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Vogtle Project
Readiness Review
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Vogtle Project

April 1, 1986

Mr. D. O. Foster
Vice President
Vogtle Project Support
Waynesboro, Ga. 30830

RE: Readiness Review Program
Module 18C
Diesel Generators

LOG: RR-846

FILE: X7BD102

Dear Mr. Foster:

Pursuant to your instructions I am enclosing Module 18C of the Readiness Review Program entitled Diesel Generators. This module reports the work of the Readiness Review Team and has been prepared in order to present you with an accurate picture of the readiness for operations of the Vogtle Project, based upon an close examination of the diesel generators program.

The scope of this module includes the diesel generators and associated support systems such as fuel oil and air start systems.

This module is restricted to an assessment of the implementation of project licensing commitments for the diesel generators and associated support systems. Other modules, as referenced in this module, include an assessment of those design and construction programs which include the design and construction work activities for the diesel generators.

The assessment in this module included a review of basic licensing documents to identify project commitments within the scope of the module. The Readiness Review Team then determined whether these commitments had been included in pertinent design and construction documents. The one finding identified during this review was determined to be of minor significance. The details and results of this review are presented in section 3 of the module.

Based on this module and the reviews described in other modules, as referenced herein, we are confident that the design and construction programs associated with the diesel generators have been adequately appraised, and that these programs will ensure that the installed diesel generators will meet design requirements and licensing commitments.

Members of the Readiness Review Team and I are prepared to discuss this module with you at your convenience. If we can provide you with any further information or assistance regarding this matter, contact me.

Very truly yours,

W. C. Ramsey

William C. Ramsey

WCR/bjd

cc: R. E. Conway
Readiness Review Board Members
Reading File
Document Control

VOGTLE ELECTRIC GENERATING PLANT

UNIT 1

READINESS REVIEW

MODULE 18C - DIESEL GENERATORS

Readiness Review - Module 18C

List of Effective Pages
April 3, 1986

Page	Revised Date
All pages unchanged	

PREFACE

Georgia Power Company (GPC), in order to gain added assurance of the operational readiness of the Vogtle Electric Generating Plant (VEGP), is conducting a pilot Readiness Review Program. The VEGP pilot Readiness Review Program is 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 approximately 20 modules. Each module is a predefined scope of VEGP activities.

Each module is intended to provide 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. If any differences exist between the commitments discussed in this document and the licensing documents, they are unintentional; and the licensing document governs.

Activities common to several modules are provided as General Appendixes. There are approximately 10 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 Readiness Review Program is being conducted on a schedule to provide added operational readiness assurance to GPC management in support of the VEGP Unit 1 operating license. However, 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, etc.; and to the same specifications and criteria.

Stone and Webster Engineering Corporation has been contracted to provide technical management for, and technical personnel to implement, the independent design review as a part of the Readiness Review program.

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 scope of work processes and regulatory commitment compliance covered by each module will be assessed by, and the module prepared and reviewed by, individuals collectively familiar with the design, construction, and operational 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 Discrepancy Reports and resulting dispositions are reviewed by the Readiness Review Program quality assurance staff and are input into the normal project process for safety significance and potential reportability evaluations in accordance with regulatory requirements.

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1.0 INTRODUCTION

1.1 SCOPE

Module 18C includes the diesel generator and associated support systems, such as the air-start, lubricating oil, and fuel oil systems.

Various design and construction work activities associated with the diesel generators are addressed in other modules, as described in sections 2.1 and 2.2, respectively, and are included for reference only. Testing and operational requirements are included within the scope of Module 3A, Initial Test Program, and Module 7, Plant Operations. The diesel generator quality assessment program, undertaken by the Project to address specific industry concerns regarding diesel generators, is discussed in this module.

In addition, this module contains a commitment implementation assessment performed by Readiness Review to determine whether licensing commitments within the scope of this module have been adequately included in project documents.

The effective date of this module is November 11, 1985. Relevant changes, if any, occurring after this date are not included.

1.2 MODULE ORGANIZATION

This module is divided into the following sections:

- Introduction
- Program Description - This section provides a brief description of design and construction activities associated with the diesel generators and their relationship to the subject matter of other modules. Also addressed is the quality assessment program, performed by the Vogtle Project, as a part of Trans America DeLaval Incorporated (TDI) Generator Owners Group Program to resolve specific industry-wide concerns.
- Commitment Implementation Assessment - This section addresses the evaluation of licensing commitments by Readiness Review to determine their implementation and the results of this review.
- Assessment - The evaluations and conclusions of the VEGP Readiness Review Board and Readiness Review Program quality assurance staff are stated in this section. In addition, resumes of the Readiness Review Team members for this module are provided.

1.3 VOGTLE PROJECT STATUS

The detail phases of the design process are complete. This included the issue of engineering drawings, procurement specifications, review of vendor design drawings and test data. The current activity of the engineering design group includes providing support to Unit 1 preoperational activities regarding test and maintenance activities.

The current diesel generator construction effort for Unit 1 has been completed. Preoperational tests of the diesel generators are scheduled to be completed approximately June 30, 1986.

2.0 PROGRAM DESCRIPTION

The following sections describe the identified programs for the standby diesel generators:

- o 2.1 Design.
- o 2.2 Construction.
- o 2.3 Diesel Generator Quality Assessment Program.

Module 18C provides references to other Readiness Review modules that describe the design and construction programs that govern the design and construction activities applicable to installation of the Vogtle diesel generators and associated systems and structures.

2.1 DESIGN

2.1.1 DIESEL GENERATOR DESCRIPTION

The Vogtle design specification X4AK01, Standby Diesel Generators, covers the performance, design, fabrication, inspection, tests, and delivery of four 7000 kW diesel generator units with auxiliaries. The auxiliaries include the cooling water system, engine lubricating oil system, air start system, fuel oil system, excitation system, local control panels, and motor control centers. The diesel generators, two per Plant Vogtle unit, have a rated output of 7000 kW, 0.8 pf, 3 phase, 60 Hz, 4160 V, and are capable of providing this output as standby power.

The diesel generator units are a part of the Class 1E system as defined in Institute of Electrical and Electronics Engineers (IEEE) standard 308-1974.

2.1.2 DIESEL GENERATOR DESIGN PROCESS

The diesel generators were designed and manufactured by Transamerica DeLaval Incorporated (TDI). Specific performance, design, fabrication, inspection, test, and delivery requirements for the diesel generators are set forth in specification X4AK01, the Vogtle Project Standby Diesel Generators.

The diesel generator associated support systems were designed by the Bechtel Power Corporation (BPC) Home Office Engineering (HOE) Group. This design effort included provisions such as proper foundation, support structure, installation, electrical/mechanical equipment interface, inlet/exhaust piping and supports, water to diesel engine cooling system, fuel oil

storage tanks, transfer pumps, transfer piping to day tanks, day tanks, piping from the day tank to the engine flange, piping, valves, and fittings.

The Vogtle Project Reference Manual (PRM), part C, contains the procedures for the preparation of design documents, including calculations, and the review of vendor documents. While this module includes certain design and construction documents associated with the diesel generators, the work activities associated with the diesel generators are addressed in other modules. Typical work activities are listed in Table 2-1, along with the module in which each activity is included.

2.1.3 DESIGN CRITERIA

The major design criteria for the diesel generators are contained in Design Criteria (DC)-1000-E; General Design Criteria (Electrical); DC-1821, Standby Power System; DC-2403, Diesel Generator Systems; and specification X4AK01, Standby Diesel Generators.

The diesel generator systems were designed in accordance with applicable provisions of the following Bechtel topical report and major design codes:

- BC-TOP-4A, Revision 3, Seismic Analyses of Structures and Equipment for Nuclear Power Plants.
- IEEE 387-1977, Criteria for Diesel Generator Units Applied as Standby Power Supplies for Nuclear Power Generating Stations.
- IEEE 308-1974, Standard Criteria for Class 1E Power Systems for Nuclear Power Generating Stations.
- IEEE 323-1974, Standard for Qualifying 1E Equipment for Nuclear Power Generating Stations.
- IEEE 344-1975, Recommended Practices for Seismic Qualification of 1E Equipment for Nuclear Power Generating Stations.
- NRC-BTP-1CSB-8(PSB), Use of Diesel Generator Sets for Peaking.
- NRC-BTP-PSB-2, Criteria for Alarms and Indications Associated with Diesel Generator Unit Bypass and Inoperable Status.
- NRC-NUREG/CR 0660, Enhancement of Onsite Diesel Generator Reliability.

- ASME Boiler and Pressure Vessel Code, Section III, Division 1, Class 1, 2, and 3, 1977 Edition with Addenda through Summer 1977, Nuclear Power Plant Components.

2.1.4 PROCUREMENT

PRM, part C, section 5, describes the processing of vendor data. The material specification (X4AK01) for the procurement of the diesel generators was developed and administered by the BPC HOE Mechanical Group. Vendor documents are processed through the Home Office Document Control Center. The type, quantity, and schedule for submittal of vendor documents are identified in section 17 (Drawing and Data Requirements) of the proposal form shown in specification X4AK01.

The organization of, and responsibility for, procurement activities are described in Appendix C, Procurement.

2.2 CONSTRUCTION

Construction activities which include installation and inspection of the diesel generators and associated hardware are addressed in the appropriate modules (Table 2-1).

2.3 DIESEL GENERATOR QUALITY ASSESSMENT PROGRAM

In 1983, several models of TDI diesel generators, including model DSRV-16, procured for Plant Vogtle, experienced problems that appeared to be generic in nature.

In late 1983, after several significant deficiencies were reported to the Nuclear Regulatory Commission (NRC) in compliance with requirements of 10 CFR 21 and 10 CFR 50.55(e), Georgia Power Company (GPC) and other owners of TDI diesel generators formed a TDI Owners Group in an effort to resolve these generic deficiencies.

2.3.1 TDI OWNERS GROUP PROGRAM

The TDI Owners Group established a comprehensive program which, through a combination of design reviews, quality revalidations, engine tests, and component inspections provided an in-depth assessment of the adequacy of the respective utilities' TDI engines to perform their intended safety-related functions.

This assessment consisted of three phases, as follows:

- Resolution of known generic problems.

- o Design review of important engine components and quality revalidation of important attributes of selected engine components.

- o Expanded engine testing and inspection recommendations.

2.3.1.1 Resolution of Generic Problems - Phase I

The first major program element (Phase I) involved the resolution of generic known problems. A review of the accumulated operational experience resulted in the conclusion by the Owners Group Technical staff that a limited number of components warranted priority attention and consideration because of significant known problems that had potentially generic applicability. The Owners Group technical staff and consultants conducted a technical assessment of the components and developed inspection procedures/guides.

The Owners Group identified inspection criteria for specific components to determine their acceptability. Components not meeting the acceptance criteria were replaced.

2.3.1.2 Comprehensive Design Review and Quality Revalidation - Phase II

The second major program element was a design review and quality revalidation of 171 engine components. The Owners Group established a design review and quality revalidation program to assess the quality and ability of each engine to reliably perform its intended function. Included, where appropriate, were inspection criteria and procedures. The effort was conducted by a team of engineering personnel with specialized skill in such fields as nondestructive testing, diesel generator design, operation, and manufacturing. This effort is further described in section 2.3.2.2. The results of this effort provided GPC and the Vogtle Project assurance of the quality and reliability of the diesel generators.

2.3.1.3 Maintenance and Surveillance Recommendations - Phase III

The third major program element involved specific component tests and inspections. The Owners Group Technical Staff, in evaluating specific engine components, provided technical recommendations to each owner regarding component inspections, preventive maintenance, and surveillance recommendations, which will give added assurance that the engines and components will perform their intended operational functions over the life of the plant. The implementation of these recommendations is a plant-specific function. The results of Phase III are further described in section 2.3.1.4.

2.3.1.4 Results

The results of the TDI Owners Group program, with regard to Vogtle, were provided to the NRC in a report entitled, TDI Diesel Generator Design Review and Quality Revalidation Report.

In conclusion, the three phases discussed in these paragraphs corrected actual and suspected faults in the engines. Further, the completion of the three phases has provided GPC assurance of the quality of the engines and that the engines will perform their intended function.

2.3.2 GPC ACTIVITIES

GPC instituted a program, TDI Emergency Diesel Generator Resolution Program, to define objectives, organization, division of responsibility, and interface requirements for the satisfactory closeout of diesel generator concerns.

2.3.2.1 Inspection of the Diesel Engines

GPC developed necessary procedures and equipment and began the disassembly of the stored diesel generators in April 1984. This initial work involved inspections, replacement of suspect parts, and reassembly prior to placement of the diesel generators in the diesel generator buildings. Subsequent to installation, additional inspections were performed. The work was performed by GPC Power Generation maintenance personnel and the initial work was monitored by representatives from TDI. The Owners Group contractors performed certain Nondestructive Examination (NDE) tests and inspections. GPC quality control (QC) and quality assurance (QA) personnel closely followed the work with documented inspections, audits, and surveillances. The work was documented in Maintenance Work Orders DP84-001 (1-84-00916), DP84-078 (1-84-00937), DP84-2000 (2-84-00002), DP84-1000 (2-84-00085), MWO-1-85-07978, and MWO 1-85-04381.

2.3.2.2 Diesel Generator Status

The Unit 1 diesel generators are currently undergoing preoperational tests. Approximately mid-March 1986, the diesel generators will be test operated in a 100-hour run.

Preoperational tests are scheduled for completion by mid-June 1986. The diesel generators are also scheduled for additional inspections and maintenance tests as prescribed by the Owners Group after achieving sufficient operational hours and number of starts.

Long-term maintenance recommendations of the Owners Group are being tracked on the Vogtle Maintenance Matrix for incorporation into Plant Vogtle maintenance procedures.

2.3.3 QUALITY ASSURANCE ACTIVITIES

Project QA, as noted above, has been involved in the review and inspection of items during the disassembly, reassembly, and evaluation of the diesel generators. In addition, the project QA program also included formal QA audits and QA surveillances (an informal review of an activity).

During the period from August 1984 through May 1985 five Vogtle site QA audits were performed. In addition, 87 QA surveillances were performed from March 1984 through February 1986.

The scope of the QA audits and their findings are as follows:

- Audit SP01-84/30, conducted May 7 through 11 and June 11 through 20, 1984.

  Scope: Included NRC concerns reported in Inspection and Enforcement (IE) Information Notice 82-56, specific portions of the special maintenance and QC procedures, and requirements from the vendor's instruction manual.

  Results: No Findings.

- Audit SP01-84/47, conducted July 2 through 16, 1984.

  Scope: Included portions of specially written procedures, applicable ANSI standards, the PRM, and NRC IE Circular 80-11.

  Results: Finding 669 was issued against Bechtel QA because of an inadequate response to IE Circular 80-11. The Bechtel response did not address all engine materials wetted by the engine coolant. Circular 80-11 required verification that the corrosion inhibitor used in the cooling water is compatible with all materials wetted by the cooling water.

  Resolution: The concern was resolved by Bechtel Letter (Log No. BG 32640). The letter noted that the vendor's Instruction Manual, AX4AK01-509-1, section 6-J, specified that the cooling water, treated with the corrosion inhibitor, is compatible with all materials wetted by the cooling water.

- Audit SP01-84/79, conducted October 23 through November 7, 1984.

  Scope: Included requirements from TDI procedures and Appendix 6 of the Project Policy and Procedures Manual including QC sign-off of hold points; procedure approvals, including changes; receipt inspections; material storage; etc.

  Results: Finding 713 was issued against GPC QC for inadequate completion of QA program records.

  Resolution: A subsequent QA review of inspector plans indicated the noted deficiencies had been corrected, and the audit finding was closed.

- Audit SP01-84/84, conducted December 17, 1984, through January 2, 1985.

  Scope: Included verification of inspections reported to the NRC, mechanical procedures, QC activities, and safety.

  Results: Finding 745 was issued against GPC Construction for not following torq[illegible] requirements. Finding 746 was issued against GPC [illegible]irement for not following interface requirements.

  Resolution: A letter from TDI provided clarification of the torquing requirements which resolved the concern, and finding 745 was closed. Appendix 6 of the Project Policy and Procedures Manual was revised to list the purchase order for the Unit 2 diesel generators, which corrected the interface concern, and Finding 746 was closed.

- Audit SP01-85/48, conducted April 8 through 16, 1985.

  Scope: Included the TDI diesel engine repair program documentation of the repair, proposed testing programs, storage and maintenance conditions, and control of design changes in addition to evaluations performed on NRC-identified potentially defective TDI items.

  Results: Finding 800 was issued against Vogtle Nuclear Operations for writing a preoperational test procedure which was not in compliance with the requirements of Regulatory Guide 1.108 and the FSAR.

  Resolution: Preoperational test procedure 1-3KJ-01 was revised to include the FSAR commitment for a 24-hour

load test in the prescribed sequence. This corrective action resolved the concern and the finding was closed.

The QA surveillance program verified site compliance with requirements of the TDI instruction manuals, GPC procedures, and Bechtel drawing requirements. These documents include requirements for storage, inspection, test, installation, assembly integrity, workmanship, and final physical appearance.

While the QA surveillance program documented numerous nonconforming conditions, there were no significant findings or generic problems determined to have adverse effects on the diesel generator activities. Nonconformances generally involved not following procedures, improper work, or inadequate personnel training. These surveillances were instrumental in recognizing nonconforming conditions at an early stage before they could become problems.

2.4 PROGRAM CONCLUSIONS

The diesel generator resolution program, with the resulting engine modifications, has provided assurance of the quality and the adequacy of the VEGP emergency diesel generators to perform their intended function. The results of the program has been submitted to the NRC.

TABLE 2-1 (SHEET 1 OF 3)

MODULES INCLUDING PROJECT WORK ACTIVITIES
ASSOCIATED WITH DIESEL GENERATORS

Module No.	Module Title	Work Activities[a]
1	Reinforced Concrete Structures	Design: Structural design of diesel generator building. Construction: The installation of concrete, rebar, cadwelds, associated quality control inspections. This work includes provisions for formwork, waterstop, waterproofing, rebar location for penetrations and block-outs, and, as required, control of cadweld splicing.
4	Mechanical Equipment and Piping	Design: System design (including vendor coordination) of mechanical aspects for the diesel generator and its auxiliaries (e.g., cooling water system, engine lube oil system, air start system, etc.). This effort also includes the preparation of the design specification (X4AK01) for the diesel generator, drawings (flow diagrams and piping and instrumentation diagrams) identifying equipment, piping, valves, and instruments. Piping material specifications and master valve lists were also developed to standardize the type of piping, valves, and fittings to be used for specific design conditions and service. Consideration of possible interactions resulting from internally generated missiles were identified and resolved. Construction: Installation and inspection of diesel generators and associated equipment with applicable piping. This activity includes programs covering maintenance and storage of the diesel generators and auxiliaries.

Module No.	Module Title	Work Activities[a]
6	Electrical Equipment	Design: Design activities as they pertain to the design and installation of Class 1 electrical equipment for the diesel generators. This activity includes electrical equipment systems design, controls wiring, physical design, and circuits and raceways for the diesel generators. The Electrical Group is supported by a specialty group responsible for environmental qualification of safety-related equipment. The Electrical Group also includes provisions for proper design of electrical penetrations, physical independence of electrical systems, overload protection, etc. Construction: Installation and inspection of diesel generators and associated equipment as it relates to electrical equipment. This activity also included provisions for the control of equipment maintenance and the storage of electrical equipment.
8	Structural Steel	Design: The design of Category I building steel, anchor bolts, embeds, etc. Construction: Installation and inspection of structural steel and embedments such as embedded steel, pipe sleeves, anchor bolts, strut channels, concrete insert plates, and Unistrut. Structural welding and control of weld filler materials was also performed during installation of the diesel generators.

TABLE 2-1 (SHEET 3 OF 3)

Module No.	Module Title	Work Activities[a]
11	Pipe Stress and Supports	Design: Pipe stress analysis and pipe support design for piping associated with the diesel generators. This equipment, such as air inlet and exhaust piping, cooling water piping to the engines and heat exchanger, and fuel oil system piping. Construction: Installation and inspection of pipe supports for the above stated piping.
12	Cable and Terminations	Design: Design activity associated with Class 1E cables and their associated terminations. This activity also includes medium and low voltage power, control, and instrumentation cables and their associated terminations. This effort performed on the diesel generators includes the EE580 cable and raceway program. Construction: Cable installation and associated terminations and inspections of the above stated items.
20	Instrumentation and Controls	Design: Design provisions for the diesel generator instrumentation and controls, which includes coordination and integration of vendor-supplied items. Construction: Installation and inspection of diesel generator instrumentation and controls.

a. The identified modules provide coverage of these work activities, in that the involved organizations, pertinent documentation, and key programs, as described in the referenced modules, include these activities.

3.0 COMMITMENT IMPLEMENTATION ASSESSMENT

3.1 INTRODUCTION

This section contains a listing of Final Safety Analysis Report (FSAR) licensing commitments and corresponding implementing documents applicable to the diesel generators. These commitments are presented in two matrixes, the commitment matrix and the implementation matrix. A brief explanation of the development process for each matrix is included. Differences, if any, between the commitments discussed in this section and the FSAR are unintentional and the commitments in the FSAR govern.

3.2 SUMMARY EVALUATION

Module 18C provides an assessment of the implementation of commitments into design documentation. Applicable design documents (e.g., project design criteria, specifications, drawings, etc.) were reviewed to ascertain whether commitments had been recognized by the applicable engineering discipline as a requirement of the detail design or construction effort, as appropriate. The reviewers concluded that applicable commitments made in the FSAR are implemented in design documents. However, during this review Finding 18C-1 was issued and satisfactorily resolved. This finding concerned a reference to an early revision level to Institute of Electrical and Electronics Engineers (IEEE) 387; the finding was categorized a level II. See section 3.7 for a description of this finding.

3.3 DEFINITIONS

An FSAR commitment is an obligation to comply with an industry standard, Regulatory Guide, Branch Technical Position, or owner plan of specific action, and other licensing documents.

An implementing document is the working level document that identifies project commitments applicable to the specific activity.

3.4 SOURCES

Commitments covered by this module are typically identified from the following sources:

- FSAR, including responses to Nuclear Regulatory Commission (NRC) questions.
- Responses to Inspection and Enforcement (I&E) Bulletins.
- Responses to generic letters.

These sources are reviewed for commitments based upon guidelines developed from the definition.

Implementation of commitments stated in the commitment matrix is typically contained in:

- Design criteria.
- Material specifications.
- Construction specifications.
- Construction procedures.

3.5 COMMITMENT MATRIX

Once identified by the Readiness Review Team, the commitments are placed on the commitment matrix. Information identifying the source, source section, and subject are also listed on the matrix. Any relevant comments concerning the commitments or subject of the section are indicated in the remarks column.

The commitment matrix is presented at the end of this section. Commitments on the matrix are accurate as of November 11, 1985, and reflect Amendment 19 of the FSAR.

3.6 IMPLEMENTATION MATRIX

After the commitments were identified, as shown in the commitment matrix, applicable design documents were reviewed to determine whether the applicable commitment has been incorporated. Documents reviewed during this review primarily included project design criteria. In those cases where a commitment was of specific detail and not included within the design criteria, material specifications or drawings were reviewed to determine appropriate inclusion of the commitment. See section 2.1.3 for a listing of major design criteria.

As a result of this review, one Finding (18C-1) was issued. This finding is described in section 3.7.

Results of this review are provided in the implementation matrix, which identifies the design document in which the commitment is incorporated. This matrix identifies the design criteria document revision in which the commitment was first implemented and the most recent revision that includes the commitment.

The implementation matrix is presented at the end of this section.

3.7 FINDINGS AND PROJECT RESPONSE

The results of the verification review are described in this section. This review for implementation of the 103 design commitments identified in the commitment matrix was satisfactorily completed.

It was concluded that all the commitments made in the FSAR are implemented in design documents; however, during this review, Finding 18C-1 was issued. Findings are categorized to indicate their importance, as follows:

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 concerns.

Level III — Violation of project procedures with no safety concerns.

A statement of this finding, the Project's response, and the Readiness Review conclusion are as follows:

- Finding 18C-1 (Level II)

  The FSAR, section 1.9.1, and the specification (X4AK01) for the diesel generator both specify 1977 as the applicable revision of IEEE-387. Further, applicable design criteria (DC) (e.g., DC-1821, section 2.0D) specify that the applicable revision dates for the standards are indicated in DC-1000-E. However, DC-1000-E, Revision 6, specifies 1972 as the applicable edition of IEEE-387.

  Project Response: The 1972 edition of IEEE-387 was compared to the 1977 edition and it was determined that the 1977 edition expanded on qualification requirements and testing analysis as well as adding a paragraph on preventive maintenance, inspection, and testing. DC-1000-E will be revised by April 18, 1986, to show IEEE-387-1977 to be consistent with the FSAR and specification X4AK01.

  Electrical Design Criteria document DC-1000-E did not show the correct applicable date for the IEEE standard because of an engineering oversight. To determine

whether this was an isolated incident, applicable dates of codes and standards in DC-1000-E were checked against FSAR sections 1.9 and 8. No other errors were found.

Readiness Review Conclusion: The project response is acceptable. The corrective action taken by the Project resolves the concern. This finding has been determined to have no effect on the design since specification X4AK01 and the FSAR included the proper edition of IEEE 387.

COMMITMENTS

SORTED BY SOURCE AND SECTION

COMMITMENT SOURCE	COMMITMENT SECTION	COMMITMENT SUBJECT	DOCUMENT/ FEATURE	RESPONSIBILITY DESIGN	RESPONSIBILITY CONST	REMARKS	REF NO.

EXPLANATION OF FIELDS

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

RESPONSIBILITY - An X is placed under the heading for the organization responsible for implementation of the commitment

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

COMMITMENTS

MODULE 18C - SORTED BY SOURCE & SECTION

COMMITMENT SOURCE	COMMITMENT SECTION	COMMITMENT SUBJECT	DOCUMENT/ FEATURE	RESPONSIBILITY DESIGN	RESPONSIBILITY CONST	REMARKS	REF NO
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		SEE FSAR SECTIONS 8.3.1.1.2.D, 8.1 AND 8.3	1601
FSAR	1. 9. 9	SELECTION, DESIGN AND QUALIFICATION OF DIESEL GENERATOR UNITS USED AS STANDBY POWER SUPPLY FOR NUCLEAR POWER PLANTS	RG 1.9, REV. 2, 12/79	X		VOLTAGE AND FREQUENCY REQUIREMENTS NOT MET DURING TIME OS. DURING LOAD CENTER ENERGIZATION REF. 8.3	113
FSAR	1. 9. 9	SELECTION, DESIGN AND QUALIFICATION OF DIESEL GENERATOR UNITS USED AS STANDBY POWER SUPPLY FOR NUCLEAR POWER PLANTS.	RG 1.108	X			117
FSAR	1. 9. 9	SELECTION, DESIGN AND QUALIFICATION OF DIESEL GENERATOR UNITS USED AS STANDBY POWER SUPPLY FOR NUCLEAR POWER PLANTS	IEEE 279-1971	X			118
FSAR	1. 9. 9	SELECTION, DESIGN AND QUALITY OF DIESEL-GEN. UNITS AS STANDBY POWER	IEEE 387-1977, SECT. 3.7.1	X			1514
FSAR	1. 9. 9	SELECTION, DESIGN AND QUAL. OF DIESEL-GEN. UNITS AS STANDBY POWER	IEEE 387-1977, SECT. 3.7.2	X			1515

COMMITMENTS

MODULE 18C - SORTED BY SOURCE & SECTION

COMMITMENT SOURCE	COMMITMENT SECTION	COMMITMENT SUBJECT	DOCUMENT/ FEATURE	RESPONSIBILITY DESIGN	RESPONSIBILITY CONST	REMARKS	REF NO
FSAR	1. 9. 9	SELECTION, DESIGN AND QUAL. OF DIESEL-GEN. UNITS AS STANDBY POWER	IEEE 308-1974 & 387-1977, SECT. 5.1.1	X		SUBJECT TO REG. GUIDE 1.32	1516
FSAR	1. 9. 9	SELECTION, DESIGN AND QUAL. OF DIESEL-GEN. UNITS AS STANDBY POWER	IEEE 387-1977, SECT. 5.1.2	X			1517
FSAR	1. 9. 9	SELECTION, DESIGN AND QUAL. OF DIESEL-GEN. UNITS AS STANDBY POWER	IEEE 323-1974 AND 387-1977, SECT. 5.4	X		SUBJECT TO REG. GUIDE 1.89	1518
FSAR	1. 9. 9	SELECTION, DESIGN AND QUAL. OF DIESEL-GEN. UNITS AS STANDBY POWER	IEEE 387-1977, SECT. 5.5	X		REF. RG 1.108	1519
FSAR	1. 9. 9	SELECTION, DESIGN AND QUAL. OF DIESEL-GEN. UNITS AS STANDBY POWER	IEEE 387-1977, SECT. 5.6.2.2	X			1520
FSAR	1. 9. 9	SELECTION, DESIGN AND QUAL. OF DIESEL-GEN. UNITS AS STANDBY POWER	IEEE 387-1977, SECT. 5.6.3.1	X			1521
FSAR	1. 9. 9	SELECTION, DESIGN AND QUAL. OF DIESEL-GEN. UNITS AS STANBY POWER	IEEE 387-1977 AND 344-1975	X		SUBJECT TO RG. 1.100	1522
FSAR	1. 9. 9	SELECTION, DESIGN AND QUAL. OF DIESEL-GEN. UNITS AS STANDBY POWER	IEEE 387-1977, SECT. 6.3.2(5)(c)	X			1523

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COMMITMENT SOURCE	COMMITMENT SECTION	COMMITMENT SUBJECT	DOCUMENT/ FEATURE	RESPONSIBILITY DESIGN	RESPONSIBILITY CONST	REMARKS	REF NO
FSAR	1. 9. 9	SELECTION, DESIGN AND QUAL. OF DIESEL-GEN. UNITS AS STANDBY POWER	IEEE 387-1977, SECT. 6.5	X		RG 1.108 SUPPLEMENTS	1524
FSAR	1. 9. 9	SELECTION, DESIGN AND QUAL. OF DIESEL-GEN. UNITS AS STANDBY POWER	IEEE 387-1977, SECT. 4	X			1525
FSAR	1. 9. 9	SELECTION, DESIGN AND QUAL OF DIESEL-GEN. UNITS AS STANDBY POWER	IEEE 387-1977, SECT. 6.3.2	X			1526
FSAR	1. 9. 9	SELECTION, DESIGN AND QUAL. OF DIESEL-GEN. UNITS AS STANDBY POWER	IEEE 387-1977, SECT. 6.3.1	X			1527
FSAR	1. 9. 61	DAMPING VALUES FOR SEISMIC DESIGN OF NUCLEAR POWER PLANTS	RG 1.61, 10/73	X		SEE FSAR 3.7.B.1, 3.7.N.1	707
FSAR	1. 9.100	SEISMIC QUALIFICATION OF CLASS IE ELECTRIC EQUIPMENT	RG 1.100 REV. 1, 8/77	X		SEE FSAR 3.10.B.2	175
FSAR	1. 9.137	FUEL-OIL SYSTEMS FOR STAND-BY DIESEL GENERATORS	RG 1.137, REV. 1, 10/79	X		REF. TECH. SPECS, REF. 9.5.4	1592
FSAR	1. 9.137	FUEL-OIL SYSTEMS FOR STAND-BY DIESEL GENERATORS	ANSI N195-1976	X		REF. TECH. SPECS, REF. 9.5.4	1593
FSAR	1. 9.137	FUEL-OIL SYSTEMS FOR STAND-BY DIESEL GENERATORS	10CFR50, APP. A, GDC 17	X		REF. TECH. SPECS, REF. 9.5.4	1594

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COMMITMENT SOURCE	COMMITMENT SECTION	COMMITMENT SUBJECT	DOCUMENT/ FEATURE	RESPONSIBILITY DESIGN	RESPONSIBILITY CONST	REMARKS	REF NO
FSAR	3. 1. 1	CONFORMANCE WITH NRC GENERAL DESIGN CRITERIA, OVERALL REQUIREMENTS	10CFR50, APP. A, GDC 2	X			785
FSAR	3. 1. 1	CONFORMANCE WITH NUCLEAR REGULATORY COMMISSION GENERAL DESIGN CRITERIA, OVERALL REQUIREMENTS	10CFR50, APP. A, GDC 5	X			4116
FSAR	3. 2. 2	VEGP SEISMIC DESIGN CLASSIFICATION SYSTEM	RG 1.29	X			1754
FSAR	3. 2. 2-1	PRINCIPAL CODES AND STANDARDS FOR T.3.2.2-1	DEMA (DIESEL ENGINE MFR. ASSOC.) STATIONARY DIESEL/GAS ENGINES-1971	X			864
FSAR	3. 2. 2-1	PRINCIPAL CONSTRUCTION CODE FOR TABLE 3.2.2-1.	ASME III, CLASS 1,2,3 OR MC, NF, OR CS	X	X	TABLE 3.2.2-1 NOTE (g)	880
FSAR	3. 2. 2-2	CONST. CODES/STDS. Q.G.-B FOR PRESSURE VESSELS, PIPING, PUMPS, VALVES, ATM. STORAGE TANKS, 0-15psig STORAGE TANKS, SUPPORTS, METAL CONT. COMP, CORE SUPPORT STRS.	ASME III, D.1, SUBSECTION NC, CLASS 2	X		TABLE 3.2.2-1, NOTE (g) SUBSECT. NF FOR SUPPORTS, SUBSECT. NE, CLASS MC FOR METAL CONT. COMP., SUBSECT. NG FOR CORE SUPPORT STRS. NSR	885
FSAR	3. 7.B. 3. 1.3	SEISMIC ANALYSIS OF CATEGORY 1 SUBSYSTEMS AND COMPONENTS	BC-TOP-4A	X			1011
FSAR	8. 1-1	ACCEPTANCE CRITERIA/GUIDELINES FOR ELECTRIC POWER SYSTEMS	RG 1.9	X			2367

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MODULE 18C - SORTED BY SOURCE & SECTION

COMMITMENT SOURCE	COMMITMENT SECTION	COMMITMENT SUBJECT	DOCUMENT/ FEATURE	RESPONS DESIGN	IBILITY CONST	REMARKS	REF NO
FSAR	8. 1-1	ACCEPTANCE CRITERIA/GUIDELINES FOR ELECTRIC POWER SYSTEMS	BTP ICSB 8(PSB)	X			2379
FSAR	8. 1-1	ACCEPTANCE CRITERIA/GUIDELINES FOR ELECTRIC POWER SYSTEMS	BTP PSB-2	X			2384
FSAR	8. 1-1	ACCEPTANCE CRITERIA/GUIDELINES FOR ELECTRIC POWER SYSTEMS	NUREG/CR 0660	X			2385
FSAR	8. 1. 4. 2.A	ONSITE POWER SYSTEM	10CFR50, APP.A, GDC 17	X			2180
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 17	X			4810
FSAR	8. 1. 4. 2.C	ONSITE POWER SYSTEM - DESIGN CONDITIONS AS VIBRATION, OVERSPEED	IEEE 387	X			4811
FSAR	8. 1. 4. 2.C	ONSITE POWER SYSTEM - SURVEILLANCE INSTR. AND TESTING.	IEEE 387	X		FSAR 59.5.4, 9.5.8,88.3.1.1.3	4812
FSAR	8. 1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS	10CFR50, APP. A, GDC 4	X			2
FSAR	8. 1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS	10CFR50, APP. A, GDC 5	X			3

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COMMITMENT SOURCE	COMMITMENT SECTION	COMMITMENT SUBJECT	DOCUMENT/ FEATURE	RESPONSIBILITY DESIGN	RESPONSIBILITY CONST	REMARKS	REF NO
FSAR	8. 1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS	10CFR50, APP. A, GDC 18	X			4
FSAR	8. 1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS	10CFR50, APP. A, GDC 50	X			5
FSAR	8. 1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS	RG 1.6	X			6
FSAR	8. 1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS	RG 1.9	X			7
FSAR	8. 1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS	RG 1.29	X			9
FSAR	8. 1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS	RG 1.32	X			11
FSAR	8. 1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS	RG 1.47	X			14
FSAR	8. 1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS	RG 1.53	X			15
FSAR	8. 1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS	RG 1.62	X			16
FSAR	8. 1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS	RG 1.75	X	X	SEE TABLE 8.1-1	18

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COMMITMENT SOURCE	COMMITMENT SECTION	COMMITMENT SUBJECT	DOCUMENT/ FEATURE	RESPONSIBILITY DESIGN	RESPONSIBILITY CONST	REMARKS	REF NO
FSAR	8. 1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS	RG 1.81	X			19
FSAR	8. 1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS	RG 1.89	X			20
FSAR	8. 1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS	RG 1.93	X			21
FSAR	8. 1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS	RG 1.100	X			22
FSAR	8. 1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS	IEEE 308-1974	X			27
FSAR	8. 1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS	IEEE 323-1974	X			29
FSAR	8. 1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS	IEEE 334-1974	X			30
FSAR	8. 1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS	IEEE 336-1971		X		31
FSAR	8. 1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS	IEEE 344-1975	X			32
FSAR	8. 1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS	IEEE 379-1972	X			33

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COMMITMENT SOURCE	COMMITMENT SECTION	COMMITMENT SUBJECT	DOCUMENT/ FEATURE	RESPONSIBILITY DESIGN	RESPONSIBILITY CONST	REMARKS	REF NO
FSAR	8. 1. 4. 3	DESIGN CRITERIA, REGULATORY GUIDES AND IEEE STANDARDS	IEEE 384-1974	X	X		38
FSAR	8. 1. 4. 3	COMPLIANCE WITH RG & IEEE STANDARDS	IEEE 387-1972	X			2358
FSAR	8. 3. 1. 1	AC POWER SYSTEM CLASS 1E -SHARING OF SYSTEM BETWEEN UNITS	RG 1.32	X			99
FSAR	8. 3. 1. 1	AC POWER SYSTEM, CLASS 1E, SHARING OF SYSTEMS BETWEEN UNITS	RG 1.81	X			100
FSAR	8. 3. 1. 1	AC POWER STANDBY POWER SUPPLY	RG 1.9	X			101
FSAR	8. 3. 1. 1	TIME FOR LOADING D/G STANDBY POWER SUPPLY	DIESEL GENERATOR- DESIGNED TO ACCEPT LOADS WITHIN 9.5 SEC. AFTER RECEIPT OF START SIGNAL	X			4816
FSAR	8. 3. 1. 1	DIESEL GENERATOR RATING CRITERIA	7000 KW (CONTINUOUS OPERATION), 7700 KW (SHORT TERM (2-h) PERIOD EVERY 24h.)	X			4818
FSAR	8. 3. 1. 5	SRP EVALUATION	IEEE 323-1974	X			93
FSAR	9. 5. 4. 1	DESIGN OF DIESEL GENERATOR FUEL SYSTEM	ANSI N195-1976	X			3587
FSAR	9. 5. 4. 1	DESIGN OF DIESEL GENERATOR FUEL SYSTEM	RG. 1.26 QUALITY GROUP C	X			3588

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COMMITMENT SOURCE	COMMITMENT SECTION	COMMITMENT SUBJECT	DOCUMENT/ FEATURE	RESPONSIBILITY DESIGN	RESPONSIBILITY CONST	REMARKS	REF NO
FSAR	9. 5. 4. 1	DIESEL GENERATOR FUEL OIL SYSTEM DESIGN AND CONSTRUCTION	RG 1.29 SEISMIC CAT. 1	X			3589
FSAR	9. 5. 4. 2	INSTALLATION OF F.O. STORAGE TANK	29 CFR 1910 SUBPART H, SECTION 1910.106	X			3591
FSAR	9. 5. 4. 4	TESTING OF D/G F.O. SYSTEM	ASME III, CLASS 3	X		NIL DUCTILITY TRANSITION NOT REQM	3592
FSAR	9. 5. 5-1	EMERGENCY DIESEL ENGINE COOLING WATER SYSTEM COMPONENT DATA	DESIGN CODES AND STDS.	X		TABLE	3599
FSAR	9. 5. 5. 1	COOLING WATER SYSTEM	DESIGNED TO REMAIN FUNCTIONAL DURING AND AFTER SSE	X			3593
FSAR	9. 5. 6-1	DIESEL GENERATOR STARTING SYSTEM COMPONENT DATA	DESIGN CODES AND STDS.	X		TABLE	3600
FSAR	9. 5. 6-1	DIESEL GENERATOR STARTING SYSTEM COMPONENT DATA	DESIGN CODES AND STDS.	X		TABLE	3859
FSAR	9. 5. 6. 2	RATING CONDITION FOR AIR DRYERS OF D/G COMPRESSOR	NFPA T3.27.2(1976)CLASS H	X			3594
FSAR	9. 5. 7-1	DIESEL GENERATOR LUBRICATION SYSTEM DESIGN PARAMETERS	DESIGN CODES AND STDS.	X		TABLE	3601
FSAR	9. 5. 7. 1	D/G LUBRICATION SYSTEM-DESIGN BASIS	DESIGNED TO REMAIN FUNCTIONAL DURING AND AFTER SSE	X		X	3595

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COMMITMENT SOURCE	COMMITMENT SECTION	COMMITMENT SUBJECT	DOCUMENT/ FEATURE	RESPONSIBILITY DESIGN	RESPONSIBILITY CONST	REMARKS	REF NO
FSAR	9. 5. 7. 1	D/G LUBRICATION SYSTEM-DESIGN BASIS	A SINGLE FAILURE WITH L.O.O.P. CANNOT RESULT IN COMPLETE LOSS OF STANDBY POWER SOURCE FUNCTION	X			3596
FSAR	9. 5. 8-1	DIESEL ENGINE AIR INTAKE AND EXHAUST SYSTEM DESIGN PARAMETER	DESIGN CODES	X		TABLE	3602
GENERIC LETTER CORR.	C-84/00/00	TDI DIESEL GENERATOR SHOP TESTS	DEMA STANDARDS	X		ATTACHMENT TO LETTER NO. GN 84-27 (NO DATE ON LETTER)	4504
GENERIC LETTER CORR.	C-85/01/14	TDI DIESEL GENERATOR SHOP TESTS	IEEE 387-1977, PARA. 6.1.2 & 6.2	X			4505
NRC QUEST. CORRES.	Q210. 14	SAFETY-RELATED PORTIONS OF DIESEL GENERATOR SYSTEM	ASME III, CLASS 3	X		Q210.12 COMPONENTS LISTED IN A,B,C. RESPONSE TO QUESTION	4225
NRC QUEST. CORRES.	Q430. 4	DIESEL GENERATOR AVAILABILITY	IEEE 323-1974 (QUALIFICATIONS)	X		AMEND. 13	4788
NRC QUEST. CORRES.	Q430. 6	DIESEL GENERATOR PIPE AND COMPONENTS WITHIN AUX. MODULE (SKID)	ASME SECT. III, CL. 3	X		RESPONSE TO QUESTION.	4175
NRC QUEST. CORRES.	Q430. 6	PRESSURE CONNECTIONS TO DIESEL GENERATOR ENGINER	ASME RATED EXPANSION COUPLING	X		RESPONSE TO QUESTION	4185
NRC QUEST. CORRES.	Q430. 006	PRESSURE CONNECTIONS TO DIESEL GENERATOR ENGINE	ANSI STD. NPT THREADED	X		RESPONSE TO QUESTION	4184
NRC QUEST. CORRES.	Q430. 10	DIESEL GENERATORS: STARTING AIR RECEIVERS DESIGN	ASME SECT. III, CL. 3	X		RESPONSE TO QUESTION.	4176

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COMMITMENT SOURCE	COMMITMENT SECTION	COMMITMENT SUBJECT	DOCUMENT/ FEATURE	RESPONSIBILITY DESIGN	RESPONSIBILITY CONST	REMARKS	REF NO
NRC QUEST. CORRES.	Q430. 16	DIESEL GENERATOR FUEL OIL STORAGE CAPACITY	RG 1.137	X		RESPONSE TO QUESTION	4177
NRC QUEST. CORRES.	Q430. 41	COMBUSTION AIR INTAKE PIPING DESIGN REQUIREMENTS	ASME SECT. 3, CL. 3	X		RESPONSE TO QUESTION	4178
NRC QUEST. CORRES.	Q430. 41	DIESEL GENERATOR ENGINE EXHAUST PIPING DESIGN REQUIREMENTS	ANSI B31.1 WITH ALLOWABLE STRESSES IN ACCORDANCE WITH ASME, SECT. III	X		RESPONSE TO QUESTION	4179
NRC QUEST. CORRES.	Q430. 45	DIESEL GENERATOR ENGINE DUST CONTROL	NEMA 12	X		AMEND. 13	4781
NRC QUEST. CORRES.	Q430. 67	DG QUALIFICATION	IEEE 344-1975	X			4282

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DOCUMENT/FEATURE	SECTION	DESIGN LAST	DESIGN FIRST	CONST LAST	CONST FI'	REMARKS	REF NO.

EXPLANATION OF FIELDS

DOCUMENT/FEATURE – The document discussed in the FS[illegible] section or the plant feature described in the FSAR section. (See Commitment Matrix.)

SECTION – The section of the document/feature that is being dis[illegible]d

DESIGN LAST, CONST LAST – "Last" indicates the project document currently containing the information found in the commitment

DESIGN FIRST, CONST FIRST – "First" indicates the project document that contained the information found in the commitment when the activities governed by the document first began.

REF NO. – A reference number that corresponds to the appropriate line entry in the commitment matrix.

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DOCUMENT/FEATURE	SECTION	DESIGN LAST	DESIGN FIRST	CONST LAST	CONST FIRST	REMARKS	REF NO
10CFR50, APP. A, GDC 4		DC-2403-1.0, 3.1.F, REV. 3, 5-2-79, DC-1821-1.0, REV. 5, 5-2-83	DC-2403-1.0, 3.1.F, REV. 2, 12-6-77, DC-1821-1.0, REV. 5, 5-2-83				2.00
10CFR50, APP. A, GDC 5		DC-1821-1.0, REV. 5, 5-2-83, DC-2403-1.0, REV. 3, 5-2-79	DC-1821-1.0, REV. 5, 5-2-83, DC-2403-1.0, REV. 3, 5-2-79				3.00
10CFR50, APP. A, GDC 18		DC-2403-1.0, REV. 3, 5-2-79, DC-1821-1.0, REV. 5, 5-2-79	DC-2403-1.0, REV. 0, 7-17-83, DC-1821-1.0, REV. 0, 3-14-74				4.00
10CFR50, APP. A, GDC 50		DC-1818-1.0, REV. 3, 8-22-85	DC-1818-1.0, REV. 1, 6-21-77				5.00
RG 1.6-1971		DC-1000-E-2.0.D. 2, REV. 6, 8-29-85, DC-1821-1.0, 3.1.C, REV. 5, 5-2-83	DC-1000-E-2.0.D. 2, REV. 2, 12-13-77, DC-1821-1.0, 3.1.C, REV. 1, 4-19-74				6.00
RG 1.9-1979		DC-1000-E-2.0.D. 2, REV. 6, 8-29-85, DC-1821-1.0, 3.1.B, REV. 5, 5-2-83, DC-2403-1.0, 3.3.A, REV. 3, 5-2-79, X4AE01-2.0.15, REV. 7, 11-5-85	DC-1000-E-2.0.D. 2, REV. 2, 12-13-77, DC-1821-1.0, 3.1.B, REV. 3, 8-25-77, DC-2403-1.0, 3.3.A, REV. 2, 12-6-77, X4AE01-2.0.15, REV. 1, 9-12-78				7.00

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DOCUMENT/FEATURE	SECTION	DESIGN LAST	DESIGN FIRST	CONST LAST	CONST FIRST	REMARKS	REF NO
RG 1.29-1978		DC-1000-E-2.0.D. 2, REV. 6, 8-29-85, DC-1010-1.0, TABLE 1, SH. 60 THRU 63, REV. 4, 6-29-83, X4AK01-2.0.15, REV. 7, 11-5-85	DC-1000-E-2.0.D. 2, REV. 2, 12-13-77, DC-1010-1.0, TABLE 1, SH. 60 THRU 63, REV. 3, 8-11-81, X4AK01-2.0.15, REV. 1, 9-12-78				9.00
RG 1.32-1977		DC-1000-E-2.0.D. 2, REV. 6, 8-29-85, DC-1821-1.0, REV. 5, 5-2-83, X4AK01-2.0.7, REV. 7, 11-5-85	DC-1000-E-2.0.D. 2, REV. 2, 12-13-77, DC-1821-1.0, REV. 1, 4-19-74, X4AK01-2.0.7, REV. 1, 9-12-78			IMPLEMENTATIO N PER IEEE 308-1974	11.00
RG 1.47-1973		DC-1000-E-2.0.D. 2, REV. 6, 8-29-85, DC-1821-1.0, REV. 5, 5-2-83, X4AK01-2.0.7, REV. 7, 11-5-85	DC-1000-E-2.0.D. 2, REV. 2, 12-13-77, DC-1821-1.0, REV. 5, 5-2-83, X4AK01-2.0.7, REV. 1, 9-12-78			IMPLEMENTATIO N PER IEEE-279-1971 , PARA. 4.13	14.00
RG 1.53-1973		DC-2403-2.0.D, REV. 3, 5-2-79, X4AK01-2.0.7, REV. 7, 11-5-85	DC-2403-2.0.D, REV. 2, 12-6-77, X4AK01-2.0.7, REV. 1, 9-12-78			IMPLEMENTATIO N PER IEEE 279-71, SECT. 4.2	15.00

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DOCUMENT/FEATURE	SECTION	DESIGN LAST	DESIGN FIRST	CONST LAST	CONST FIRST	REMARKS	REF NO
RG 1.62-1973		DC-2403-2.0.D, REV. 3, 5-2-79, X4AK01-2.0.7, REV. 7, 11-5-85	DC-2403-2.0.D, REV. 2, 12-6-77, X4AK01-2.0.7, REV. 1, 9-12-78			IMPLEMENTATION PER IEEE 279-71, SECT. 4.17	16.00
RG 1.75-1978		DC-1821-1.0, 3.1.C, REV. 5, 5-2-83, DC-2403-2.0.D.6, REV. 3, 5-2-79, X4AK01-2.0.15, REV. 7, 11-5-85	DC-1821-1.0, 3.1.C, REV. 4, 12-18-78, DC-2403-2.0.D.6, REV. 2, 12-6-77, X4AK01-2.0.15, REV. 1, 9-12-78	ED-T-07, REV. 9, 7-18-85, ED-T-08, REV. 7, 7-18-85	ED-T-07, REV. 4, 4-7-83, ED-T-08, REV. 2, 8-19-82	IMPLEMENTATION PER IEEE 384-1975	18.00
RG 1.81-1975		DC-1821-1.0, REV. 5, 5-2-83, DC-1000-E-2.0.D.2, REV. 6, 8-29-85	DC-1821-1.0, REV. 5, 5-2-83, DC-1000-E-2.0.D.2, REV. 2, 12-13-77				19.00
RG 1.89-1984		DC-1000-E-2.0.D.2, REV. 6, 8-29-85, DC-2403-2.0.D.3 & 5, REV. 3, 9-19-85, DC-1821-2.0.B, REV. 5, 5-2-83, X4AK01-2.0.15, REV. 7, 11-5-85	DC-1000-E-2.0.D.2, REV. 2, 12-13-77, DC-2403-2.0.2, REV. 1, 12-19-73, DC-1821-2.0.B, 1.0, REV. 4, 12-18-78, X4AK01-2.0.15, REV. 1, 9-12-78			IMPLEMENTATION PER IEEE 323-1974 AND IEEE 344-1975	20.00

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DOCUMENT/FEATURE	SECTION	DESIGN LAST	DESIGN FIRST	CONST LAST	CONST FIRST	REMARKS	REF NO
RG 1.93-1974		DC-1000-E-2.0.D. 2, REV. 6, 8-29-85, DC-1821-2.0.D, REV. 5, 5-2-83	DC-1000-E-2.0.D. 2, REV. 2, 12-13-77, DC-1821-2.0.D, 1.0, REV. 4, 12-18-78				21.00
RG 1.100-1977		DC-1821-2.0.B, REV. 5, 5-2-83, DC-2403-2.0.D.5, REV. 3, 5-2-79, X4AK01-2.0.15, REV. 7, 11-5-85	DC-1821-2.0.B, 1.0, REV. 4, 12-18-78, DC-2403-2.0.2, REV. 1, 12-19-73, X4AK01-2.0.15, REV. 1, 9-12-78			IMPLEMENTATIO N PER IEEE 344-1975	22.00
IEEE 308-1974		DC-1821-2.0.B, REV. 5, 5-2-83, DC-2403-2.0.D.2, REV. 3, 5-2-79, X4AK01-2.0.7, REV. 7, 11-5-85	DC-1821-2.0.2, REV. 1, 4-19-74, DC-2403-2.0.2, REV. 1, 12-19-73, X4AK01-2.0.7, REV. 1, 9-12-78				27.00
IEEE 323-1974		DC-1821-2.0.B, REV. 5, 5-2-83, DC-2403-2.0.D.3, REV. 3, 5-2-79, X4AK01-2.0.7, REV. 7, 11-5-85	DC-1821-2.0.C, REV. 3, 8-26-77, DC-2403-2.0.2, REV. 1, 12-19-73, X4AK01-2.0.7, REV. 1, 9-12-78				29.00

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MODULE 18C - SORTED BY REFERENCE NUMBER

DOCUMENT/FEATURE	SECTION	DESIGN LAST	DESIGN FIRST	CONST LAST	CONST FIRST	REMARKS	REF NO
IEEE 334-1974		DC-1000-E-2.0.D, REV. 6, 8-29-85, DC-1821-2.0.D, REV. 5, 5-2-83, X4AF04-APP. AB, 2.2, REV. 6, 11-5-84	DC-1000-E-2.0.D, REV. 2, 12-13-77, DC-1821-2.0.E, REV. 3, 8-25-77, X4AF04-APP. AB, 2.2, REV. 2, 2-8-79				30.00
IEEE 336-1971				ED-T-04, REV. 6, 11-21-84, ED-T-19, REV. 1, 12-21-84, GD-A-30, REV. 8, 9-19-84, GD-A-08, REV. 14, 12-5-84, QC-A-01, REV. 3, 3-7-85, GD-T-01, REV. 11, 6-18-84, DC-A-06, REV. 9, 8-14-84, GD-T-09, REV. 7, 2-15-85, GD-T-31, REV. 0, 7-13-84	ED-T-04, REV. 1, 4-17-80, ED-T-19, REV. C, 5-11-83, GD-A-30, REV. 0, 9-17-79, GD-A-08, REV. 0, 6-28-78, QC-A-01, REV. 0, 1-7-83, GD-T-01, REV. 0, 2-17-77, DC-A-06, REV. 0, 12-4-78, GD-T-09, REV. 0, 9-25-79, GD-T-31, REV. 0, 7-13-84		31.00
IEEE 344-1975		DC-1000-E-2.0.D, REV. 6, 8-29-85, DC-1821-2.0.B, REV. 5, 5-2-83, DC-2403-2.0.D.5, REV. 3, 5-2-79, X4AK01-2.0.7, REV. 7, 11-5-85	DC-1000-E-2.0.D, REV. 2, 12-13-77, DC-1821-2.0.1, REV. 2, 12-20-74, DC-2403-2.0.2, REV. 1, 12-19-73, X4AK01-2.0.7, REV. 1, 9-12-78				32.00

IMPLEMENTATION

MODULE 18C - SORTED BY REFERENCE NUMBER

DOCUMENT/FEATURE	SECTION	DESIGN LAST	DESIGN FIRST	CONST LAST	CONST FIRST	REMARKS	REF NO
IEEE 379-1972		DC-1821-2.0.B, REV. 5, 5-2-83, DC-1009-2.0, REV. 2, 6-3-83	DC-1821-2.0.B, REV. 5, 5-2-83, DC-1009-2.0, REV. 1, 3-12-81				33.00
IEEE 384-1974		DC-2403-2.0.D.6, REV. 3, 5-2-79, DC-1821-2.0.B, REV. 5, 5-2-83, X4AK01-2.0.7, REV. 7, 11-5-85	DC-2403-2.0.D.6, REV. 2, 12-6-77, DC-1821-2.0.C, REV. 3, 8-25-77, X4AK01-2.0.7, REV. 1, 9-12-78	ED-T-07, REV. 9, 7-18-85, ED-T-08, REV. 7, 7-18-85	ED-T-07, REV. 4, 4-7-85, ED-T-08, REV. 2, 8-19-82		35.00
IEEE 323-1974		SEE REMARKS				FOR DESIGN IMPLEMENTATION, SEE REF. NO. 29	93.00
RG 1.32-1977		SEE REMARKS				FOR DESIGN IMPLEMENTATION, SEE REF. NO. 11	99.00
RG 1.81-1975		SEE REMARKS				FOR DESIGN IMPLEMENTATION, SEE REF. NO. 19	100.00
RG 1.9-1979		SEE REMARKS				FOR DESIGN IMPLEMENTATION, SEE REF. NO. 7	101.00

IMPLEMENTATION

MODULE 18C - SORTED BY REFERENCE NUMBER

DOCUMENT/FEATURE	SECTION	DESIGN LAST	DESIGN FIRST	CONST LAST	CONST FIRST	REMARKS	REF NO
RG 1.9, REV. 2, 12/79	ALL	DC-1000-E, REV. 6, 8-85, SECT. 2.0.D.2, DC-1823, REV. 3, 2-84, SECT. 1.0, RG, DC-1821, REV. 5, 5-83, SECT. 1.0, RG, DC-1804, REV. 5, 10-85, SECT. 1.0, RG	DC-1000-E, REV. 2, 12-13-77, SECT. 2.0.D.2, DC-1823, REV. 1, 4-1-77, SECT. 1.0, RG, DC-1821, REV. 1, 4-19-74, SECT. 1.0, RG, DC-1804, REV. 5, 10-2-85, SECT. 1.0, RG				113.00
RG 1.108, REV. 1, 8/77	ALL	DC-1000-E, REV. 6, 8-85, SECT. 2.0.D.2, DC-1821, REV. 5, 5-83, SECT. 1.0, RG, DC-1823, REV. 3, 2-84, SECT. 1.0, RG	DC-1000-E, REV. 2, 2-13-77, SECT. 2.0.D.2, DC-1821, REV. 4, 12-18-78, SECT. 1.0, RG, DC-1823, REV. 1, 4-1-77, SECT. 1.0, RG				117.00
IEEE 279-1977	ALL	DC-1000-E, REV. 6, 8-85, SECT. 2.0.D.2, DC-1804, REV. 5, 10-85, SECT. 3.1.J, DC-1805, REV. 5, 8-85, SECT. 2.0, DC-1806, REV. 5, 8-85, SECT. 2.0.A, DC-1816, REV. 3, 9-85, SECT. 2.0, DC-2403, REV. 3, 5-79, SECT. 2.0.D, DC-1009, REV. 2, 6-83, SECT. 2.0	DC-1000-E, REV. 2, 12-13-77, SECT. 2.0.D.1, DC-1804, REV. 2, 10-3-77, SECT. 2.0, DC-1805, REV. 0, 6-6-74, SECT. 2.0.1, DC-1806, REV. 2, 10-13-77, SECT. 2.0.C, DC-1816, REV. 0, 5-27-77, SECT. 2.0, DC-2403, REV. 2, 12-6-77, SECT. 2.0.D.1				118.01

IMPLEMENTATION

MODULE 18C - SORTED BY REFERENCE NUMBER

DOCUMENT/FEATURE	SECTION	DESIGN LAST	DESIGN FIRST	CONST LAST	CONST FIRST	REMARKS	REF NO
IEEE 279-1977	ALL	DC-1624, REV. 2, 6-83, SECT. 2.0, DC-1625, REV. 1, 8-83, SECT. 2.0, DC-1623, REV. 1, 5-83, SECT. 2.0.1.	DC-1009, REV. 0, 3-23-77, SECT. 2.0, DC-1624, REV. 0, 4-28-78, SECT. 2.0, DC-1625, REV. 0, 2-5-79, SECT. 2.0, DC-1623, REV. 0, 7-7-77, SECT. 2.0				118.02
RG 1.100, REV. 1, 8/77	ALL	DC-1000-E, REV. 6, 8-29-85, SECT. 2.0.D.2, DC-2403, REV. 3, 5-2-79, SECT. 2.0.D.5, SPEC. X4AK01, REV. 7, 11-5-85, SECT. 3.3.3	DC-1000-E, REV. 2, 12-13-77, SECT. 2.0.D.2, DC-2403, REV. 0, 7-17-73, SECT. 2.0.2, SPEC. X4AK01, REV. 4, 6-30-84, SECT. 3.3.3			IMPLEMENTATION PER IEEE-344, 1975	175.00
RG 1.61, 10/73	ALL	SPEC. X4AK01, REV. 7, 11-5-85, SECT. 3.3.3	SPEC. X4AK01, REV. 4, 6-30-84, SECT. 3.3.3			DAMPING VALUES CONTAINED IN IEEE-344, 1975	707.00
10CFR50, APP. A	GDC-2	DC-1821, REV. 5, 5-2-83, SECT. 1.0, GDC, DC-2403, REV. 3, 5-2-79, SECT. 1.0, GDC	DC-1821, REV. 5, 5-2-83, SECT. 1.0, GDC, DC-2403, REV. 0, 7-17-73, SECT. 1.0, GDC				785.00

IMPLEMENTATION

MODULE 18C - SORTED BY REFERENCE NUMBER

DOCUMENT/FEATURE	SECTION	DESIGN LAST	DESIGN FIRST	CONST LAST	CONST FIRST	REMARKS	REF NO
DEMA 1971 (DIESEL ENGINE MFG. ASSOC.)	ALL	DC-2403, REV. 3, 5-2-79, SECT. 2.0.C.2, SPEC. X4AK01, REV. 7, 11-5-85, SECT. 4.1 & 5.3.1	DC-2403, REV. 3, 5-2-79, SECT. 2.0.C.2, SPEC. X4AK01, REV. 0, 2-14-74, SECT. 4.1 & 5.3.1				864.00
ASME III, CLASS 1,2,3 OR MC, NF, OR CS		DC-2403, REV. 3, 5-2-79, SECT. 2.0.A.2, DC-1090-E, REV. 6, 8-29-85, SECT. 2.0.B.10, SPEC. X4AK01, REV. 7, 11-5-85, SECT. 2.0-1, DC-1010-TABLE 1, SH. 61 THRU 63, REV. 4, 6-29-82	DC-2403, REV. 0, 7-17-73, SECT. 2.0.A.1, DC-1000-E, REV 6, 8-29-85, SECT. 2.0.B.10, SPEC. X4AK01, REV. 0, 2-14-74, SECT. 2.0-1, DC-1010-TABLE 1, SH. 61 THRU 63, REV. 3, 8-11-83	SPEC. X4AK01, REV. 7, 11-5-85, SECT. 2.0-1	SPEC. X4AK01, REV. 0, 2-14-74, SECT. 2.0-1		880.00
ASME III, D.1, SUBSECTION NC, CLASS 2		SPEC. X4AK01, REV. 7, 11-5-85, SECT. 2.0-1, DC-2403, REV. 3, 5-2-79, SECT. 2.0.A.2, DC-1000-E, REV. 6, 8-29-85, SECT. 2.0.B.10	SPEC. X4AK01, REV. 0, 6-30-81, SECT. 2.0-1, DC-2403, REV. 0, 7-17-73, SECT. 2.0.A.1, DC-1000-E, REV. 6, 8-29-85, SECT. 2.0.B.10				885.00

IMPLEMENTATION

MODULE 18C - SORTED BY REFERENCE NUMBER

DOCUMENT/FRATURE	SECTION	DESIGN LAST	DESIGN FIRST	CONST LAST	CONST FIRST	REMARKS	REF NO
BC-TOP-4A, REV. 3, 11/74	ALL	DC-1000-C, REV. 3, 9-30-83, SECT. 2.3.C, SPEC. X4AK01, REV. 7, 11-5-85, SECT. 3.3.1	DC-1000-C, REV. 0, 2-28-74, SECT. 2.3.C, SPEC. X4AK01, REV. 1, 9-12-78, SECT. 3.3.1				1011.00
IEEE 387-1977	3.7.1	SPEC. X4AK01, REV. 7, 11-5-85, SECT. 3.2.1.1	SPEC. X4AK01, REV. 1, 9-12-78, SECT. 3.2.1.1				1514.00
IEEE 387-1977	3.7.2	SPEC. X4AK01, REV. 7, 11-5-85, SECT. 3.2.1.2, DC-1821, REV. 5, 5-2-83, SECT. 3.1.B	SPEC. X4AK01, REV. 1, 9-12-78, SECT. 3.2.1.2, DC-1821, REV. 3, 8-25-77, SECT. 3.1.B				1515.00
IEEE 308-1974 & 387-1977	ALL 5.1.1	DC-1000-E, REV. 6, 8-29-85, SECT. 3.1.2.B.3, DC-1821, REV. 5, 5-2-83, SECT. 2.0.B, SPEC. X4AK01, REV. 7, 11-5-85, SECT. 3.1	DC-1000-E, REV. 2, 12-13-77, SECT. 3.1.2.B.3, DC-1821, REV. 3, 8-25-77, SECT. 2.0.B, SPEC. X4AK01, REV. 0, 2-14-74, SECT. 3.1			RRF NO. 18C-1	1516.00
IEEE 387-1977	5.1.2	DC-1000-E, REV. 6, 8-29-85, SECT. 3.1.2.B.3, DC-1821, REV. 5, 5-2-83,SECT. 3.1.B, SPEC. X4AK01, REV. 7, 11-5-85, SECT. 3.2.1.6	DC-1000-E, REV. 2, 12-13-77, SECT. 3.1.2.B.3, DC-1821, REV. 3, 8-25-77, SECT. 3.1.B, SPEC. X4AK01, REV. 1, 9-12-78, SECT. 3.2.1.6			RRF NO. 18C-1	1517.00

IMPLEMENTATION

MODULE 18C - SORTED BY REFERENCE NUMBER

DOCUMENT/FEATURE	SECTION	DESIGN LAST	DESIGN FIRST	CONST LAST	CONST FIRST	REMARKS	REF NO
IEEE 387-1977 & 323-1974	5.4 ALL	DC-1821, REV. 5, 5-2-83, SECT. 2.0.B, DC-2403, REV. 3, 5-2-79, SECT. 2.0.D, SPEC. X4AK01, REV. 7, 11-5-85, SECT. 2.0.7	DC-1821, REV. 3, 8-25-77, SECT. 2.0.B, DC-2403, REV. 0, 7-17-73, SECT. 2.0.2, SPEC. X4AK01, REV. 1, 9-12-78, SECT. 2.0.7				1518.00
IEEE 387-1977	5.5	DC-1821, REV. 5 5-2-83, SECT. 3.1.E & 3.3, DC-2403, REV. 3 5-2-79, SECT. 3.1.C, SPEC. X4AK01, REV. 7, 11-5-85, SECT. 5.3	DC-1821, REV. 3, 8-25-77, SECT. 3.1.E & 3.3, DC-2403, REV. 2, 12-6-77, SECT. 3.1.C, SPEC. X4AK01, REV. 1, 9-12-78, SECT. 5.3				1519.00
IEEE 387-1977	5.6.2.2	DC-1821, REV. 5, 5-2-83, SECT. 3.1.D, DC-2403, REV. 3, 5-2-79, SECT. 3.3.B, SPEC. X4AK01, REV. 7, 11-5-85, SECT. 3.2.2.3	DC-1821, REV. 3, 8-25-77, SECT. 3.1.D, DC-2403, REV. 2, 12-6-77, SECT. 3.3.B, SPEC. X4AK01, REV. 1, 9-12-78, SECT. 3.2.2.3				1520.00
IEEE 387-1977	5.6.3.1	DC-1821, REV. 5, 5-2-83, SECT. 3.1.D, DC-2403, REV. 3, 5-2-79, SECT. 3.3.F, SPEC. X4AK01, REV. 7, 11-5-85, SECT. 3.2.5	DC-1821, REV. 3, 8-25-77, SECT. 3.1.D, DC-2403, REV. 2, 12-6-77, SECT. 3.3.F, SPEC. X4AK01, REV. 1, 9-12-78, SECT. 3.2.5				1521.00

IMPLEMENTATION

MODULE 18C - SORTED BY REFERENCE NUMBER

DOCUMENT/FEATURE	SECTION	DESIGN LAST	DESIGN FIRST	CONST LAST	CONST FIRST	REMARKS	REF NO
IEEE 387-1977 & 344-1975	6.3 ALL	DC-1821, REV. 5, 5-2-83, SECT. 2.0.B, DC-2403, REV. 3, 5-2-79, SECT. 2.0.D, SPEC. X4AK01, REV. 7, 11-5-85, SECT. 2.0.7	DC-1821, REV. 3, 8-25-77, SECT. 2.0.B, DC-2403, REV. 0, 7-17-73, SECT. 2.0.2, SPEC. X4AK01, REV. 0, 2-14-74, SECT. 2.0.7				1522.00
IEEE 387-1977	6.3.2(5)(c)	SPEC. X4AK01, REV. 7, 11-5-85, SECT. 5.3	SPEC. X4AK01, REV. 1, 9-12-78, SECT. 5.3				1523.00
IEEE 387-1977	6.5	DC-1821, REV. 5, 5-2-83, SECT. 3.1.B, DC-2403, REV. 3, 5-2-79, SECT. 3.1.C, SPEC. X4AK01, REV. 7, 11-5-85, SECT. 5.3	DC-1821, REV. 3, 8-25-77, SECT. 3.1.B, DC-2403, REV. 2, 12-6-77, SECT. 3.1.C, SPEC. X4AK01, REV. 1, 9-12-78, SECT. 5.3				1524.00
IEEE 387-1977	4.0	DC-1821, REV. 5, 5-2-83, SECT. 2.0, DC-2403, REV. 3, 5-2-79, SECT. 2.0, SPEC. X4AK01, REV. 7, 11-5-85, SECT. 2.0.7, DC-1000-E, REV. 6, 8-29-85, SECT. 2.0.D.2	DC-1821, REV. 3, 8-25-77, SECT. 2.0, DC-2403, REV. 0, 7-17-73, SECT. 2.0, SPEC. X4AK01, REV. 0, 2-14-74, SECT. 2.0.7, DC-1000-E, REV. 0, 5-17-73, SECT. 2.0.D.2			REF NO. 18C-1	1525.00

IMPLEMENTATION

MODULE 18C - SORTED BY REFERENCE NUMBER

DOCUMENT/FRATURE	SECTION	DESIGN LAST	DESIGN FIRST	CONST LAST	CONST FIRST	REMARKS	REF NO
IEEE 387-1977	6.3.2	SPEC. X4AK01, REV. 7, 11-5-85, SECT. 5.3.2.A.2	SPEC. X4AK01, REV. 1, 9-12-78, SECT. 5.3.2.A.3				1526.00
IEEE 387-1977	6.3.1	SPEC. X4AK01, REV. 7, 11-5-85, SECT. 5.3.1 & 5.3.3.2	SPEC. X4AK01, REV. 1, 9-12-78, SECT. 5.3.1 & 5.3.3.2				1527.00
RG 1.137, REV. 1, 10/79	ALL	DMCN-2403-5, 9-19-85, SECT. 1.0, RG, SPEC. X4AK01, REV. 7, 11-5-85, SECT. 2.0-15	DMCN-2403-5, 9-19-85, SECT. 1.0, RG, SPEC. X4AK01, REV. 4, 6-30-84, SECT. 2.0-15			TESTING TO BE IMPLEMENTED PER TECH. SPEC. REF. 9.5.4	1592.00
ANSI N195-1976	ALL	DC-2403, REV. 3, 5-2-79, SECT. 2.0.B, SPEC. X4AK01, REV. 7, 11-5-85, SECT. 2.0-2	DC-2403, REV. 2, 12-6-77, SECT. 2.0.B, SPEC. X4AK01, REV. 1, 9-12-78, SECT. 2.0-2			TESTING/APPX. B OF ANSI-N195 TO BE IMPLEMENTED PER TECH. SPEC. REF. 9.5.4	1593.00
10CFR50, APP. A	GDC-17	DC-2403, REV. 3, 5-2-79, SECT. 1.0, GDC, DC-1821, REV. 5, 5-2-83, SECT. 1.0, GDC	DC-2403, REV. 0, 7-17-73, SECT. 1.0, GDC, DC-1821, REV. 0, 3-4-78, SECT. 1.0, GDC			TESTING TO BE IMPLEMENTED PER TECH. SPEC. REF. 9.5.4	1594.00

IMPLEMENTATION

MODULE 18C - SORTED BY REFERENCE NUMBER

DOCUMENT/FEATURE	SECTION	DESIGN LAST	DESIGN FIRST	CONST LAST	CONST FIRST	REMARKS	REF NO
RG 1.6, REV. 0, 3/71	ALL	DC-1000-E, REV. 6, 8-85, SECT. 2.0.D.2, DC-1804, REV. 5, 10-85, SECT. 3.1.J, DC-1805, REV. 5, 8-85, SECT. 1.0, RG, DC-1806, REV. 5, 8-85, SECT. 1.0, RG, DC-1807, REV. 3, 8-85, SECT. 1.0, RG, DC-1821, REV. 5, 5-83, SECT. 1.0, RG	DC-1000-E, REV. 2, 12-13-77, SECT. 2.0.D.2, DC-1804, REV. 0, 5-1-74, SECT. 1.0, RG, DC-1805, REV. 0, 6-6-74, SECT. 1.0, RG, DC-1806, REV. 3, 10-3-78, SECT. 1.0, RG, DC-1807, REV. 0, 9-27-77, SECT. 1.0, RG, DC-1821, REV. 1, 4-19-74, SECT. 1.0, RG				1601.00
RG 1.29, REV. 3, 9/78	ALL	SPEC. X4AK01, REV. 7, 11-5-85, SECT. 3.3.1, DC-1000-E, REV. 6, 8-29-85, SECT. 2.0.D.2	SPEC. X4AK01, REV. 1, 9-12-78, SECT. 3.3.1, DC-1000-E, REV. 2, 12-13-77, SECT. 2.0.D.2				1754.00
10CFR50, APP.A	GDC-17	DC-1821, REV. 5, 5-2-83, SECT. 1.0, GDC, DC-2403, REV. 3, 5-2-79, SECT. 1.0, GDC, SPEC. X4AK01, REV. 7, 11-5-85, SECT. 3.0	DC-1821, REV. 0, 3-4-78, SECT. 1.0, GDC, DC-2403, REV. 0, 7-17-73, SECT. 1.0, GDC, SPEC. X4AK01, REV. 0, 2-14-74, SECT. 3.0				2180.00

IMPLEMENTATION

MODULE 18C - SORTED BY REFERENCE NUMBER

DOCUMENT/FEATURE	SECTION	DESIGN LAST	DESIGN FIRST	CONST LAST	CONST FIRST	REMARKS	REF NO
IEEE 387-1972		DC-2403-2.0.D.7, REV. 3, 5-2-79, DC-1821-2.0.B, REV. 5, 5-2-83, X4AK01-2.0.7, REV. 7, 11-5-85	DC-2403-2.0.2, REV. 1, 12-19-73, DC-1821-2.0.C, REV. 3, 8-25-77, X4AK01-2.0.7, REV. 1, 9-12-78				2368.00
RG 1.9, REV. 2, 12/79	ALL	DC-1821, REV. 5, 5-2-83, SECT. 1.0, RG, DC-2403, REV. 3, 5-2-79, SECT. 1.0, RG, SPEC. X4AK01, REV. 7, 11-5-85, SECT. 2.0-15	DC-1821, REV. 1, 4-19-74, SECT. 1.0, RG, DC-2403, REV. 2, 12-6-77, SECT. 1.0, RG, SPEC. X4AK01, REV. 4, 6-30-81, SECT. 2.0-15				2367.00
BTP ICSB 8(PSB)	ALL	DC-1821, REV. 5, 5-2-83, SECT. 1.0, BTP, DC-2403, REV. 3, 5-2-79, SECT. 1.0, GDC-17, SPEC. X4AK01, REV. 7, 11-5-85, SECT. 2.0-7	DC-1821, REV. 3, 8-25-77, SECT. 1.0, BTP, DC-2403, REV. 0, 7-17-73, SECT. 1.0, GDC-17, SPEC. X4AK01, REV. 0, 2-14-74, SECT. 2.0-7			IMPLEMENTATION PER IEEE-308	2379.00
BTP PSB-2	ALL	DC-1821, REV. 5, 5-2-83, SECT. 1.0, BTP, DC-2403, REV. 3, 5-2-79, SECT. 2.0.D.1, SPEC. X4AK01, REV. 7, 11-5-85, SECT. 2.0-7	DC-1821, REV. 3, 8-25-77, SECT. 1.0, BTP, DC-2403, REV. 2, 12-6-77, SECT. 2.0.D.1, SPEC. X4AK01, REV. 0, 2-14-74, SECT. 2.0-7			IMPLEMENTATION PER IEEE-279	2384.00

IMPLEMENTATION

MODULE 18C - SORTED BY REFERENCE NUMBER

DOCUMENT/FEATURE	SECTION	DESIGN LAST	DESIGN FIRST	CONST LAST	CONST FIRST	REMARKS	REF NO
NUREG/CR 0660	ALL	DMCN-2403-5, 9-19-85, SECT. 2.0.J	DMCN-2403-5, 9-19-85, SECT. 2.0.J				2385.00
ANSI N195-1976		DC-2403-2.0.B.7, REV. 3, 5-2-79, X4AK01-2.0, REV. 7, 11-5-85	DC-2403-2.0.B.8, REV. 2, 12-6-77, X4AK01-2.0, REV. 1, 9-12-78				3587.00
RG. 1.26, QUALITY GROUP C		DC-2403-2.0.A, REV. 3, 5-2-79, X4AK01-2.0.1, REV. 7, 11-5-85	DC-2403-2.0.1, REV. 1, 12-19-73, X4AK01-2.0.1, REV. 1, 9-12-78			IMPLEMENTATION PER ASME CODE, SEC. III, CLASS 3	3588.00
RG 1.29, SEISMIC CAT. 1		SEE REMARKS				FOR DESIGN IMPLEMENTATION, REFER TO REF. NO. 9	3589.00
29 CFR 1910, SUBPART H, SECTION 1910.106 (INSTALLATION OF FUEL OIL STORAGE TANK)		DC-1000-C-2.5.3, REV. 3, 9-30-83, X4AH03, REV. 8, 4-27-84	DC-1000-C-2.5.3, REV. 0, 2-28-74, X4AH03, REV. 2, 12-1-78				3591.00
ASME III, CLASS 3 (TESTING OF D/G F.O. SYSTEM)		DC-2403-3.3.P, REV. 4, 5-2-79, DMCN-2403-1, 5-18-82, DC-1010-TABLE 1, SH. 62, REV. 4, 6-29-82	DC-2403-3.3.P, REV. 2, 12-6-77, DMCN-2403-1, 5-18-82, DC-1010-TABLE 1, SH. 62, REV. 3, 8-11-81				3592.00

IMPLEMENTATION

MODULE 18C - SORTED BY REFERENCE NUMBER

DOCUMENT/FRATURE	SECTION	DESIGN LAST	DESIGN FIRST	CONST LAST	CONST FIRST	REMARKS	REF NO
COOLING WATER SYSTEM DESIGNED TO REMAIN FUNCTIONAL DURING AND AFTER SSE		DC-1202-3.1.E & F, REV. 5, 4-19-83, X4AK01-3.3.1, REV. 7, 11-5-85, DC-1010-TABLE 1, SH. 61, 62, REV. 4, 6-29-82	DC-1202-3.1.E & F, REV. 4, 1-3-78, X4AK01-3.3.1, REV. 1, 9-12-78, DC-1010-TABLE 1, SH. 61, 62, REV. 3, 8-11-81				3593.00
NFPA T3.27.2(1975)CLASS H		1X4AK01-319-6, APPROVED 1-24-84	1X4AK01-319-6, APPROVED 1-24-84				3594.00
D/G LUBRICATION SYSTEM - DESIGN BASIS - DESIGNED TO REMAIN FUNCTIONAL DURING AND AFTER SSE		DC-1010-TABLE 1, SH. 61 THRU 63, REV. 4, 6-29-82, X4AK01-3.3.1, REV. 7, 11-5-85	DC-1010-TABLE 1, SH. 61 THRU 63, REV. 3, 8-11-81, X4AK01-3.3.1, REV. 1, 9-12-78				3595.00
D/G LUBRICATION SYSTEM - A SINGLE FAILURE WITH LOSS OF OFFSITE POWER CANNOT RESULT IN COMPLETE LOSS OF STANDBY POWER SOURCE FUNCTION		DC-2403-3.1.A & E, REV. 3, 5-2-79, DC-1821-3.1.A & C, REV. 5, 5-2-83	DC-2403-3.1.A & E, REV. 2, 12-6-77, DC-1821-3.1.A & C, REV. 3, 8-25-77				3596.00
DESIGN CODES AND STANDARDS (EMERGENCY DIESEL ENGINE COOLING WATER SYSTEM COMPONENT DATA)		DC-1010-TABLE 1, SH. 60 THRU 63, REV. 4, 6-29-82, X4AK01-2.0, REV. 7, 11-5-85	DC-1010-TABLE 1, SH. 60 THRU 63, REV. 3, 8-11-81, X4AK01-2.0, REV. 1, 9-12-78				3599.00

IMPLEMENTATION

MODULE 18C - SORTED BY REFERENCE NUMBER

DOCUMENT/FEATURE	SECTION	DESIGN LAST	DESIGN FIRST	CONST LAST	CONST FIRST	REMARKS	REF NO
DESIGN CODES AND STANDARDS (DIESEL GENERATOR STARTING SYSTEM COMPONENT DATA)		DC-1010-TABLE 1, SH. 60 THRU 63, REV. 4, 6-29-82, X4AK01-2.0, REV. 7, 11-5-85	DC-1010-TABLE 1, SH. 60 THRU 63, REV. 3, 8-11-81, X4AK01-2.0, REV. 1, 9-12-78				3600.00
DESIGN CODES AND STANDARDS (LUBRICATION SYSTEM DESIGN PARAMETERS)		DC-1010-TABLE 1, SH. 60 THRU 63, REV. 4, 6-29-82, X4AK01-2.0, REV. 7, 11-5-85	DC-1010-TABLE 1, SH. 60 THRU 63, REV. 3, 8-11-81, X4AK01-2.0, REV. 1, 9-12-78				3601.00
DESIGN CODES	ALL	SPEC. X4AK01, REV. 7, 11-5-85, SECT. 2.0, DC-1000-E, REV. 6, 8-29-85, SECT. 1.0 & 2.0, DC-1821, REV. 5, 5-2-83, SECT. 1.0 & 2.0, DC-2403, REV. 3, 5-2-79, SECT. 1.0 & 2.0	SPEC. X4AK01, REV. 0, 2-14-74, SECT. 2.0, DC-1000-E, REV. 0, 5-17-73, SECT. 1.0 & 2.0, DC-1821, REV. 0, 3-4-78, SECT. 1.0 & 2.0, DC-2403, REV. 0, 7-17-73, SECT. 1.0 & 2.0				3602.00
DES. D/G STORAGE & TRANSFER, RG 1.137		SEE REMARKS				FOR DESIGN IMPLEMENTATION SEE REF. NO. 1592	3845.00

IMPLEMENTATION

MODULE 18C - SORTED BY REFERENCE NUMBER

DOCUMENT/FEATURE	SECTION	DESIGN LAST	DESIGN FIRST	CONST LAST	CONST FIRST	REMARKS	REF NO
DES. D/G FUEL SYSTEM ANSI N195-1976		SEE REMARKS				FOR DESIGN IMPLEMENTATIO N SEE REF. NO. 1593	3846.00
DES. D/G FUEL SYSTEM, RG 1.26 QUALITY GROUP C		SEE REMARKS				FOR DESIGN IMPLEMENTATIO N SEE REF. NO. 3588	3847.00
DES D/G FUEL SYSTEM, RG 1.29 CAT. I		SEE REMARKS				FOR DESIGN IMPLEMRNTATIO N SEE REF. NO. 9	3848.00
DESIGN CODES AND STANDARDS (DIESEL GENERATOR STARTING SYSTEM COMPONENT DATA)		SEE REMARKS				FOR DESIGN IMPLEMENTATIO N, SEE REF. NO. 3600	3859.00
D/G - LUBRICATION SYSTEM DESIGN PARA. CODES & STANDARDS		SEE REMARES				FOR DESIGN IMPLEMENTATIO N SEE REF. NO. 3601	3860.00
DIESEL ENGINE AIR INTAKE & EXHAUST SYSTEM DESIGN PARAMETERS		SEE REMARKS				FOR DESIGN IMPLEMENTATIO N SEE REF. NO. 4179	3861.00

IMPLEMENTATION

MODULE 18C - SORTED BY REFERENCE NUMBER

DOCUMENT/FEATURE	SECTION	DESIGN LAST	DESIGN FIRST	CONST LAST	CONST FIRST	REMARKS	REF NO
10CFR50, APP. A	GDC-5	DC-1821, REV. 5, 5-2-83, SECT. 1.0, GDC, DMCN-2403-5, 9-19-85, SECT. 1.0, GDC	DC-1821, REV. 5, 5-2-83, SECT. 1.0, GDC, DMCN-2403-5, 9-19-85, SECT. 1.0, GDC				4116.00
ASME SECT. III, CL. 3	ALL	SPEC. X4AK01, REV. 7, 11-5-85, SECT. 4.5.3 & 2.0-1, DC-2403, REV. 3, 5-2-79, SECT. 2.0.A.2	SPEC. X4AK01, REV. 0, 2-14-74, SECT. 4.5.3 & 2.0-1, DC-2403, REV. 0, 7-17-73, SECT. 2.0-1				4175.00
ASME SECT. III, CL. 3	ALL	SPEC. X4AK01, REV. 7, 11-5-85, SECT. 4.1.5	SPEC. X4AK01, REV. 0, 2-14-74, SECT. 4.1.5				4176.00
RG 1.137, REV. 1, 10/79	ALL	DMCN-2403-4, 4-23-85, SECT. 3.1.C, SPEC. X4AK01, REV. 7, 11-5-85, SECT. 2.0-15	DMCN-2403-4, 4-23-85, SECT. 3.1.C, SPEC. X4AK01, REV. 4, 6-30-81, SECT. 2.0-15				4177.00
ASME SECT. III, CL. 3	ALL	DC-2403, REV. 3, 5-2-79, SECT. 2.0.A.2, SPEC. X4AK01, REV. 7, 11-5-85, SECT. 4.1.5	DC-2403, REV. 0, 7-17-73, SECT. 2.0-1, SPEC. X4AK01, REV. 4, 6-30-81, SECT. 4.1.5				4178.00

IMPLEMENTATION

MODULE 18C - SORTED BY REFERENCE NUMBER

DOCUMENT/FEATURE	SECTION	DESIGN LAST	DESIGN FIRST	CONST LAST	CONST FIRST	REMARKS	REF NO
ANSI B31.1 WITH ALLOWABLE STRESSES/ASME SECT III, CL. 3	ALL	CALC. NO. 1K5-2403-009-02, REV. 0, 3-12-84, 1K5-2403-036-01, REV. 0, 11-14-84	SAME AS DESIGN LAST				4179.00
ANSI STD. NPT THREADED		SPEC. X4AK01, REV. 7, 11-5-85, SECT. 4.5.3.1.A & C	SPEC. X4AK01, REV. 4, 6-30-81, SECT. 4.5.3.1.A & C				4184.00
ASME RATED EXPANSION COUPLING		SPEC. X4AK01, REV. 7, 11-5-85, SECT. 4.5.3, DC-2403, REV. 3, 5-2-79, SECT. 2.0.A.2	SPEC. X4AK01, REV. 0, 2-14-74, SECT. 4.5.3, DC-2403, REV. 0, 7-17-73, SECT. 2.0-1				4185.00
ASME III, CLASS 3	ALL	DC-2403, REV. 3, 5-2-79, SECT. 2.0.A.2, SPEC. X4AK01, REV. 7, 11-5-85, SECT. 2.0-1	DC-2403, REV. 0, 7-17-73, SECT. 2.0-1, SPEC. X4AK01, REV. 0, 2-14-74, SECT. 2.0-1				4225.00
IEEE 344-1975	ALL	SPEC. X4AK01, REV. 7, 11-5-85, SECT. 3.3.3	SPEC. X4AK01, REV. 4, 6-30-81, SECT. 3.3.3				4282.00

IMPLEMENTATION

MODULE 18C - SORTED BY REFERENCE NUMBER

DOCUMENT/FEATURE	SECTION	DESIGN LAST	DESIGN FIRST	CONST LAST	CONST FIRST	REMARKS	REF NO
LOAD SEQUENCING OF CLASS IE BUSES, IEEE 323-1974		SPEC. X4AK01, REV. 7, SECT. 5.3.2 & 3.3.3, 11-5-85	SPEC. X4AK01, REV. 4, SECT. 5.3.2 & 3.3.3, 6-30-81				4285.00
DEMA STANDARDS	ALL	SPEC. X4AK01, REV. 7, 11-5-85, SECT. 2.0-4, SEE REMARKS - RESPONSE TO GENERIC LETTER	SPEC. X4AK01, REV. 0, 2-14-74, SECT. 2.0-4			LETTER LOG GN-508 WAS ISSUED IN RESPONSE TO LETTER LOG GN-384	4504.00
IEEE 387-1977	6.1.2 & 6.2	SPEC. X4AK01, REV. 7, 11-5-85, SECT. 2.0-7, SEE REMARKS - RESPONSE TO GENERIC LETTER	SPEC. X4AK01, REV. 0, 2-14-74, SECT. 2.0-7			LETTER LOG GN-585 WAS ISSUED IN RESPONSE TO LETTER LOG GN-508	4505.00
IEEE 323-1974	ALL	DC-1000-E, REV. 6, 8-29-85, SECT. 2.0.D.1, DC-1821, REV. 5, 5-2-83, SECT. 2.0.B, DC-2403, REV. 3, 5-2-79, SECT. 2.0.D.3, SPEC. X4AK01, REV. 7, 11-5-85, SECT. 3.3.3	DC-1000-E, REV. 2, 12-13-77, SECT. 2.0.D.1, DC-1821, REV. 3, 8-25-77, SECT. 2.0.C, DC-2403, REV. 0, 7-17-73, SECT. 2.0-2, SPEC. X4AK01, REV. 0, 2-14-74, SECT. 2.0-7				4788.00

IMPLEMENTATION

MODULE 18C - SORTED BY REFERENCE NUMBER

DOCUMENT/FEATURE	SECTION	DESIGN LAST	DESIGN FIRST	CONST LAST	CONST FIRST	REMARKS	REF NO
NEMA 12	ALL	DC-1816, REV. 3, 9-3-85, SECT. 3.1.B	DC-1816, REV. 1, 4-16-82, SECT. 3.1.B				4791.00
10CFR50, APP. A	GDC-17	DC-1821, REV. 5, 5-2-83, SECT. 1.0, GDC, DC-2403, REV. 3, 5-2-79, SECT. 1.0, SPEC. X4AK01, REV. 7, 11-5-85, SECT. 3.1	DC-1821, REV. 0, 3-4-78, SECT. 1.0, GDC, DC-2403, REV. 0, 7-17-73, SECT. 1.0, SPEC. X4AK01, REV. 0, 2-14-74, SECT. 3.1				4810.00
IEEE 387-1977	5.6	DC-1821, REV. 5, 5-2-83, SECT. 3.1.D, DC-2403, REV. 3, 5-2-79, SECT. 2.0.D.2, SPEC. X4AK01, REV. 7, 11-5-85, SECT. 3.2.3	DC-1821, REV. 3, 8-25-77, SECT. 3.1.D, DC-2403, REV. 0, 7-17-73, SECT. 2.0-2, SPEC. X4AK01, REV. 0, 2-14-74, SECT. 3.2.3				4811.00
IEEE 387-1977		DC-2403-2.0.D, REV. 3, 5-2-79, DC-1000-E-2.0.D. 1, REV. 6, 8-29-85, DC-1821-2.0.B, REV. 5, 5-2-83, X4AK01-2.0.7, REV. 7, 11-5-85	DC-2403-2.0.2, REV. 1, 12-19-73, DC-1000-E-2.0.D. 1, REV. 2, 12-13-77, DC-1821-2.0.C, REV. 3, 8-25-77, X4AK01-2.0.7, REV. 1, 9-12-78				4812.00

IMPLEMENTATION

MODULE 18C - SORTED BY REFERENCE NUMBER

DOCUMENT/FEATURE	SECTION	DESIGN LAST	DESIGN FIRST	CONST LAST	CONST FIRST	REMARKS	REF NO
DIESEL GENERATOR DESIGNED TO ACCEPT LOADS WITHIN 9.5 SEC. AFTER RECEIPT OF START SIGNAL		SPEC. X4AK01, REV. 7, 11-5-85, SECT. 3.2.1.6, 3.2.2.1 & 3.4.3	SPEC. X4AK01, REV. 4, 6-30-81, SECT. 3.2.1.6, 3.2.2.1 & 3.4.3				4816.00
7000 KW (CONTINUOUS OPERATION), 7700 KW (SHORT TERM (2 HR) PERIOD EVERY 24 HRS)		DC-1821-3.1.B, REV. 5, 5-2-83, X4AK01-3.2, REV. 7, 11-5-85	DC-1821-3.1.B, REV. 3, 8-25-77, X4AK01-3.2, REV. 1, 9-12-78				4818.00

4.0 ASSESSMENT AND CONCLUSIONS

4.1 OPEN CORRECTIVE ACTIONS

The open action, completion date, and organization responsible for completing the action are provided below.

- Finding 18C-1

  Action: Revise design criteria (DC)-1000-E to show correct edition of standard.

  Completion Date: April 18, 1986.

  Responsible Organization: Bechtel Power Corporation Home Office Engineering.

4.2 QA STATEMENT

The process for the development of Module 18C was monitored by the Readiness Review quality assurance (QA) staff for general adequacy.

Monitoring activities consisted of reviewing the findings and confirming the availability of records for Readiness Review personnel qualification and training. The findings were screened for reportability [10 CFR 21, 10 CFR 50.55(e)] in accordance with existing QA procedures. No findings were identified which required additional evaluation by the project for reportability.

An independent reverification was performed on a sampling basis under Readiness Review QA overview to determine the adequacy of the commitment/implementation matrixes.

Based upon these monitoring efforts, this module and the Readiness Review Team conclusions are judged to be acceptable.

J. Taylor
Readiness Review Team
Quality Assurance Representative

John H. Dragge
Readiness Review Team
Quality Assurance Representative

4.3 RESUMES

The resumes which follow present a brief professional history of those personnel involved in the development of Module 18C.

JOSEPH ARBAIZA, Senior Quality Engineer, Team Leader

Mr. Arbaiza has been employed by Bechtel Power Corporation since 1973.

Mr. Arbaiza has held the positions of project quality engineer (PQE) on Grand Gulf Nuclear Station (GGNS), Unit 2, and deputy PQE on GGNS, Unit 1. His duties included reviewing project engineering and vendor documents for compliance with engineering and quality program requirements, preparing and revising project engineering procedures, and representing the project engineer on matters related to quality (audits, training, etc.).

Education:

Finlay College
B.S., Mechanical Engineering

P.E., State of California

MAHESH A. SUTHAR, Engineer, Team Member

Mr. Suthar began his employment with Bechtel Power Corporation in 1980 and has 6 years experience in designing pipe supports for nuclear power plants.

In 1982, he was assigned to the Grand Gulf Project where he was involved with pressure drop calculations in piping systems and was responsible for designing fire protection systems such as deluge and sprinkler systems, Halon and CO_2 fire suppression systems, portable fire extinguishers, fire hydrants, fire hose stations, and fire and smoke detection systems. Also, he was responsible for the suppression pool make-up system and was involved in the fire protection analysis for HVAC modifications in the control building. He also designed containment systems pipe supports which would be subjected to jet impingement due to loss-of-coolant accident conditions. Before coming to Bechtel Power Corporation, Mr. Suthar worked for companies engaged in process equipment and electromechanical design and taught several mechanical engineering-related courses.

Education:

Sardar Patel University
M.S., Mechanical Engineering

P.E., District of Columbia

Diesel Generators - Module 18C

Readiness Review Board Acceptance

The Readiness Review Board has been apprised of the scope and content of Module 18C, Diesel Generators.

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 that the standby diesel generators at Plant Vogtle are sound and comply with commitments set forth in the FSAR and acceptable practices.

APPROVED: Doug Dutton DATE: 3-26-86

Doug Dutton
Chairman, Readiness Review Board
Vogtle Electric Generating Plant

0112r/076-6