THE CALCULATION UTILIZED A BECHTEL STANDARD COMPUTER PROGRAM, IS THE PROGRAM NUMBER AND/OR NAME AND VERSION REFERENCED?				
9	PRM C9.7 TDR 22F-001 22F-010 6-76	DOES THE CALCULATION AS ISSUED REFLECT THAT THE FOLLOWING CHECKS WERE PERFORMED? • CALCULATION AGREES WITH DESIGN INPUT DOCUMENTS FOR CONFIGURATION, DIMENSIONS, MATERIAL REQUIREMENTS • DESIGNER PROPERLY UTILIZED ASSUMPTIONS, ANALYTICAL METHOD OR CONSERVATIVE APPROXIMATION DESIGN METHODS • NUMERICAL RESULTS ARE CONSISTENT WITH THE REQUIRED MATHEMATICAL ACCOUNT OF THE CALCULATION.				

PERFORMED BY

DATE

READINESS REVIEW CHECKLIST

NO. RR- 006-007

PREPARED BY DAVID L EDENFIELD	DATE 21 JAN 87	AUDIT NO.	PAGE <u>1</u> OF <u>4</u>
SAMPLE IDENTIFICATION - OR1 SITE EQUIPMENT MODIFICATION IN-PROCESS		AUDI. DATE	AREA
TAG #	AUDITORS		
FECO #	CCP#	CR#	

ITEM	REFERENCE	REQUIREMENT	FINDING / COMMENT	ACCEPT	REJECT	RESOLUTION
1A	GDT-25 para 5.1.3 RRF 6-46	DOES THE PROJECT FECO COORDINATOR PERFORM THE FOLLOWING STEPS PRIOR TO ISSUING THE FECO? 1) ATTACH A FECO ROUTING COVER SHEET 2) ENTER FECO NUMBER, REVISION, STARTUP SYSTEM(S), AND EQUIPMENT TAG NUMBER(S) ON THE COVER SHEET 3) ASSIGN RESPONSIBILITY TO THE APPROPRIATE PROJECT SECTION SUPERVISOR				
1B	GDT-25 para 5.1.6 RRF 6-46	DOES THE RESPONSIBLE GPC FIELD ENGINEER PREPARE A FECO PACKAGE THAT CONTAINS, AS APPROPRIATE? 1) A COPY OF THE FECO 2) DRAWINGS AND DOCUMENTS NEEDED TO PERFORM THE WORK 3) PERMIT REQUESTS 4) ASSISTANCE REQUESTS 5) REQUIREMENTS				
PERFORMED BY		DATE	R.R. TEAM LEADER	DATE		

READINESS REVIEW CHECKLIST

NO. RR- 006-007

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AUDIT NO.

PAGE 2 OF 4

ITEM	REFERENCE	REQUIREMENT	FINDING / COMMENT	ACCEPT	REJECT	RESOLUTION
1C	GD-T-25 para 5.1.10	DID THE FECD REQUIRE REMOVAL OF AN ITEM OR COMPONENT? WAS THE ITEM OR COMPONENT LISTED IN THE REMARKS BLOCK OF THE FECD? IF THE ITEM/COMPONENT IS 'Q', WAS IT TAGGED IN THE PRESENCE OF THE QC INSPECTOR. WAS IT RETURNED TO THE WAREHOUSE? IF STILL IN THE WAREHOUSE, IS IT STILL TAGGED?				

PERFORMED BY

DATE

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NO. RR-006-007

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ITEM	REFERENCE	REQUIREMENT	FINDING / COMMENT	ACCEPT	REJECT	RESOLUTION
2A	GD-T-28 para 4.8	DOES THE ELECTRICAL DISCIPLINE MAINTAIN AN EQUIPMENT COMPONENT REMOVAL LOG?				
2B	GD-T-28 para 5.3.1	IF THE COMPONENT/EQUIPMENT IS CLASS IE, OR REQUIRED INDICATOR OF A NON-IE PIECE OF EQUIPMENT IN A SEPARATE LOG HERE, DID QUALITY CONTROL PERFORM THE REQUIRED INSPECTIONS AND SIGN THE COMPONENT REMOVAL FORM?	INSPECTOR			
2C	GD-T-28 sect 5.5	ARE BOTH THE REMOVED ITEMS AND THE EQUIPMENT AFFECTED TAGGED? IF THE OR PURCHASED REPLACEMENT ITEMS, ARE THEY TAGGED AT THE WAREHOUSE? IF THE COMPONENT OR EQUIPMENT IS 'Q', WERE THE TAGS ATTACHED BY OR IN THE PRESENCE OF A QC INSPECTOR?	P.O. # WHSE LOC			

PERFORMED BY

DATE

READINESS REVIEW CHECKLIST

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NO. RR - 006 - 007

CONTINUATION SHEET			AUDIT NO.	PAGE 4 OF 4		
ITEM	REFERENCE	REQUIREMENT	FINDING / COMMENT	ACCEPT	REJECT	RESOLUTION
3A	GD-T-33 para 5.1.3	WAS A CCP ASSIGNMENT FORM ISSUED BY THE PROTECT CHANGE CONTROL ENGINEER?				
3B	GD-T-33 para 5.1.4, 5.1.5, 5.1.6	WAS A CCP DISTRIBUTION LIST PREPARED BY THE CONSTRUCTION CCP COORDINATOR AND FORWARDED TO MAINTENANCE DOCUMENT CONTROL? DID IT REFLECT APPROPRIATE DISCIPLINE(S)? DOES DOCUMENT CONTROL UTILIZE IT TO ISSUE CONTROLLED COPIES OF CCP'S, IDCM'S AND XFCR'S?				
3C	GD-T-33	WHEN AN IDCM ADDS OR MODIFIES A NON-TAG-NUMBERED ELECTRICAL COMPONENT (RELAYS, FUSE BLOCKS, TERMINAL STRIPS, ETC.) DID THE DISCIPLINE CCP ENGINEER PLACE A CCP INSPECTION STAMP ON THE BACK OF THE IDCM?				
		IDCM #				

READINESS REVIEW CHECKLIST

NO. RR- 006-008A

PREPARED BY <u>DAVID / EDENFIELD</u>	DATE <u>22 JAN 87</u>	AUDIT NO.	PAGE <u>1</u> OF <u>3</u>
SAMPLE IDENTIFICATION EQUIPMENT INSTALLATION - IN-PROCESS		AUDIT DATE	AREA
AUDITORS			

ITEM	REFERENCE	REQUIREMENT	FINDING, COMMENT	ACCEPT	REJECT	RESOLUTION
1	ANST 145.2.4 para 2.2(5) DC-A-06 para 3.2 GD-A-30 para 5.5.9 GD-T-01 para 9.1, 9.1.3	ARE THE FOLLOWING DOCUMENTS RELATING TO THE EQUIPMENT AVAILABLE ON-SITE PRIOR TO RELEASE FROM THE WAREHOUSE: ◦ LATEST APPROVED FOR CONSTRUCTION DRAWINGS. ◦ INSTALLATION SPECIFICATIONS ◦ MANUFACTURERS INSTRUCTIONS ◦ EVIDENCE OF COMPLIANCE BY MANUFACTURER WITH PURCHASE AND QUALITY ASSURANCE REQUIREMENTS IF NOT WAS A CONDITIONAL RELEASE USED? WAS THE CONDITIONAL RELEASE CANCELLED PRIOR TO ACTUAL INSTALLATION START? CR # _____ DWG #'s _____				

PERFORMED BY	DATE	R.R. TEAM LEADER	DATE
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READINESS REVIEW CHECKLIST

CONTINUATION SHEET

NO. RR-006-008A

AUDIT NO.

PAGE 2 OF 3

ITEM	REFERENCE	REQUIREMENT	FINDING / COMMENT	ACCEPT	REJECT	RESOLUTION
2	ED-T-04 para 5.1	IS THE INSTALLATION SEQUENCE BEING ADHERED TO REGARDING PARTS 1.2. and 3 OF THE INSTALLATION AND TURNOUT FORM?				
3	ED-T-04 para 5.2.2 REF 6-29	ARE RIGGING AND LIFTING PACKAGES UTILIZED WHERE REQUIRED, IS THERE ANY PHYSICAL DAMAGE TO THE EQUIPMENT EXTERIOR?				
4	CM-T-02 para 5.1.5	IS THE EQUIPMENT PROPERLY PROTECTED FROM SURROUNDING CONSTRUCTION ACTIVITY? DOES THE CMOR REFLECT THE ACTUAL STORAGE LOCATION?				
5	ED-T-04 para 5.3	IS AN EQUIPMENT FOUNDATION RELEASE OBTAINED PRIOR TO PLACEMENT OF THE EQUIPMENT?				
6	CM-T-02 para 5.2.6	DOES THE CONDITION OF THE EQUIPMENT REFLECT THE MAINTENANCE REQUIREMENTS OF THE CMOR?				
7	ED-T-04 exh. 03 REF 6-27	IS THE EQUIPMENT IDENTIFIED WITH THE EQUIPMENT TAG NUMBERED BY APPROPRIATELY COLOR CODED TAGS?				

PERFORMED BY

DATE

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CONTINUATION SHEET

NO. RR- 006-008A

AUDIT NO.

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ITEM	REFERENCE	REQUIREMENT	FINDING / COMMENT	ACCEPT	REJECT	RESOLUTION
B	ED-T-08 section 5.4	HAVE JUMPERS SHOWN ON EITHER THE VENDOR OR RECIPIENT WIRING DIAGRAM TO BE FIELD ADDED ON THE VENDOR SIDE OF THE TERMINAL BLOCK BEEN INCLUDED IN A JUMPER INSTALLATION PACKAGE? w/d # _____ JUMPER PKG # _____				

PERFORMED BY

DATE

READINESS REVIEW CHECKLIST

NO. RR-006-008B

PREPARED BY DAVID L EDENFIELD	DATE 22 JAN 87	AUDIT NO.	PAGE 1 OF 2
SAMPLE IDENTIFICATION PENETRATIONS - IN PROCESS		AUDIT DATE	AREA
AUDITORS			

ITEM	REFERENCE	REQUIREMENT	FINDING / COMMENT	ACCEPT	REJECT	RESOLUTION
1	ED-T-19 para 4.2.3	WHERE THE PERMANENT ENCLOSURE BOX HAS NOT BEEN INSTALLED, HAS A TEMPORARY BOX BEEN INSTALLED?				
2	ED-T-19 para 4.2.4, 4.4.6	HAS THE INITIAL LEAK RATE TEST BEEN PERFORMED? WERE THE RESULTS ACCEPTABLE?				
3	ED-T-19 para 4.9, 4.9.2 RRF 6-2	IS THE ELECTRICAL AREA ENGINEER PERFORMING MONTHLY SURVEILLANCE TO ENSURE POSITIVE PRESSURE IS MAINTAINED? ARE THE COMPLETED PRESSURE CHECK FORMS ON FILE IN THE ELECTRICAL EQUIPMENT SECTION?				
4	ED-T-19 para 4.11 RRF 6-4	HAS NUCLEAR OPERATIONS PERFORMED THE ELECTRICAL TESTS? IF SO, ARE THE FORMS SIGNED AND DATED BY THE ELECTRICAL AREA ENGINEER. ENGR _____				
PERFORMED BY		DATE	R.R. TEAM LEADER	DATE		

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AUDIT NO.

PAGE 2 OF 2

ITEM	REFERENCE	REQUIREMENT	FINDING / COMMENT	ACCEPT	REJECT	RESOLUTION
5	ED-T-19 para 4.15 REF 6-2	HAS THE PENETRATION BEEN RELEASED FOR TERMINATIONS? IF SO, WERE EXHIBITS AT AND DA ACCEPTABLE PRIOR TO THE RELEASE?				

PERFORMED BY

DATE

READINESS REVIEW CHECKLIST

NO. RR- 006 - 009A

PREPARED BY <u>D. EDENFIELD</u>	DATE <u>14 MAY 87</u>	AUDIT NO.	PAGE <u>1</u> OF <u>7</u>
SAMPLE IDENTIFICATION INSTALLED EQUIPMENT		AUDIT DATE	AREA
AUDITORS			

ITEM	REFERENCE	REQUIREMENT	FINDING / COMMENT	ACCEPT	REJECT	RESOLUTION
1	ED-T-04 Exh. 07, Part 3, page 1	IS THERE ANY OBVIOUS EXTERNAL DAMAGE? IF SO, IS IT PROPERLY DESCRIBED ON THE APPROPRIATE DOCUMENT? D.R. # _____ P.L. # _____ EMSL MEMO _____				
2	ED-T-04 para 5.17	ARE SHIPPING SPLIT JUMPERS INSTALLED PROPERLY? VEND DWG. # _____ JMPR PKG # _____				
3	ED-T-04 para 5.12.3 REF 6-17	IS THE ATTACHMENT OF THE EQUIPMENT TO ITS FOUNDATION PER VENDOR AND/OR DESIGN DRAWINGS. DESIGN DWG. # _____ VEND DWG # _____				

PERFORMED BY	DATE	R.R. TEAM LEADER	DATE
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READINESS REVIEW CHECKLIST

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ITEM	REFERENCE	REQUIREMENT	FINDING / COMMENT	ACCEPT	REJECT	RESOLUTION
4	ED-T-04, para 6.2 and Exhibit 07.	IS THE EQUIPMENT PROPERLY IDENTIFIED, LOCATED AND ORIENTED? Loc. Diag. # _____ Vents. Diag. # _____				
5	ED-T-04 para 6.2	IS THE EQUIPMENT CLEAN, FREE OF DEBRIS, AND PROTECTED FROM SURROUNDING CONSTRUCTION ACTIVITY?				
6	ED-T-04, EXHIBIT 07; Y3AR01 app. 55 REF 6-32.	IS THE EQUIPMENT SPACED FROM OTHER COMMODITIES AS SPECIFIED?				
7	IEEE 384-1974 REF 6-37	ARE BUNDLES OF WIRE/COILS IN MULTI-TRAIN SECTIONS CLEARLY AND PERMANENTLY IDENTIFIED TO THEIR RESPECTIVE SEGMENTED TRAIL?				

PERFORMED BY _____

DATE _____

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ITEM	REFERENCE	REQUIREMENT	FINDING / COMMENT	ACCEPT	REJECT	RESOLUTION
8	X3AR01-E9 AH 2, AH 5	VERIFY SEPARATION OF VENDOR INTERNAL WIRING AND FIELD ADDED JUMPERS AND/OR COMPONENTS MEETS X3AR01-E9, AH 2 or AH 5.				
9	ED-T-08, R/9 para 5.8.2 REF 6-16	VERIFY THAT FIELD CABLING WITHIN THE CABINET ENCLOSURE MEETS THE SEPARATIONS REQUIREMENTS OF X3AR01-E9				
10	EP-6 sect VII(b)	VERIFY THAT VIOLATIONS OF SEPARATION CRITERIA HAVE BEEN DOCUMENTED ON A DR, DDR, OR REWORK, AND THAT THE ITEMS HAVE BEEN REWORKED OR ARE TRACKED IN ITS				

PERFORMED BY

DATE

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ITEM	REFERENCE	REQUIREMENT	FINDING / COMMENT	ACCEPT	REJECT	RESOLUTION
11	GD-T-25 para 5.1.10	<u>FIELD EQUIPMENT CHANGE ORDER (FECO)</u> HAVE COMPONENTS CONTROLLED BY A FECO BEEN INSTALLED, REMOVED, AND/OR MODIFIED PER THE DOCUMENTS REFERENCED ON THE FECO? FECO # _____				
12	GD-T-25, para 5.1.10.3	IF THE FECO REQUIRED THE REMOVAL OF A 'Q' COMPONENT FOR STORAGE OR LATER USE, IS IT TAGGED AND STORED PROPERLY? STOR. LOC. _____				
13	GD-T-33	<u>COMPONENT REMOVAL</u> HAVE COMPONENTS CONTROLLED BY QR'S BEEN RE-INSTALLED IN ACCORDANCE WITH VENDOR AND/OR DESIGN REMOVAL METHOD C2 H's _____				

PERFORMED BY _____

DATE _____

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NO. RR-006-009A

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ITEM	REFERENCE	REQUIREMENT	FINDING / COMMENT	ACCEPT	REJECT	RESOLUTION
14	GD-T-33 para 5.2.1	<u>CHANGE CONTROL</u> <u>PACKAGES (CCP)</u> HAVE THE COMPONENTS REQUIRED ON A CCP BEEN INSTALLED AS REQUIRED BY THE CCP?				
15	ANISE 1145.2-11 section 9	IF A CCP REQUIRES REMOVAL OF A SAFETY- RELATED COMPONENT, IS IT PROPERLY MARKED TO ENSURE FUTURE TRACEABILITY? IS IT RETURNED TO A WAREHOUSE OR STORAGE AREA?				
16	ED-T-04 REF 6-45	IS THE EQUIPMENT GROUNDED PER THE EX3DE GENERAL NOTES AND DETAILS (AT EACH END) ?				

PERFORMED BY

DATE

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AUDIT NO.

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ITEM	REFERENCE	REQUIREMENT	FINDING / COMMENT	ACCEPT	REJECT	RESOLUTION
17	GD-A-48, R/2 para 5.4.9	<u>TURNOVER / RFT</u> DOES THE RFT PACKAGE CONTAIN THE APPROPRIATE DOCUMENTS (LISTED IN para 5.4.9)				
18	SUM-17	ARE ITEMS REMAINING ON THE MTS PUNCHLIST CATEGORIZED PER SUM-17?				
19	SUM-9 R/12 para 6.4.2	HAVE THE DOCUMENTS INDICATED ON THE TURNOVER/RFT FORM AS REQUIRED BEEN PROVIDED AS PART OF THE PACKAGE				
20	GD-T-31, R/2 para 5.1.5	ARE THE RECORDS REQUIRED BY EXHIBIT 03 ON FILE IN THE Q.A. RECORDS VAULT, LISTED IN MTS, OR ON A TRANSMITTAL TO NUCLEAR OPERATIONS?				

PERFORMED BY

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READINESS REVIEW CHECKLIST

NO. RR-006-009A

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AUDIT NO.

PAGE 7 OF 7

ITEM	REFERENCE	REQUIREMENT	FINDING / COMMENT	ACCEPT	REJECT	RESOLUTION
21	SUM-7	HAVE BLUE TAGS BEEN ATTACHED TO THE ITEMS RELEASED/TURNED OVER (ONLY)				
PERFORMED BY			DATE			

READINESS REVIEW CHECKLIST

NO. RR- 006-0098

PREPARED BY J.A. LOVOY		DATE 8 MAY 87		AUDIT NO.		PAGE 1 OF 2	
SAMPLE IDENTIFICATION CONSTRUCTION COMPLETION ELECTRICAL PENETRATIONS - HARDWARE PENETRATION TAG NUMBER				AUDIT DATE		AREA	
				AUDITORS			
ITEM	REFERENCE	REQUIREMENT	FINDING / COMMENT	ACCEPT	REJECT	RESOLUTION	
1	VENDOR MANUAL AX3AB03-3A RRF 6-5	ARE THE ENCLOSURE BOXES BEING USED AS WORK BENCHES, PLATFORMS AND/OR SCAFFOLDING?	CONTAINMENT BLDG SIDE? CONTROL BLDG SIDE?				
2	ED-T-19, VENDOR DRAWING RRF 6-7	IS THE CONFIGURATION AND ORIENTATION OF THE PENETRATION ASSEMBLY FEED THRU MODULE AND ENCLOSURE BOX IN ACCORDANCE WITH THE VENDOR DRAWING?	VENDOR DRAWING NO. CONTAINMENT BLDG SIDE? CONTROL BLDG SIDE?				
PERFORMED BY		DATE		R.R. TEAM LEADER		DATE	

READINESS REVIEW CHECKLIST

NO. RR- 006-009B

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AUDIT NO.

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ITEM	REFERENCE	REQUIREMENT	FINDING / COMMENT	ACCEPT	REJECT	RESOLUTION
3	ED-T-19 para 4.9	HAS FIELD SURVEILLANCE OF PENETRATION PRESSURE BEEN PERFORMED MONTHLY? WAS ANY ACTION NEEDED TO CORRECT UNACCEPTABLE READINGS?	15			
4	PRM App. SC	DOES A MINIMUM OF 4" HORIZ. AND 3" VERT. CLEARANCE EXIST BETWEEN THE OUTBOARD PENETRATION ENCLOSURES AND ITEMS SUPPORTED FROM THE CONTROL BUILDING STRUCTURE?				
5	PRM App SC	DOES THE FOLLOWING MINIMUM DISTANCE (HORIZ AND VERT.) EXIST BETWEEN INBOARD ENCLOSURES AND: STRUCTURAL STEEL - 2 1/4" ITEMS SUPPORTED FROM THE STRUCT STEEL - 3"				

PERFORMED BY

DATE

READINESS REVIEW CHECKLIST

NO. RR - 006 - 010A

PREPARED BY D. EDENFIELD		DATE 11 MAY 87	AUDIT NO.	PAGE 1 OF 4		
SAMPLE IDENTIFICATION COMPLETED DOCUMENTATION - CONSTRUCTION		AUDIT DATE		AREA		
TAG #		AUDITORS				
ITEM	REFERENCE	REQUIREMENT	FINDING / COMMENT	ACCEPT	REJECT	RESOLUTION
1	ED-T-04 para 5.6 REF 6-20 REF 6-47	IS THE ELECTRICAL INSTALLATION TURNOVER AND INSPECTION FORM PARTS 1,2, AND 3 COMPLETE AND FILED BY THE NUMBER IN THE OA VAULT?	PART 1 _____ PART 2 _____ PART 3 _____			
2	ED-T-04 REF 6-25	WAS THE ELECTRICAL INSTALLATION TURNOVER AND INSPECTION FORM PARTS 1,2, AND 3 COMPLETED IN THE PROPER SEQUENCE?				
3	CM-T-02 para 5.3.2 CM-A-02 para 5.6 REF 6-30	ARE THE COMPLETED MAINTENANCE RECORDS FILED IN THE VAULT BY EQUIPMENT TAG NUMBER. DO THE RECORDS COVER THE APPROPRIATE TIME PERIOD?				
PERFORMED BY			R. R. TEAM LEADER		DATE	

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CONTINUATION SHEET

ITEM	REFERENCE	REQUIREMENT	FINDING / COMMENT	ACCEPT	REJECT	RESOLUTION
4.	GD-T-25 para 5.1.13.1	<u>FIELD EQUIPMENT</u> <u>CHANGE ORDERS (FECOs)</u> FOR FECO'S CONTROLLING WORK ON SAFETY-RELATED EQUIPMENT, DID QUALITY CONTROL SIGN THE FOLLOWING TO INDICATE INSPECTIONS AND ACCEPTANCE OF THE WORK: - o BLOCK 3, FECO ROUTING COVER SHEET - o The Inspection Supervisor block on the inspection AND VERIFICATION Record stamp (initials + date)	INSPECTOR: _____ LEVEL II date: _____			
5	GD-T-25 para 5.4	WAS THE ORIGINAL FECO AND A COPY OF THE FECO ROUTING COVER SHEET RETURNED TO PROJECT ENGINEERING?				
6	GD-T-25 para 5.4	IS THE ORIGINAL FECO ROUTING COVER SHEET, AND A COPY OF THE FECO, AND MARKED UP DRAWINGS/ BACKUP INFORMATION FILED IN THE Q.A VAULT BY TAG # ?	LOCATION: _____			

PERFORMED BY _____

DATE _____

CONTINUATION SHEET

NO. RR- 006 - 010A

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PAGE 3 OF 4

ITEM	REFERENCE	REQUIREMENT	FINDING / COMMENT	ACCEPT	REJECT	RESOLUTION
		<u>COMPONENT REMOVALS (CR)</u>				
7	GD-T-27 para 5.3.1	IF THE CR CONTROLLED WORK ON A SAFETY-RELATED COMPONENT, DID QUALITY CONTROL SIGN THE CR?	INSPECTOR: _____ LEVEL II DATE: _____			
8	GD-T-27 para 5.6	IS THE CR FORM FILED BY ITEM TAG NUMBER? (LOCATION) _____				
PERFORMED BY		DATE				

READINESS REVIEW CHECKLIST

NO. RR- 006-010A

CONTINUATION SHEET

AUDIT NO.

PAGE 4 OF 4

ITEM	REFERENCE	REQUIREMENT	FINDING / COMMENT	ACCEPT	REJECT	RESOLUTION
9	GD-T-33, R/3 para 5.2.3	CHANGE CONTROL PACKAGE (CCP) FOR CCP'S THAT CONTROL WORK ON SAFETY-RELATED COMPONENTS, DID QUALITY CONTROL SIGN THE FOLLOWING: ° CCP COMPONENT LIST ° CCP COMPLETION FORM	INSPECTOR: _____ LEVEL II CERT: _____			
10	GD-T-33, R/3 para 5.4.2	DOES THE DISCIPLINE CCP COORDINATOR REVIEW THE DESIGN DOCUMENT REGISTER CCP CLOSEOUT REPORT FOR A "CLOSEOUT DATE"? DOES HE DESTROY THE CONTROLLED COPY OR STAMP IT "FOR INFORM- ATION ONLY" WHEN CLOSED OUT?				

PERFORMED BY

DATE

READINESS REVIEW CHECKLIST

NO. RR- 006-0108

PREPARED BY <i>J.A. Lovoy</i>	DATE <i>8 MAY 87</i>	AUDIT NO.	PAGE <i>1</i> OF <i>3</i>
SAMPLE IDENTIFICATION <i>CONSTRUCTION COMPLETION</i> <i>ELECTRICAL PENETRATIONS - DOCUMENTATION</i> <i>PENETRATION TAG NUMBER</i>		AUDIT DATE	AREA
AUDITORS			

ITEM	REFERENCE	REQUIREMENT	FINDING / COMMENT	ACCEPT	REJECT	RESOLUTION
<i>1</i>	<i>ED-T-19</i> <i>PARA 4.7,</i> <i>4.8 + 4.15,</i> <i>EXHIBIT 01</i> <i>(REV 2)</i>	<i>IS THE CONTROL AND</i> <i>TRACKING SYSTEM</i> <i>INSTALLATION CARD ON</i> <i>FILE IN THE QA VAULT?</i>	<i>INBOARD SIDE? _____</i> <i>OUTBOARD SIDE? _____</i>			
<i>2</i>	<i>CM-T-02,</i> <i>EXHIBIT 02,</i> <i>(PAGE 1);</i> <i>PARA 5.3.1</i> <i>(REV 0)</i> <i>RIF 6-30</i>	<i>IS A CMDR ON FILE FOR</i> <i>THE PENETRATION EITHER</i> <i>IN CMD FILES (FOR</i> <i>PENETRATIONS NOT TURNED</i> <i>OVER TO NUCLEAR</i> <i>OPERATIONS) OR IN THE</i> <i>VAULT (FOR TURNED OVER</i> <i>PENETRATIONS).</i>				
PERFORMED BY		DATE	R.R. TEAM LEADER	DATE		

READINESS REVIEW CHECKLIST

NO. RR- 006-010B

CONTINUATION SHEET

AUDIT NO.

PAGE 2 OF 3

ITEM	REFERENCE	REQUIREMENT	FINDING / COMMENT	ACCEPT	REJECT	RESOLUTION
2 (CONT)		B) DO SIGNATURES AND DATES ON CMOR(S) INDICATE CONTINUOUS MAINTENANCE AND QC APPROVAL PER THE INTERVAL SPECIFIED ON THE CMOR?				
3	ED-T-19 PARA A.4.6, A.7, EXHIBIT 02 (REV 2)	A) IS AN ELECTRIC PENETRATION ASSEMBLY LEAK TEST INSPECTION REPORT ON FILE IN THE QA VAULT FOR THE PENETRATION? B) IS THE LEAK TEST INSPECTION REPORT PROPERLY COMPLETED AND SIGNED BY THE QC INSPECTOR AND SUPERVISOR?				
PERFORMED BY		DATE				

READINESS REVIEW CHECKLIST

NO. RR- 006-0108

CONTINUATION SHEET

AUDIT NO.

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ITEM	REFERENCE	REQUIREMENT	FINDING / COMMENT	ACCEPT	REJECT	RESOLUTION
4	ED-T-19 PARA 4.10, 4.11, 4.14, EXHIBIT 04 (REV 2)	A) IS A PENETRATION TEST REQUEST ON FILE IN THE VAULT FOR THE PENETRATION. B) DID THE ELECTRICAL AREA ENGINEER SIGN AND DATE THE REQUEST INDICATING REVIEW AND APPROVAL?				
PERFORMED BY		DATE				

READINESS REVIEW CHECKLIST

NO. RR - 006 - 0114

PREPARED BY <i>D. EDEFIELD</i>		DATE <i>14 MAY 87</i>	AUDIT NO.	PAGE <i>1</i> OF <i>2</i>		
SAMPLE IDENTIFICATION DESIGN COMPLETION ACTIVITIES		AUDIT DATE	AREA			
AUDITORS						
ITEM	REFERENCE	REQUIREMENT	FINDING / COMMENT	ACCEPT	REJECT	RESOLUTION
1	PRM C4.3 C26.8	FIELD CHANGE REQUESTS (FCR) DESIGN CHANGE NOTICES (DCN) CONSTRUCTION SPECIFICATIONS (CSN) HAVE THE APPROVED CHANGES BEEN PROPERLY INCORPORATED INTO THE DESIGN DRAWINGS?				
2	PRM C4.8.1 C26.8.1	IF THE CHANGE WAS INCORPORATED WITH MODIFI- CATIONS, WAS THE MODIFICATION NON-TECHNICAL (EDITORIAL) ONLY?				
3	PRM C35.9	CHANGE CONTROL PACKAGE (CCP) ARE DCN'S AND APPROVED XFCR'S, EXCEPT THOSE WHICH ARE VOIDED OR USED FOR VOIDING, CONVERTED TO DCN'S WITHIN 10 WORKING DAYS AFTER RECEIPT OF THE CROCED OUT CCP FROM NUCLEAR OPERATIONS?				
PERFORMED BY		DATE	R R TEAM LEADER		DATE	

READINESS REVIEW CHECKLIST CONTINUATION SHEET

NO. RR - 006-011A

AUDIT NO.

PAGE 2 OF 2

ITEM	REFERENCE	REQUIREMENT	FINDING / COMMENT	ACCEPT	REJECT	RESOLUTION
4	PRM C9.3.3	<u>CALCULATIONS</u> IS ACTUAL FIELD DATA USED TO UPDATE AND/OR REVISE THE CALCULATION? IF THE CALCULATION REVISION INDICATES THE NEED FOR HARDWARE MODIFICATION, IS A DESIGN CHANGE DOCUMENT ISSUED?				
5	PRM C24.8	<u>FIELD EQUIPMENT CHANGE ORDER (FECO)</u> VERIFY THAT DESIGN CHANGE NOTICES AND DRAWINGS LISTED ON THE FECO REFERENCE THE FECO LOG AND REVISION NUMBER.				
6	PRM C4.8	VERIFY THAT DESIGN CHANGE NOTICES ISSUED AS PART OF A FECO HAVE BEEN PROPERLY INCORPORATED INTO THE DRAWINGS				

PERFORMED BY

DATE

READINESS REVIEW CHECKLIST

NO. RR- 006-0113

PREPARED BY D. EDENFIELD / J LOVOY	DATE 14 MAR 1987	AUDIT NO.	PAGE 1 OF 4
SAMPLE IDENTIFICATION FINALIZATIONAL WALKDOWNS		AUDIT DATE	AREA
AUDITORS			

ITEM	REFERENCE	REQUIREMENT	FINDING / COMMENT	ACCEPT	REJECT	RESOLUTION
1	HAIST 14/5.2.11 para 4 PRM C41	VERIFY THAT APPLICABLE PROCEDURES ARE ADEQUATE TO CONTROL THE FIELD WALKDOWN PROCESS SUCH THAT THE FOLLOWING REQUIREMENTS ARE VERIFIED: ◦ FSAR TABLE B.3.1-4 (FP-6) ◦ IOCFRSD APPA GDC4 (FP-2) ◦ PRM APPENDIX SC (FP-14)				

PERFORMED BY	DATE	R R TEAM LEADER	DATE
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READINESS REVIEW CHECKLIST

NO. RR- 006-012

PREPARED BY DAVID EDENFIELD	DATE 6-1-87	AUDIT NO.	PAGE 1 OF 3
SAMPLE IDENTIFICATION CONSTRUCTION ACCEPTANCE TESTS CAT # TAB #		AUDIT DATE	AREA
AUDITORS			

ITEM	REFERENCE	REQUIREMENT	FINDING / COMMENT	ACCEPT	REJECT	RESOLUTION
1	SUM-12A 5.5.1, 5.5.2	QC PERSONNEL SHALL REVIEW CAT PACKAGES PRIOR TO THE TESTS BEING PERFORMED ON EQUIPMENT THAT IS SAFETY-RELATED, SHALL ASSIGN HOLD POINTS AS NECESSARY, AND SHALL INDICATE THEIR REVIEW BY SIGNING AND DATING THE FRONT CAT DATA SHEET. (per 00201-C)				
2	SUM-5 6.3.4	PRIOR TO PERFORMING ANY ACTIVITY THAT REQUIRES THE DIRECT REFERENCE TO PROCEDURES IN ORDER TO PERFORM SUCH ACTIVITY, THE PROSPECTIVE USER SHALL ENSURE THAT: 1. THE LATEST REVISION IS ON HAND				

PERFORMED BY	DATE	R.R. TEAM LEADER	DATE
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READINESS REVIEW CHECKLIST

NO. RR- 006-012

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AUDIT NO.

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ITEM	REFERENCE	REQUIREMENT	FINDING / COMMENT	ACCEPT	REJECT	RESOLUTION
2 (cont.)	SUM 5 6.3.4	2. THE PROCEDURE TEXT IS COMPLETE AND INTACT 3. PERTINENT CHECKLISTS, DATA SHEETS, FIGURES, AND TABLES ARE INCLUDED AND ON HAND. 4. THE ACTIVITIES AND DIRECTIONS PROVIDED IN THE PROCEDURE ARE UNDERSTOOD.				
3	SUM 12-A 6.3.2	MAINTENANCE PERSONNEL PERFORMING GENERIC CAT'S SHOULD NOTIFY THE SHIFT SUPERVISOR AT THE BEGINNING AND END OF EACH CAT TEST IN PROGRESS.				
4	SUM 12-A 6.4.5	CAT PROCEDURE PRE-REQUISITES THAT AFFECT THE OPERATION OF EQUIPMENT SHALL BE MET PRIOR TO EQUIPMENT OPERATION.				
PERFORMED BY		DATE				

READINESS REVIEW CHECKLIST

NO. RR- 006-012

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AUDIT NO.

PAGE 3 OF 8

ITEM	REFERENCE	REQUIREMENT	FINDING / COMMENT	ACCEPT	REJECT	RESOLUTION
5	SUM 24 para 6.1.1	PERSONNEL PERFORMING ITP ACTIVITIES AFFECTING QUALITY SHALL BE CERTIFIED IN ACCORDANCE WITH SUM-24				
6	SUM 24 para 6.1.9	THE SUPERINTENDENT OF NUCLEAR TRAINING SHALL FORWARD ORIGINAL CERTIFICATION FORMS TO DOCUMENT CONTROL.				
PERFORMED BY			DATE			

READINESS REVIEW CHECKLIST

NO. KR- 076 -012

CONTINUATION SHEET

AUDIT NO.

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ITEM	REFERENCE	REQUIREMENT	FINDING / COMMENT	ACCEPT	REJECT	RESOLUTION
7	SUM-11 para 5.1	TEST PERSONNEL SHALL RECORD ALL DATA AS SPECIFIED BY THE PROCEDURE. ALL VERIFICATIONS OF INSPECTIONS OR PRE-REQUISITES SHALL BE INITIALED BY TEST PERSONNEL. ALL BLANK SPACES SHALL BE EITHER INITIALED, DATA FILLED IN, OR MARKED "N/A" SIGNIFYING THE STEP IS NOT APPLICABLE. IF ANY PROBLEMS ARISE DURING THE TEST, THE REMARKS SECTION IS WHERE THE PROBLEM SHOULD BE DETAILED.				
PERFORMED BY		DATE				

READINESS REVIEW CHECKLIST

CONTINUATION SHEET

NO. RR-026-012

AUDIT NO.

PAGE 5 OF 8

ITEM	REFERENCE	REQUIREMENT	FINDING / COMMENT	ACCEPT	REJECT	RESOLUTION
8	SUM 12-A 6.4.4	EACH BLANK SPACE ON A PROCEDURE SHALL BE FILLED IN WITH ONE OR MORE OF THE FOLLOWING AS APPLICABLE: - N/A (not applicable) IF THE N/A IS DUE TO THE WORK HAVING BEEN PREVIOUSLY PERFORMED, THE WORK DOCUMENT (MWD, etc) SHALL BE ENTERED. PERSONNEL WHO N/A PORTIONS OF THE GENERIC CATS SHALL INITIAL AND DATE EACH ENTRY. - DATE - INITIALS OF THE OBSERVER - SIGNATURE OF REQUIRED PERSONNEL - DATE OF ENTRY				

PERFORMED BY

DATE

READINESS REVIEW CHECKLIST

NO. RR- 006-012

CONTINUATION SHEET

AUDIT NO.

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ITEM	REFERENCE	REQUIREMENT	FINDING / COMMENT	ACCEPT	REJECT	RESOLUTION
9	SJM 12-A para 6.4.3	ERRORS IN RECORDING DATA SHOULD BE CORRECTED USING THE FOLLOWING STEPS: DRAW A SINGLE LINE THROUGH THE ORIGINAL ENTRY ENTER CORRECTION IN THE IMMEDIATE VICINITY INITIAL AND DATE THE CORRECTION				

PERFORMED BY

DATE

READINESS REVIEW CHECKLIST

NO. RR-006-012

CONTINUATION SHEET

AUDIT NO.

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ITEM	REFERENCE	REQUIREMENT	FINDING / COMMENT	ACCEPT	REJECT	RESOLUTION
10	SUM 12-C 6.4.11	IF THE PROCEDURE CONTAINS HOLD OR WITNESS POINTS THE TEST SUPERVISOR SHALL DO THE FOLLOWING: a) NOTIFY THE Q.C. DEPT. THAT HE IS PERFORMING A TEST AND HAS REACHED A HOLD OR WITNESS POINT. b) DO NOT PROCEED PAST A HOLD POINT UNTIL A Q.C. REPRESENTATIVE ARRIVES AND SIGNS AND DATES IN THE MARGIN OF DRAWERS PER 85301-C				

PERFORMED BY

DATE

READINESS REVIEW CHECKLIST

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NO. RR - 006-012

AUDIT NO.

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ITEM	REFERENCE	REQUIREMENT	FINDING / COMMENT	ACCEPT	REJECT	RESOLUTION
11	SUM 11 para 5.2.1	THE MAINTENANCE SUPV. OR DESIGNEE SHALL BE RESPONSIBLE FOR APPROVAL OF THE DATA. IF ALL DATA IS WITHIN THE ACCEPTANCE CRITERIA LIMITS HE MAY APPROVE THE DATA SHEET, SIGN AND DATE IT, AND UPON THE TEST SUPERVISOR'S APPROVAL SEND IT TO DOCUMENT CONTROL.				
12	SUM 11 para 5.3.2	DOCUMENT CONTROLS SHALL BE RESPONSIBLE FOR MAINTAINING ALL OFFICIAL DATA SHEETS.				

PERFORMED BY

DATE