TABLE OF CONTENTS

Section	Title	Page
17.0	QUALITY ASSURANCE	17.1-1
17.1	INTRODUCTION	17.1-1
17.1.1	QUALITY ASSURANCE DURING DESIGN, CONSTRUCTION AND MAJOR MODIFICATION	17.1-1
17.1.1.1	South Carolina Electric and Gas Company	17.1-2
17.1.1.2	Gilbert Associates, Inc.`	17.1-10
17.1.1.3	Westinghouse Electric Corporation	17.1-11
17.1.1.4	Daniel Construction Company	17.1-11
17.1.2	QUALITY ASSURANCE PROGRAM	17.1-12
17.1.2.1	Applicability	17.1-12
17.1.2.2	Administrative Controls	17.1-13
17.1.2.3	Indoctrination and Training	17.1-14
17.1.3	DESIGN CONTROL	17.1-15
17.1.3.1	South Carolina Electric & Gas Company	17.1-15
17.1.3.2	Gilbert Associates, Inc.	17.1-15
17.1.3.3	Westinghouse Electric Corporation	17.1-17
17.1.4	PROCUREMENT DOCUMENT CONTROL	17.1-17
17.1.4.1	NSSS Purchases	17.1-18
17.1.4.2	Balance of Plant Purchases	17.1-18
17.1.5	INSTRUCTIONS, PROCEDURES, AND DRAWINGS	17.1-19
17.1.6	DOCUMENT CONTROL	17.1-20
17.1.7	CONTROL OF PURCHASED MATERIAL, EQUIPMENT AND SERVICES	17.1-21
17.1.7.1	Construction Phase Source Selection	17.1-21
17.1.7.2	Work Release	17.1-21
17.1.7.3	Audit, Surveillance and Inspection	17.1-22
17.1.7.4	Acceptance	17.1-22
17.1.7.5	Documentation	17.1-23
17.1.8	IDENTIFICATION AND CONTROL OF MATERIALS, PARTS AND COMPONENTS	17.1-23
17.1.9	CONTROL OF SPECIAL PROCESSES	17.1-24
17.1.10	INSPECTION	17.1-24
17.1.10.1	Vendor Inspection	17.1-24
17.1.10.2	Onsite Inspection	17.1-25
17.1.11	TEST CONTROL	17.1-26
17.1.11.1	Vendor Testing	17.1-26
17.1.11.2	Site Testing	17.1-26
17.1.12	CONTROL OF MEASURING AND TEST EQUIPMENT	17.1-27
17.1.12.1	Vendor Controls	17.1-27
17.1.12.2	Site Controls	17.1-27
17.1.13	HANDLING, STORAGE AND SHIPPING	17.1-29
17.1.13.1	Vendor Controls	17.1-29
17.1.13.2	Site Controls	17.1-30
17.1.14	INSPECTION, TEST AND OPERATING STATUS	17.1-31
17.1.14.1	Vendor Controls	17.1-31
17.1.14.2	Site Controls	17.1-31
17.1.15	NONCONFORMING MATERIALS, PARTS OR COMPONENTS	17.1-32
17.1.15.1	Vendor Controls	17.1-32
17.1.15.2	Site Controls	17.1-32
17.1.16	CORRECTIVE ACTION	17.1-34
17.1.16.1	Vendor Controls	17.1-34
17.1.16.2	Site Controls	17.1-34

TABLE OF CONTENTS (Continued)

Section	Title	Page	
17.1.17	QUALITY ASSURANCE RECORDS	17.1-35	
17.1.17.1	Vendor Records	17.1-35	
17.1.17.2	Site Controls	17.1-36	
17.1.18	AUDITS	17.1-37	
17.1.18.1	Internal Audits	17.1-37	
17.1.18.2	External Audits	17.1-38	
17.1.18.3	Audit Requirements	17.1-39	
17.1.19	REFERENCES	17.1-40	
17.2	QUALITY ASSURANCE DURING THE OPERATIONS PHASE	17.2-1	RN 11-040

LIST OF TABLES

Table	Title	Page	
17.2-1	Deleted by RN 11-040	---	RN 11-040

LIST OF FIGURES

Figure No.	Title
Figure 17.1-1	South Carolina Electric & Gas Company Virgil C. Summer Nuclear Station Quality Assurance Organization Chart
Figure 17.1-2	South Carolina Electric & Gas Company Virgil C. Summer Nuclear Station Quality Assurance Organization Chart
Figure 17.1-3	South Carolina Electric & Gas Company Virgil C. Summer Nuclear Station Quality Control Organization Chart
Figure 17.1-4	Gilbert Associates, Inc. Corporate Organization Chart
Figure 17.1-5	Gilbert Associates, Inc. Quality Assurance Division Organization Chart
Figure 17.1-6	South Carolina Electric & Gas Company Virgil C. Summer Nuclear Station Daniel Construction Company Project Organization Chart
Figure 17.2-1	Deleted by RN 11-040

RN 11-040

LIST OF EFFECTIVE PAGES (LEP)

The following list delineates pages to Chapter 17 of the Virgil C. Summer Nuclear Station Final Safety Analysis Report which are current through May 2012. The latest changes to pages and figures are indicated below by Revision Number (RN) in the Amendment column along with the Revision Number and date for each page and figure included in the Final Safety Analysis Report.

Page / Fig. No.		Amend. No.	Date
Page	17.i	Reset	May 2012
	17.ii	RN11-040	May 2012
	17.iii	RN11-040	May 2012
	17.iv	RN11-040	May 2012
	17.v	Reset	May 2012
Page	17.1-1	00-01	December 2000
	17.1-2	97-01	August 1997
	17.1-3	97-01	August 1997
	17.1-4	97-01	August 1997
	17.1-5	97-01	August 1997
	17.1-6	97-01	August 1997
	17.1-7	97-01	August 1997
	17.1-8	97-01	August 1997
	17.1-9	97-01	August 1997
	17.1-10	97-01	August 1997
	17.1-11	97-01	August 1997
	17.1-12	97-01	August 1997
	17.1-13	97-01	August 1997
	17.1-14	97-01	August 1997
	17.1-15	97-01	August 1997
	17.1-16	97-01	August 1997
	17.1-17	97-01	August 1997
	17.1-18	97-01	August 1997
	17.1-19	97-01	August 1997
	17.1-20	97-01	August 1997
	17.1-21	97-01	August 1997
	17.1-22	97-01	August 1997
	17.1-23	97-01	August 1997
	17.1-24	97-01	August 1997
	17.1-25	97-01	August 1997
	17.1-26	97-01	August 1997
	17.1-27	97-01	August 1997
	17.1-28	97-01	August 1997
Page	17.1-29	97-01	August 1997
	17.1-30	97-01	August 1997
	17.1-31	97-01	August 1997
	17.1-32	97-01	August 1997
	17.1-33	97-01	August 1997
	17.1-34	97-01	August 1997
	17.1-35	97-01	August 1997
	17.1-36	97-01	August 1997
	17.1-37	97-01	August 1997
	17.1-38	97-01	August 1997
	17.1-39	97-01	August 1997
	17.1-40	97-01	August 1997
Fig.	17.1-1	0	August 1984
	17.1-2	0	August 1984
	17.1-3	0	August 1984
	17.1-4	0	August 1984
	17.1-5	0	August 1984
	17.1-6	0	August 1984
Page	17.2-1	RN11-040	May 2012
Fig.	17.2-1	RN11-040	Deleted

17.0 QUALITY ASSURANCE

NOTE 17.1
Section 17.1 is being retained for historical purposes only.

00-01

17.1 INTRODUCTION

South Carolina Electric & Gas Company (SCE&G) recognizes the need for a comprehensive, formalized, documented method of specifying and verifying that the Virgil C. Summer Nuclear Station design, procurement, construction, modification, maintenance, inservice inspection, and operation has been and will continue to be accomplished without undue risk to the health and safety of the public. Cognizant of its responsibilities as an applicant for an operating license, SCE&G has established and will execute an effective Quality Assurance (QA) Program for Virgil C. Summer Nuclear Station which meets the requirements of Title 10 CFR Part 50, Appendix B. The QA Program provides the necessary systematic activity and administrative control to provide checks to assure activities which affect quality and safety-related functions during design, procurement, construction, modification, maintenance, inservice inspection, and operation are performed in accordance with established requirements. The SCE&G QA Program is applied to those items identified as safety-related in Table 3.2-1.

SCE&G also recognizes that in addition to providing a high degree of confidence that structures, systems, and components; as designed, manufactured, constructed, maintained, and modified; reflect all safety-related requirements, the reliability and availability of the plant will be enhanced by the implementation of the Program. The philosophy used in the QA Program development ensures that systems, components, and structures have optimum quality consistent with safety, reliability, and plant availability considerations, as well as consideration for sound engineering.

17.1.1 QUALITY ASSURANCE DURING DESIGN, CONSTRUCTION, AND MAJOR MODIFICATION

The responsibility for the overall nuclear project rests with the SCE&G Executive Vice President Operations. On an independent organizational chain from Production Engineering and Construction, the responsibility for administration of the overall QA Program is delegated to the SCE&G Vice President and Group Executive, Nuclear Operations, who reports to the Executive Vice President Operations. He is assisted in executing this responsibility by the SCE&G Group Manager Nuclear Services, the Manager of QA, Gilbert Associates, Inc. (Gilbert), and other consultants, as needed, who have been or will be retained to implement the QA Program. Westinghouse provides a QA Program on the nuclear steam supply (NSSS) structures, systems, and components. Gilbert provides a balance of plant (BOP) QA Program on safety-related structures, systems, and components not included in NSSS scope. SCE&G assisted by the Gilbert QA Division and others as agents, audits, these programs to assure the effectiveness of the portion of the program performed by Gilbert and Westinghouse. The following sections describe the QA responsibilities and authorities of each major organization during construction and potentially during major outages.

17.1.1.1 South Carolina Electric and Gas Company

The Virgil C. Summer Nuclear Station QA organization chart (Figure 17.1-1) shows the lines of responsibility for design, procurement, construction, and QA for safety-related activities of the Virgil C. Summer Nuclear Station.

The overall responsibility for this nuclear project rests with SCE&G Executive Vice President of Operations. The executive management responsibility for assurance of provision of an adequate QA Program has been assigned to the SCE&G Vice President and Group Executive, Nuclear Operations, who is on an independent organization chain from production engineering and construction. Execution of this responsibility is by the SCE&G Group Manager Nuclear Services with implementation by the Manager of Quality Assurance.

The Gilbert QA Division and other consultants, as needed, have been and are expected to be retained to assist SCE&G QA in auditing the QA Program on the NSSS and safety-related structures, systems, and components. SCE&G QA and/or their agents audit these programs and perform surveillance to verify compliance with and effectiveness of the overall QA Program.

The SCE&G Vice President and Group Executive, Engineering and Construction directs the project construction with the assistance of the Group Manager, Construction and Quality Control, the QC Manager (Construction), and the Nuclear Site Manager. Construction is under the overall supervision of the SCE&G Nuclear Site Manager, with quality control (QC) the responsibility of the SCE&G QC Manager. Both report independently to the Group Manager of Construction and Quality Control.

The SCE&G Vice President and Group Executive, Rates/Purchasing assisted by the General Manager, Purchasing, and the Manager of Production and Construction Purchasing is responsible for procurement of equipment, material, and services.

17.1.1.1.1 Quality Assurance Program Organization

QA Figures 17.1-1 and 17.1-2 show the lines of responsibility for the QA Program. QA activities pertaining to the design, procurement, fabrication, handling, installation, and testing of safety-related structures, systems, and components are carried out in accordance with procedures that have been developed to conform to the 18 criteria as set forth in Appendix B of 10 CFR 50. These procedures are assembled in the SCE&G QA Procedures Manual, the Gilbert QA Manual, the SCE&G QC Manual, the SCE&G Nuclear Engineering Procedures Manual, the SCE&G Purchasing Procedures Manual, the Westinghouse WRD Quality Assurance Plan, the Daniel Construction Company (Daniel) Construction Procedures Manual, the Gilbert Project Management Manual and vendor and contractor procedures manuals.

The SCE&G QA Program involves personnel from various organizational groups within the company. The general responsibilities of these groups are as follows:

1. Quality Assurance Group

   The Group Manager, Nuclear Services provides administrative control and coordination of the role and mission of the QA section. He has the responsibility to evaluate the performance of the QA Program to assure adequacy and allocation of sufficient resources to perform the role and mission. The Group Manager is the link to effective executive corrective action whenever identified. The Group Manager, Nuclear Services through the Vice President Nuclear Operations has the responsibility to identify needed senior management action. The Manager of QA reports to the Group Manager. The Manager of QA is responsible for the direction and implementation of the total QA Program. These responsibilities include:

   a. Preparation and revision of the overall QA Program, assisted as needed by the Gilbert QA Division, Westinghouse, each group or organization performing quality activities and/or other agents.

   b. Review and approval of the QA Program and associated documents generated by SCE&G and its agents, Gilbert, Westinghouse, Daniel, vendors, and contractors.

   c. Review and/or approve revisions to the QA program and associated documents.

   d. Schedule, perform, and/or direct performance of audits of SCE&G, its agents, Gilbert, Westinghouse, Daniel, vendors, and contractors; and the surveillance of Daniel, vendors, and contractors.

   e. Audit and approve solutions to safety-related interface problems which arise.

   f. Monitor the status of the QA Program to assure effective implementation.

   g. Identify that appropriate corrective action is taken to accomplish changes where activities do not comply with QA and QC plans or procedures.

   h. Stop work on safety-related structures, systems, and/or components when designated codes, standards, design documents, or procedures are not being adhered to and cannot be immediately corrected.

   i. Ensure that the collection, distribution, audit, and filing of all project QA records are accomplished in a controlled manner.

j. Notify the Nuclear Regulatory Commission of any significant breakdown in any portion of the QA Program.

k. Provide for the indoctrination, training and certification of SCE&G QA personnel in the performance of activities affecting quality.

Site QA personnel under the direction of the SCE&G QA Director of Surveillance Systems are responsible for surveillance of site quality-related activities including such areas as receiving, handling, site fabrication, installation, construction and testing. When the scope of work activity during construction or major outage warrants it, a Quality Assurance coordinator may be assigned who reports to the Director of Surveillance Systems.

2. Nuclear Engineering and Licensing Department

During the Construction phase of the project the Nuclear Engineering and Licensing Department, under the direction of the Group Manager, Nuclear Engineering and Licensing; who is assisted by the Manager, Nuclear Engineering; the Manager, Nuclear Licensing; the Manager, Independent Safety Engineering Group; and the Manager, Corporate Health Physics and Environmental Programs has the following responsibilities:

a. Direct the activities of Gilbert through Gilbert's Project Manager and coordinate the activities of the Gilbert, Westinghouse, Dames and More (D&M), other consultants and agents as needed.

b. Review and approve basic designs as developed by the Gilbert, D&M, and other consultants.

c. Review bidder's lists.

d. Review and approve specifications.

e. Evaluate vendor proposals and make recommendations for procurement sources.

f. Participate in, review, and approve the preparation and distribution of the Safety Analysis Reports, Environmental Reports, and other documentation, as required by the Nuclear Regulatory Commission and other regulatory agencies.

g. Review and approve amendments to the documents noted in item f, above.

h. Review and approve Field Change Requests and Engineering change Notices.

i. Review and disposition Nonconformance Notices.

j. Prepare bid documents for SCE&G purchases.

k. Participate in plant testing and acceptance as required.

l. Participate in the inspection program as required.

m. Participate in the test control program as required.

n. Perform functions as required in connection with the licensing of the Virgil C. Summer Nuclear Station.

3. Procurement

Procurement is the responsibility of the Vice President and Group Executive, Rates/Purchasing who is assisted by the General Manager, Purchasing and the Manager of Purchasing, Production and Construction.

a. Select qualified bidders with the assistance of engineering, operating, and QA groups.

b. Solicit bids for equipment, materials and services.

c. Submit commercial, QA, and technical evaluations to the SCE&G Purchasing Committee which select vendors.

d. Issue and control changes to purchase orders.

e. Prepare, in cooperation with the QA and nuclear engineering groups, procurement procedures.

4. Nuclear Site Manager

The SCE&G Nuclear Site Manager has the overall responsibilities for the construction activities performed on the site by Daniel, contractors, and subcontractors. Administratively, the SCE&G Nuclear Site Manager reports to the Group Manager Construction and Quality Control and is responsible for the cost and scheduling of the work done on the site. All work done on the site by the various crafts of Daniel, contractors, and subcontractors is under the jurisdiction of the Daniel Project Manager. The Daniel Project Manager also has the responsibility for compliance with the Daniel QA Manual for Nuclear construction in the fabrication and installation of ASME Code, Section III components. For major modifications, a project manager having the same responsibilities as the Nuclear Site Manager above may be appointed.

5. Quality Control Manager

The SCE&G QC Manager also reports to the Group Manager Construction and Quality Control. The SCE&G QC Manager supervises the QC efforts at the site in accordance with the SCE&G QC Plan. The QC organization performs the following major functions but are not limited to these:

a. Work and communicate with Daniel, Daniel QC and QA, and SCE&G QA groups at the site.

b. Supervise the activities of commercial testing organizations at the site, who are under contract with SCE&G.

c. Prepare QC procedures for inspection of construction activities.

d. Stop work on structures, systems, and/or components when work is not in compliance with specified standards, codes, design documents, or procedures.

e. Be responsible for the testing and inspection of work performed by Daniel, contractors, and subcontractors at the construction site except when QC is provided by Daniel (ASME Code Work), or ASME contractors or subcontractors. SCE&G/QC will be responsible for testing and inspection of piping hangers where the intent of ASME Code requirements is being met.

f. Inspect on receipt, material and equipment for conformity to purchase documents and perform acceptance tests as required except when QC is provided by Daniel (ASME Code work). File test reports, certificates of release, and other documents necessary to verify quality.

g. Perform warehousing functions.

h. Maintain the permanent file for QA records, inspection reports, tests, certificates of release, and other QA documents.

i. Report potentially significant deficiencies found in construction in accordance with approved procedures.

17.1.1.1.2 Lines of Authority and Communication

As noted in Figure 17.1-1, the complex multi-organizational QA Program requires definite lines of authority and communication with control by independent checks. These relationships warrant discussion to illustrate how overall administrative control of the Program by SCE&G is achieved.

1. Overall Project

   The line of authority within the organization clearly provides the flexibility for quality related problems to be identified and resolved. The SCE&G Manager of QA, having a direct line through the Group Manager Nuclear Services to the Vice President Nuclear Operations and the Senior Vice President Power Operations can inform SCE&G top management of unresolved QA issues.

2. Quality Assurance

   The Vice President and Group Executive, Engineering and Construction is made aware of the QC activities by the SCE&G QC Manager through his line of authority to the Group Manager Construction and Quality Control.

   The QC staff and the independent test laboratories are under the direction and supervision of the SCE&G QC Manager.

   The General Manager, Purchasing, has a direct line of authority through the Vice President and Group Executive, Rates/Purchasing through which the Executive Vice President Finance is kept informed of the status of the purchasing operations.

   The line of authority extends downward such that the SCE&G Group Manager Nuclear Services monitors and controls the direction of QA activities through the Manager, Quality Assurance, his staff, QA organization onsite, the Gilbert Project Quality Coordinator, and other agents, as needed.

   As can be seen in Figure 17.1-1, there are five key Group Managers (General Managers) within the SCE&G organization who provide the necessary coordination and communication channels to allow information and project status to flow into the QA Program.

   a. The SCE&G manager QA is responsible for the overall functional control of the QA Program and provides guidance and coordination through communications with the Manager, Nuclear Engineering; the Manager, Nuclear Licensing; and the Manager, Purchasing, Production and Construction. The Manager of QA is responsible to review and comment on safety-related (including ASME Code) construction and QC procedures. Audits and site surveillance are performed to assure that safety-related work (including ASME Code) is accomplished in accordance with the QA Program requirements described herein. This enables the QA functions and responsibilities within the overall administration of the project to be under the guidance and coordination of the SCE&G Manager of QA with the cooperation of SCE&G management. Thus, problem areas anywhere within the QA Program are resolved through the responsible SCE&G management.

b. The Gilbert Project Quality Coordinator provides the SCE&G Manager of QA with a focal point within the Gilbert organization, thus extending the authority and visibility of the QA Program. By communications with Gilbert project engineering and management, as well as Westinghouse and other vendors, the Gilbert Project Quality Coordinator provides the SCE&G Manager of QA with additional information for directing the QA Program.

c. The SCE&G Director of Site Surveillance and/or QA Coordinator, in close cooperation with the Nuclear Site Manager, SCE&G QC Manager, Daniel Project Manager, the Daniel Project Quality Manager (ASME Code work), and other constructor site managers assures the understanding and implementation of quality associated requirements.

d. The SCE&G Construction QC Manager directs inspection and quality item control activities at the construction site except as defined in item e, below. Reporting offsite to the Manager of Construction and Group Manager Production Engineering, Quality control and Construction; the SCE&G QC Manager effectively communicates and coordinates quality activities with the Daniel Project Manager and other contractors for effective implementation of the QC Program.

e. The Daniel Project Quality Inspector directs the inspection and QC activities required for the ASME Code work. The Daniel Project Quality Inspector reports to the Daniel Project Quality Manager onsite for effective coordination of ASME Code quality activities.

3. Functional Relationships

The functional relationships within the SCE&G QA Program provide control to assure effective program compliance.

a. Construction site work is verified by inspection performed by the SCE&G QC and Daniel QC Groups (ASME Code work only) or by contractor or subcontractor QC.

b. Site QC and construction activities are monitored by a formal surveillance program conducted by the SCE&G QA organization onsite.

c. Vendors are required to provide internal independent QA Programs to check design and fabrication work unless working under the SCE&G QA Program.

d. Gilbert QA, SCE&G, QA and/or its agents perform vendor audits and surveillance to verify vendor performance.

e. Westinghouse, for the NSSS components, is required to provide an internal QA Program (see Section 17.1.1.3).

f. Gilbert, for design and engineering, is required to provide a Design Control Program including internal audits.

g. SCE&G QA periodically audits Westinghouse, as NSSS supplier, Gilbert as architect-engineer, Gilbert QA Division as QA consultant, Daniel as the constructor, SCE&G QC, and internal SCE&G safety related activities. These or any other contractor or agent utilized during major modification will have equivalent controls imposed.

h. Daniel QA periodically audits the Daniel ASME Code program onsite, as required to maintain the Daniel ASME Certificate of Authorization.

17.1.1.1.3 Control of Contractors

1. General

The Virgil C. Summer Nuclear Station QA Program is effectively administered and controlled by SCE&G through close association with, supervision and audit of the contractors who perform the duties and tasks outlined and delineated herein. The QA programs of the contractors were reviewed by SCE&G QA and/or its agents to assure that they contained adequate requirements and procedures to control the attainment of quality. All contractors performing safety-related work must have a QA Program reviewed and concurred with by SCE&G QA or its agents; unless the contractors are providing only labor for utilization under the direct control of the SCE&G QA Program. In some cases a contract specific QA plan, jointly approved by SCE&G and the contractor, may be used in lieu of a program manual. Contractors impose on their subcontractors a QA program commensurate with the complexity of the item and its importance to nuclear safety to assure that the high level of quality set forth in the contract documents is maintained.

2. Control Methods

Major responsibilities for implementation of the various QA activities included in the SCE&G QA Program during design, procurement, and manufacturing have been delegated to Gilbert and Westinghouse. These responsibilities are described in the Gilbert QA Plan and in the Westinghouse Electric Corporation Water Reactor Divisions QA Plan (Reference (1)). Primary responsibilities for the construction site QA and QC programs lie with SCE&G QA and the SCE&G QC organizations, respectively. The SCE&G Manager of QA controls, coordinates, and administers the overall QA Program by the use of the following planned and systematic checks of program status and progress:

a. Review and approval of the QA Program of contractors, (including the Daniel ASME QA Program).

b. Regular QA Program development and implementation status checks.

c. Scheduled QA Program audits.

d. QA Program surveillance and corrective measures.

17.1.1.2 Gilbert Associates, Inc.

The corporate organizational chart of Gilbert is shown in Figure 17.1-4. In retaining Gilbert, SCE&G has two distinct groups providing professional services in the areas of engineering and QA. Gilbert Power Engineering, Reading, provides the design services of the various engineering departments including, but not limited to, Hydraulic and Civil, Structural, Architectural, Environmental, Mechanical, Electrical, Chemical, and Nuclear. QA services are provided by the Gilbert QA Division as shown in Figure 17.1- 5. Gilbert has been retained to provide experienced personnel to assist SCE&G with the overall QA Program. The general responsibilities of the Gilbert Power Engineering, Reading, are described in the Gilbert Project Management Manual and general responsibilities of the Gilbert QA Division are described in the Gilbert QA Plan.

1. Engineering

Engineering is responsible through the Gilbert Project Manager for the design of all areas of the plant with the exception of the equipment supplied by Westinghouse. The various engineering disciplines are responsible for their respective areas of design and preparation of specifications and drawings. Engineering specifies the level of quality inspection and test requirements, acceptance criteria, and documentation requirements. Any deviation or waiver request from approved drawings, specifications or procedures must be acted upon by the same (or an SCE&G approved equivalent) engineering group which was responsible for the original design. They also review and approve vendor drawings and documents as appropriate. Design reviews are performed by engineering personnel not responsible for the original design. Design document control is under the control of the Gilbert Project Manager.

2. Quality Assurance

The Gilbert QA Division and other QA agents or consultants assist the SCE&G Manager QA as requested, in implementing the QA Program in the areas of specification review, A/E audit, vendor proposal review, NSSS supplier audits, vendor surveillance, and construction audits.

17.1.1.3 Westinghouse Electric Corporation

The Westinghouse QA Plans are given in Reference [1] and [2]. The degree of QA for Westinghouse NSSS components is given in Table 3.2-1.

The original QA Program implemented by Westinghouse for the Virgil C. Summer Nuclear Station was described in Appendix 1C of the Virgil C. Summer PSAR. Over the course of performing the design and initial procurement activities for the Virgil C. Summer Nuclear Station, the Westinghouse QA Program was upgraded to reflect changes in regulatory requirements and industry standards as shown in References [1] and [2]. These changes first culminated in WCAP-8370, Revision 7A. This revision of the Westinghouse QA Program was applicable to activities within Westinghouse scope performed for the Virgil C. Summer Nuclear Station which were initiated after January 1, 1975 to October 1, 1977. Subsequently, the present Westinghouse QA Program, which is described in WCAP-8370, Revision 8A, is applicable to activities within Westinghouse scope which were initiated after October 1, 1977 to October 15, 1979. Presently, the Westinghouse QA Program is described in WCAP-8370, Revision 9, and is applicable to activities within the Westinghouse scope which were initiated after October 15, 1979.

17.1.1.4 Daniel Construction Company

Daniel has been retained by SCE&G as the constructor to perform the actual construction activities at the project site except for specialized phases of the work which will be performed by other qualified contractors and subcontractors. The Daniel organization for the Virgil C. Summer Nuclear Station project is shown in Figure 17.1-6. Daniel is under the direction of the Daniel Project Manager who is responsible to the SCE&G Nuclear Site Manager. Daniel is responsible for the development and implementation of effective controls over the construction and erection of the safety-related structures, systems, and components to assure their conformance to the design specifications and drawings, (including the fabrication and installation of ASME Code work). Daniel responsibilities include:

1. Selection and indoctrination of qualified personnel.

2. Direct supervision of work performed by the crafts.

3. Responsibility for the quality of work done.

4. Scheduling and planning of work.

5. Preparation of construction procedures as indicated in Gilbert construction specifications and as determined to be needed by Daniel construction management to complete a quality installation.

6. Reporting monthly on the status of the construction.

7. Ensuring that only the latest revisions or issues of field documents, i.e., drawings, specifications, procedures, etc., are used for construction.

8. Providing the Daniel QA Program for the Daniel scope of work which includes the Daniel QA Manual for ASME Code work.

9. Providing the QA, QC, and Construction procedures necessary to perform field fabrication and installation of ASME Code stamped work.

10. Regularly review the status and adequacy of the construction QA Program being executed by Daniel.

The Daniel QA Program is contained in the Daniel Construction Procedures Manual and the QA Manual for Nuclear Construction. Work procedures for performing the assigned construction activities are contained in the Daniel Construction Procedures Manual (procedures for ASME Code work are included).

Construction site QC is performed by SCE&G QC and/or its agents for Daniel activities in accordance with the SCE&G QA Plan and Field Quality Control Plan, except for specialized phases of work by other contractors and subcontractors who will perform the required QA and QC; and the ASME Code work by Daniel who will perform the QA and QC required by the Daniel Certificates of Authorization. The construction site QA is provided by SCE&G QA in accordance with the SCE&G QA Plan and Manual, except as noted above.

17.1.2 QUALITY ASSURANCE PROGRAM

The Virgil C. Summer Nuclear Station QA Program is comprised of planned and systematic activities and independent verification during design, procurement, equipment fabrication, site construction and erection, and system final inspection and testing. This QA Program is organized to provide an integrated plan under the direct control of SCE&G. A system of audit and surveillance provides assurance that elements of the Program are functioning as planned.

17.1.2.1 Applicability

The SCE&G QA Program is applicable to those structures, systems, and components classified as safety-related. These items are identified in Section 3.2. The items identified as within Westinghouse scope of supply are the responsibility of Westinghouse subject to SCE&G audit, assuring appropriate QA measures. The remaining safety-related items are controlled directly by SCE&G, using the assistance of Gilbert, Daniel, and other contractors for construction and installation. The QA Program is in force throughout the design and construction of the Virgil C. Summer Nuclear Station. During future major maintenance or modification all or parts of the organizational structure shown on Figure 17.1-1 may be employed commensurate with the complexity of the activity. A QA Coordinator reporting to the Director of S. S. may be assigned if the scope of the activity requires dedicated QA follow-up. Agents and/or

contractors including those herein discussed may be employed in accordance with QA program requirements herein specified.

17.1.2.2 Administrative Controls

The SCE&G corporate QA policies and procedures are aimed at the goal of obtaining a plant which is safe and reliable in accordance with the requirements of 10 CFR 50, Appendix B. The procedures used in implementing the QA Program incorporate provisions for proceeding to successive levels of management until resolution is obtained, with ultimate resolution by the Executive Vice President, Operations.

The Vice President Nuclear Operations performs a continuing review of the SCE&G QA Program with and through the SCE&G Group Manager Nuclear Services and Manager of Quality Assurance; and reports on the effectiveness of the programs to the Executive Vice President, Operations through the Senior Vice President Power Operations.

The Manager of QA through the SCE&G Group Manager Nuclear Services has been delegated the responsibility for the establishment, maintenance, control, distribution, and verification of implementation of the QA Program by the Vice President and Group Executive, Nuclear Operations. The Group Manager Nuclear Services shall annually, or as deemed necessary, have the SCE&G QA Program reviewed and revised where required. Affected organizations may submit recommended changes as they see fit. Proposed revisions, as a result of the QA review or recommended changes by others, are submitted to SCE&G groups having responsibilities in the QA Program for comment prior to revision of the Program. Conflicting comments are resolved by the SCE&G Manager of QA with the concerned parties. Revisions affecting Code requirements shall be submitted to the Authorized Inspection Agency for acceptance prior to implementation.

The procedures and instructions which govern the activities of SCE&G in the design and construction of the Virgil C. Summer Nuclear Station are contained in the QA Manual, the Nuclear Engineering Procedures Manual, the QC Procedures Manual, and the Purchasing Procedures Manual. When required by the contract documents, each contractor of safety-related structures, systems, or components is required to develop and implement his own QA Program which is reviewed and audited by SCE&G. Audits of the contractors are conducted by SCE&G or its agents to ensure that the QA requirements are met.

The QA procedures in the area of procurement control require the Manager of QA to evaluate and accept contractor's QA Programs, by review of QA information submittals, review of QA activities on active purchase orders, and, where necessary, preaward surveys of the prospective contractor's QA Program, prior to award of a purchase order. During performance of the contract, SCE&G QA personnel or Gilbert QA personnel, at the request of the SCE&G Manager of QA, will conduct surveillance of the contractor to assure continued implementation of the accepted QA Program. These activities are recorded in surveillance reports, and findings of the reports resolved with the contractors.

QA personnel, in their reviews of programs and special process procedures implementing the QA Program, shall assure that procedures require that all prerequisites for a given action are satisfied, such as the presence and use of suitable equipment (certified or qualified when necessary), a suitable environment for accomplishing the activity, such as adequate cleanliness and lighting levels, and that necessary prerequisites for the activity have been met, e.g., prior specified examinations and processing operations or the establishment of test or inspection acceptance criteria. The QA Program requires that the procedures be prepared and made available for use prior to the need for each at the point of use. These special process procedures controlling safety-related work shall be reviewed and concurred with and a "release to fabricate" or "release to work" (for site activity) granted before work begins in the area, see Section 17.1.7.

17.1.2.3 Indoctrination and Training

The indoctrination and training is described in the indoctrination and training procedures for each organization within SCE&G with quality related responsibilities. The procedures require that personnel be familiar with the requirements of their position, and maintain expertise in their specialty. The SCE&G QA organization conducts a training course in the basics of plant familiarization and QA, with detailed emphasis on the conduct of surveillance and audits, for all personnel in the SCE&G QA organization. Expertise is also maintained by continuing experience in surveillance and auditing on the part of each member of the SCE&G QA organization.

The SCE&G Manager of QA shall have a B. S. Degree in engineering, or its equivalent in experience and/or correspondence courses. He shall be experienced in design, manufacturing, operations, construction, and/or administration in utility or related industries; have at least 1 year experience in QA management and policies; and be knowledgeable of applicable codes and standards. QA Directors, QA Engineers, and the Site QA coordinator shall be graduates of accredited engineering curricula, or the equivalent, and, preferably, have had experience in the design, manufacturing, operation, construction, or QA areas relative to the nuclear and/or utility fields. QA specialists shall be graduates of a two year engineering technical school or have the equivalent in practical experience and/or correspondence courses.

17.1.3 DESIGN CONTROL

17.1.3.1 South Carolina Electric & Gas Company

During the construction phase, the SCE&G Nuclear Engineering and Licensing Department performs design control functions relative to design interface control, specification, drawing technical reviews, and SAR deviation control. The Nuclear Engineering and Licensing Department's Manager, Nuclear Licensing performs design control functions relative to SAR deviation control. The SCE&G activities are described in the SCE&G Nuclear Engineering Procedures Manual. SCE&G Nuclear Engineering Department monitors; through its reviews of design documents, and SCE&G QA or its agents audits; the design control activities of Gilbert, Westinghouse and other vendors.

17.1.3.2 Gilbert Associates, Inc.

1. Design Review and Verification

   Safety-related design activity is reviewed and verified by a formalized and documented system described by the Gilbert Project Management Manual. The types of review used are:

   a. Checks to compare information presented on a drawing or other document with a definite, stipulated figure, criterion, or design base,

   b. Supervisory reviews which are critical inspections of design work, conducted by a superior in a given discipline, of work by a project team member in that discipline,

   c. Interface reviews by personnel of one discipline or company of work performed by another discipline or company to determine, with reasonable assurance, that the reviewer's discipline requirements are provided for, and that specification requirements are satisfied for the reviewer's discipline or company,

   d. Design verification which is independent confirmation of design adequacy and compliance with requirements, performed by an individual other than the originator, who did not perform work on the item being reviewed.

   Each discipline prepares a Design Verification Status Report identifying each item to be verified and indicating the status of each item. System design may be verified in whole or in parts. When in parts, separate verification attestations must be completed and the Design Verification Status Report must define and reflect the verification of each part. Each review and verification must be indicated on the specified form or by signature or reference to the acceptance letter of the responsible engineering company on the document reviewed. Suitable equivalent controls will also be maintained during major modifications.

2. Specification Reviews

It is the responsibility of the Gilbert Project Engineer to ensure that the necessary QC and QA requirements are included in the specifications for structures, systems and components for which he has design responsibility. In addition to reviews by SCE&G and other Gilbert design engineers, specifications are reviewed by the Gilbert QA Division and/or the SCE&G QA organization to assure that sufficient quality requirements have been incorporated for safety-related items. Procedures for the review of specifications are contained in the SCE&G QA and Gilbert QA Manuals.

3. Design Requirements Control

Interface and technical reviews are performed by Gilbert Project Engineering, the Gilbert QA Division, and/or the SCE&G QA organization. They also review vendor proposals, bills of material, and vendor and construction procedures to verify consistency with Gilbert procurement specifications. Procedures for these reviews are contained in Gilbert Project Management Manual for Virgil C. Summer Nuclear Station, and the Gilbert QA and SCE&G QA Manuals.

4. Design Document Control

Design documents are controlled as follows:

a. Specifications are issued and controlled from a controlled distribution section which maintains the record copy of specifications and a master distribution list.

b. Drawings are prepared and checked by designers and draftsmen. After review and approval by the Gilbert Project Engineer, they are issued through a central distribution group. Record copies and master distribution lists are used to provide assurance that the latest revisions are promptly forwarded to the proper organizations. Lists of latest available revisions of drawings are furnished to those on distribution lists to ensure that the latest revision is in use.

c. Changes to the SAR requirements are controlled by use of a form which is initiated by the cognizant project engineer. Significant changes and associated justifications are reviewed by the SCE&G Nuclear Engineering and Licensing Department.

d. Significant field or shop changes to drawings and specifications for safety-related equipment are allowed only after approval by Gilbert and/or SCE&G Manager Nuclear Engineering, or his designee. All authorized changes are documented and controlled as described below:

1) Design initiated changes are accomplished by Engineering Change Notices (ECN's) and are included in the drawings, specifications, and bills of material by subsequent revision. ECN's for specifications and bills of materials are approved by the SCE&G Nuclear Engineering Department before implementation, unless the ECN is written to implement a previously accepted Field Change Request (FCR), to respond to a letter from SCE&G requesting the change, or to change drawings which did not require original approval by SCE&G.

2) Field initiated changes are handled by FCR's. A field engineer requests authorization to make a field change from the SCE&G Nuclear Engineering Department. ECN's are distributed as a followup to reflect the field change after acceptance of the FCR by the SCE&G Nuclear Engineering Department. Minor field changes which do not affect the design are documented by the SCE&G QC organization and approved by the resident engineer or SCE&G Nuclear Engineering Department on field prepared "as built documents" (ABD's). Field changes and applicable ABD's are incorporated into revised drawings as directed by the resident engineer or SCE&G Nuclear Engineering Department. FCR's may be authorized by telephone in accordance with approved procedures.

5. Record Accumulation and Control

The records associated with the design activity are maintained by the individual design group. Copies of these records are indexed and stored in a safe Record Retention Storage Area. These records are audited by the Gilbert QA Division, the SCE&G QA organization, and/or its agents.

17.1.3.3 Westinghouse Electric Corporation

The Westinghouse Design Control Program is described in Reference [1] and Section 17.1.1.3.

17.1.4 PROCUREMENT DOCUMENT CONTROL

The procurement of equipment for the Virgil C. Summer Nuclear Station involves activities performed by SCE&G, Westinghouse, and Gilbert. SCE&G makes the final selection of suppliers, except those under Westinghouse scope of supply. Procurement for the remainder of the plant is referred to as BOP. The purchase documents for safety-related equipment include requirements to the extent considered necessary based on safety classification, complexity, and other engineering considerations.

17.1.4.1 NSSS Purchases

NSSS purchases of safety-related structures, systems, and components are controlled under the QA Program described in Reference [1] and Section 17.1.1.3.

17.1.4.2 Balance of Plant Purchases

Safety-related BOP structures, systems, and components are procured by the use of procurement specifications which include QA requirements. Procurement documents require the bidder to have a QA Program which meets the requirements of 10 CFR 50, Appendix B unless working under the SCE&G QA Program, or when the quality of the item to be furnished can be verified by receipt inspection, testing, or verification by an independent laboratory or performance testing prior to placing the affected system into service. This method is used when nonsafety related items are "upgraded" to safety related application or to confirm the quality of a safety-related commercial grade item. Any such actions will require QA concurrence prior to utilization. Procurement documents may also require the contractor to give the purchaser such rights as: access for inspection and audit, review and concurrence with certain special process procedures or instructions, design drawings and specifications, inspection and test records, and QA documents relative to the purchase.

Selected items; such as commercial items, repair parts, and services; may be procured by SCE&G and by the use of Gilbert or SCE&G prepared bills of material and/or SCE&G purchase requisitions. Applicable QA requirements are included in the contract documents.

For purchases made to Gilbert procurement specifications; proposals for materials, equipment, and services are subjected to a technical evaluation by Gilbert Engineering and/or SCE&G Nuclear Engineering with a QA review by the SCE&G QA organization and/or the Gilbert QA Division. Proposals for purchase from safety-related bills of material or SCE&G purchase requisitions are subject to a technical review by SCE&G Nuclear Engineering with a QA review by the SCE&G QA organization and/or the Gilbert QA Division except for the procurement of QA services. Proposals in this latter category are reviewed by the SCE&G QA organization only. The QA review is based on the requirements of the procurement specification or bill of material to ascertain that the proposed QA Program is adequate. The technical and QA reviews of the proposal request documents assure the inclusion of such requirements as correct and accurate regulatory, code, and design statements; technical and quality document preparation and submittal for review or approval, and the retention, control, and maintenance of the records; and acceptance criteria beyond which the vendor would have to request acceptance by SCE&G. These requirements are placed on the purchase order, including safety-related spares. SCE&G QA concurrence of acceptable bidders must be obtained before a request for proposal can be forwarded to a potential supplier. The bids are evaluated for technical, quality, and commercial acceptability. A preferred bidder is then selected. The preferred bidder must be accepted by SCE&G QA before a purchase order can be placed. The SCE&G QA organization and/or the Gilbert QA

Division review available quality history information and QA Program submittals for the preferred bidder to determine whether the bidder is acceptable, and where sufficient QA Program information is not available from these sources, will perform a preaward survey of the preferred bidder's QA Program, until an acceptable preferred bidder is determined.

For material, equipment, or services purchased from a Gilbert procurement specification; Gilbert prepares a bill of material based on the procurement specification, the successful bidder's proposal, and any other pertinent documents. The actual provisions of the contract will appear within the bill of material by reference to the specification or incorporation of requirements in lieu of or in addition to the specification within the bill. For material, equipment, or services purchased from a bill of material without a procurement specification, Gilbert conforms the bill of material to the successful bidder's proposal and other pertinent documents, as necessary. Again, the bill contains the actual requirements in lieu of references to correspondence (pricing excepted). These bills of material are used as contract documents and include technical and quality requirements. The bill of material is attached to the standard contractual provisions and together they form the purchase order. The bill of material is reviewed and initialed by the SCE&G QA organization and/or the Gilbert QA Division, Gilbert Engineering, and/or SCE&G Nuclear Engineering. The preparation, review, approval, and issuance of bills of material are described in the SCE&G and Gilbert procedures which implement the QA Program.

17.1.5 INSTRUCTIONS, PROCEDURES, AND DRAWINGS

Each of the organizations involved in safety-related work on the Virgil C. Summer Nuclear Station has been required to prepare program documents, instructions, procedures, and drawings to describe the work to be accomplished and the method by which the work is to be accomplished. This requirement has been imposed by contractual requirements, as with Westinghouse, or by specifications, as described in Section 17.1.4.

The SCE&G Manager of QA has been assigned the responsibility to review and concur with the QA Programs and associated documents of SCE&G and its agents; Gilbert, Westinghouse, Daniel, vendors, and contractors. The review of documents of vendors and contractors may be assigned to the Gilbert QA Division or any other qualified agent by the SCE&G Manager of QA. The reviews are performed to verify that:

1. Applicable requirements of 10 CFR 50, Appendix B have been included.

2. The plans and associated documents cover the required design, procurement, manufacturing, construction, and testing activities.

3. Adequate internal control methods have been provided for subcontractor activities.

4. Intended specific work functions are identified and established to afford a status check of planned activities, including the determination of that status (acceptance criteria).

17.1.6 DOCUMENT CONTROL

The procedures for the preparation, review, approval, and distribution of instructions, procedures, and drawings described in Section 17.1.5 require that all specified approvals be obtained prior to the issuance of the documents. These same requirements are imposed on such design and descriptive documents as specifications and SAR's. The required reviews and approvals ensure that issued documents are adequate and correct for the use intended. The procedures controlling these documents require review and approval of changes to the documents by the same organizations which approved the original document, or SCE&G approved and designated equivalent.

Specifications are issued and controlled from a controlled distribution section which maintains the record copy of all specifications and a master distribution list.

Drawings are prepared and checked by designers and draftsmen. After review and approval by the project engineer, and/or by SCE&G, they are issued through a central distribution group. Record copies and master distribution lists are used to provide assurance that the latest revisions are promptly forwarded to the proper organizations.

Construction phase changes to the SAR's requirements are controlled by the use of a form which is initiated by the cognizant project engineer. Significant changes and associated justifications are reviewed by the SCE&G Nuclear Engineering and Licensing Department.

Significant field or shop construction phase changes to drawings and specifications for safety-related equipment are allowed only after written approval by the Gilbert Engineer and/or the SCE&G Group Manager, Nuclear Engineering and Licensing, or his designee as described in Section 17.1.3.2.

All construction drawings, procedures, and specifications are issued by the SCE&G Document Control Center, including distribution to Daniel. Construction personnel assigned controlled documents are responsible for maintenance and use of the latest documents as described by construction procedures. Records and reports are developed and maintained as required by construction procedures and are available for review and audit by QA and QC personnel on request.

The issue and control of field construction documents such as working drawings, specifications, procedures, and instructions are controlled in such a manner as to ensure that only the latest revisions or issues of the documents are used for construction and erection. Documents onsite are stamped to identify those being revised, and the area of revision indicated to limit use of the documents until the

approved Engineering Change Notice, Field Change Request, or revised document is received. Procedures which control the field or engineering changes ensure that any changes made are properly authorized, documented, and distributed.

Document control within Westinghouse is described in Reference [1] and Section 17.1.1.3.

17.1.7 CONTROL OF PURCHASED MATERIAL, EQUIPMENT, AND SERVICES

The procurement of equipment for the Virgil C. Summer Nuclear Station involves activities performed by SCE&G, Westinghouse, and Gilbert. SCE&G makes the final selection of suppliers, except those under Westinghouse scope of supply. The purchase documents for safety-related equipment include QA requirements to the extent considered necessary based on safety classification, complexity and other engineering considerations. The Westinghouse control program is described in Reference [1] and Section 17.1.1.3.

17.1.7.1 Construction Phase Source Selection

Upon receipt of bids; the SCE&G QA organization and/or the Gilbert QA Division, SCE&G Nuclear Engineering, and Gilbert Engineering will evaluate the bidder's capabilities, as described in Section 17.1.4. These evaluations are forwarded to the SCE&G General Manager, Purchasing, and used to select a preferred bidder. The SCE&G Purchasing Committee then selects a vendor, and requests concurrence of the SCE&G Manager of QA.

The SCE&G Manager of QA will accept or reject the preferred vendor, on the basis of current QA performance or preaward surveys conducted by the SCE&G organization, the Gilbert QA Division, or other agents, at the direction of the SCE&G Manager of QA when sufficient current performance information is not available. In some cases, verification of the vendor's QA Program may not be necessary if quality can be verified by receipt inspection, testing, or verification by an independent laboratory or performance testing prior to returning the affected system to service. This method is used when nonsafety related items are "upgraded" to safety related application or to confirm the quality of a safety-related commercial grade item. Any such actions will require QA concurrence prior to utilization. Should the preferred vendor be unacceptable due to a deficient QA Program, the SCE&G Purchasing Committee selects another vendor, and requests concurrence of the SCE&G Manager of QA.

17.1.7.2 Work Release

Vendors or contractors may be required to submit a Contractor's QA Data Identification Report, including a listing of all special process procedures to be used on the contract. In such cases the vendor must then submit the relevant manufacturing QC, inspection and test procedures to the owner's QA representative. Fabrication cannot begin until all special process and QC procedures have been reviewed and concurred with, and a Release of Fabrication has been issued by the QA representative. The requirement for

submittal of a Contractor's QA Data Identification Report will be determined at the qualification of the vendor.

Similar controls exist for contractors onsite, with the QA Group onsite performing the procedure reviews, and the Director, Surveillance Systems or Site QA Coordinator or their designees issuing a Release to work indicating procedure concurrence and permitting the contractor to begin work.

17.1.7.3 Audit, Surveillance and Inspection

Regular review of each contractor's QA Program status is accomplished by various techniques depending on the contractor and stage of program implementation. Audits and surveillance of contractors are generally conducted during contract performance to assure that the contractor maintains an acceptable QA Program. These activities assure that control programs and methods are in place throughout performance. The reports of these activities provide a continuing status check to the SCE&G Manager of QA of the contractor's QA capabilities. The frequency of audit and surveillance is determined on the basis of safety classification of the item or service provided, complexity, other engineering considerations, and the current status of the contractor's QA Program, as evidenced by evaluation of the surveillance and audit reports, as well as evaluation of receipt inspections.

The QA specification which is imposed on applicable safety-related vendors, requires the vendor to submit a schedule of major events and all inspections and tests for each procurement. A list of suggested inspection notification points is also submitted by the vendor on the Contractor's QA Data Identification Report. The SCE&G QA organization and/or the Gilbert QA Division selects inspection points as notification points, beyond which work may not proceed until acknowledgment of satisfactory notification and issues the list to the vendor. The QA representative performing surveillance for the procurement then either performs physical surveillance of inspection, or waives surveillance by letter or TWX. The list of notification points becomes part of the contractual requirements placed on the vendor.

17.1.7.4 Acceptance

Where required in the contract documents; a vendor of safety-related material, equipment, or services is required to obtain either a Certificate of Inspection (COI), which records physical surveillance of the vendor's final inspection and/or tests, or a Waiver of Inspection (WOI), which records acceptance of the vendor's final inspection and certificate of conformance without physical surveillance. COI's and WOI's are prepared by the SCE&G QA organization and/or the Gilbert QA Division to authorize product shipment. When the requirement exists for a WOI, COI, or Quality Release (in the case of Westinghouse equipment), safety-related hardware cannot be accepted onsite without appropriate documentation.

17.1.7.5 Documentation

When required in the contract documents, a vendor of safety-related material, equipment, or services prepares a Contractor's QA Data Identification Report identifying the documentation to be submitted by the vendor in satisfaction of the purchase order requirements, and submits the report to the SCE&G QA organization and/or the Gilbert QA Division. The SCE&G QA organization and/or the Gilbert QA Division then issues a list of required documentation to the vendor. The identified documentation becomes a part of the contractual requirements for the vendor. Westinghouse forwards the QA data package in support of their Quality Release to SCE&G within 120 days of the final shipment on orders for the Virgil C. Summer Nuclear Station project.

17.1.8 IDENTIFICATION AND CONTROL OF MATERIALS, PARTS, AND COMPONENTS

When required in the contract documents; a vendor of safety-related BOP items is required to establish and maintain an identification system for materials, parts, and components; including partially fabricated assemblies which will assure that identity is maintained on the item or records traceable to the item throughout fabrication and where required, installation. This identification system is to be capable of preventing the use of incorrect or defective items and verifying that only correct and acceptable items have been used. Each item shipped to the site is to be identified by its bill of material number or other tagging information as specified in the contract documents.

The existence and implementation of such a system is one of the areas covered during preaward evaluation and continuing audits and surveillance of each vendor conducted by the SCE&G QA organization, the Gilbert QA Division, or any other agent of the SCE&G QA organization. The surveillance of each vendor shall be conducted to assure that materials, parts, and components on SCE&G products are identified, and that this identification can be used to verify the correct application of materials, parts, and components for these products.

The Westinghouse program in this area is described in Reference [1] and Section 17.1.1.3.

At receipt onsite, the identification of equipment is verified and maintained by applying an identification tag giving the bill of material numbers, Westinghouse SPIN number, or other suitable identification. This identification tag maintains identification through installation. Control is maintained by the status tags, described in Section 17.1.14, applied by the SCE&G QC organization. These tags are used to identify equipment in the warehouse area and after installation in the plant prior to startup.
Gilbert has generated an Equipment List, a Valve List, and an Instrumentation List, combining the NSSS and BOP purchase order information, to identify equipment within the Virgil C. Summer Nuclear Station. These lists will be used for control of plant equipment identification during construction.

17.1.9 CONTROL OF SPECIAL PROCESSES

The control of special processes for NSSS vendors is described in Reference [1] and Section 17.1.1.3.

Vendors of safety-related items are required to identify and submit special process procedures for review and concurrence before use when required. Fabrication may not begin until these procedures have been reviewed and concurred with and the vendor notified of this by the Release of Fabrication Procedures from the SCE&G QA representative. Audits and surveillance of vendors conducted by the SCE&G QA organization, the Gilbert QA Division, or other agents of the SCE&G QA organization will assure that the qualifications of personnel, procedures, and equipment are obtained and maintained, and that documentation of these qualifications is maintained and available. A QA specification identifies the minimum special process procedures to be, as applicable: welding procedures, welding procedure qualifications, nondestructive examination (NDE) procedures, forming and bending procedures, cleaning procedures, heat treating procedures, performance test procedures, hydrostatic procedures, leak test procedures, electrical test procedures, painting procedures, seismic procedure or test results, packaging procedures, storage procedures, shipping procedures, and procedures for verifying wall thickness of pressure boundaries of castings and forgings for valve bodies, pump casings, pipe and pipe fittings, etc.

Special process procedures and qualifications of onsite contractors are subject to review and concurrence by the QA organization onsite. Site contractors may not begin work until the Release to Work has been issued by the Director, Surveillance Systems or the QA Coordinator. During the performance of site work, the Site QA organization performs surveillance to verify proper and complete implementation of the contractor's special process procedures.

17.1.10 INSPECTION

17.1.10.1 Vendor Inspection

The control of inspection for NSSS suppliers is described in Reference [1] and Section 17.1.1.3.

Safety-related BOP vendors must satisfy the requirements of QA specifications. The submission of an Inspection Point Program, describing inspections to be performed by the vendor, concurrence with inspection procedures, and establishment of notification points are described in Sections 17.1.7 and 17.1.9. The review of the Inspection Point Plan and inspection procedures includes determination that the inspections are proper and adequate for the type of item and stage of manufacture or fabrication, to determine that items do or will satisfy the requirement for a quality product, and that direct inspection or indirect process monitoring, or both are used as necessary to determine quality.

Surveillance and audit of the vendor's QA Program and procedures by the SCE&G QA organization, the Gilbert QA Division, or any other SCE&G QA organization agent assures the existence of program elements requiring qualification or certification of inspectors, the existence and presence of inspection procedures, instructions, and/or drawings necessary to the inspection prior to performance of the inspection, and that items replaced, reworked, modified, or repaired are reinspected by the original inspection procedure or procedures equivalent to the original inspection procedure. Surveillance performed by the SCE&G QA organization, the Gilbert QA Division, or other SCE&G QA organization agents will verify implementation of such requirements. The independence of inspection personnel from those performing the activity being inspected is determined during review and evaluation of the vendor's QA Program at the preaward stage of procurement.

17.1.10.2 Onsite Inspection

Onsite inspection of the performance of contractors is performed by the SCE&G QC Organization, the Daniel QC Group (for ASME Code work), or by contractors or subcontractors. Test laboratories are utilized in the QC programs as needed. These laboratories are under the direction of the SCE&G QC Manager (except as noted below for ASME Code work). The general responsibilities of these laboratories are as follows:

1. Concrete material testing and sampling.

2. Concrete testing and sampling.

3. Soil testing and sampling.

4. Rebar Cadweld testing and sampling.

5. Concrete inspections.

6. Nondestructive examination.

7. Welding inspection.

Specific responsibilities are set forth in the SCE&G QC Manual.

The Onsite Laboratory NDE contractor will perform examinations and inspections required, including those required by Daniel in the fabrication and installation of ASME Code stamped work under the direction of the Daniel Project Quality Manager.

The final acceptance of a completed system, structure, or component is based on the completion of a final inspection. This inspection is performed by the appropriate QC organization in coordination with the QA group. Installation acceptance and release for testing will be made only after final inspection by QC with concurrence of QA.

The Programs of Daniel, site contractors, and the SCE&G QC organization are reviewed and audited by the SCE&G QA organization for the program requirements quoted in Section 17.1.10.1, above. The Site QA Staff reviews and comments on inspection procedures before they are implemented, and performs surveillance on the inspections of Daniel, site contractors, and the SCE&G QC organization to assure that the accepted procedures and instructions are implemented. Reports on the surveillance activities are prepared by QA personnel onsite to apprise the SCE&G Manager of QA of the status of site QC and construction activities.

17.1.11 TEST CONTROL

17.1.11.1 Vendor Testing

The control of NSSS supplier testing is described in Reference [1] and Section 17.1.1.3.

As required by contract documents vendors of safety-related BOP equipment shall submit a schedule of major events and inspections and test within six weeks of the receipt of contract documents. The tests identified on the schedule are those performed to verify conformance to document requirements given in such documents as instructions, procedures, drawings, specifications, etc. The procedures for control of testing are submitted for review by SCE&G and/or Gilbert or other SCE&G agents and are required to describe what testing is to be performed, when tests will be performed, the instructions provided the person performing testing, including the acceptance criteria and tolerances, the personnel qualifications required to perform the test, what special environmental conditions must be provided, if any, and the type of report to be prepared to verify that the test results are acceptable. The procedures are reviewed and concurred with by SCE&G, Gilbert, or other SCE&G agents. Proper performance of tests and test evaluations to the accepted procedures is verified by surveillance of vendor performance and documentation by SCE&G QA, Gilbert QA, or other SCE&G QA agents.

17.1.11.2 Site Testing

Site testing by site contractors is performed to procedures submitted to SCE&G QA organization for review and concurrence as described in Sections 17.1.7 and 17.1.9. These procedures are reviewed to the requirements described in Section 17.1.11.1. Site testing performed by Daniel for ASME Code work is performed under the requirements of the ASME Certificate for Daniel at the site to procedures reviewed and accepted by SCE&G QA organization. The performance of tests is subjected to surveillance by SCE&G Site QA to assure that testing is performed in accordance with the accepted procedures.

The evaluation of onsite testing is conducted by the contractors, SCE&G Nuclear Engineering, and the SCE&G QA organization with technical assistance from Gilbert, Westinghouse and other contractors and consultants, as necessary to determine that test results are acceptable.

17.1.12 CONTROL OF MEASURING AND TEST EQUIPMENT

17.1.12.1 Vendor Controls

The control of measuring and test equipment for NSSS suppliers is described in Reference [1] and Section 17.1.1.3.

Vendors and contractors of safety-related materials, parts, components and services for the Virgil C. Summer Nuclear Station are required to have a program to control measurement, inspection, and test equipment, as required, by the SCE&G QA Program, unless the quality of items furnished can be established by onsite receipt inspection, test, or other methods as indicated in Section 17.1.7.1. The program review and evaluation, surveillance, and audits of each vendor conducted by the SCE&G QA organization, the Gilbert QA Division, or other SCE&G Organization agents assures the existence of an acceptable program. When required by the control document the following will be defined by the vendor:

1. A listing of measuring and test devices affecting quality that require calibration. Measuring equipment such as steel rules, levels and similar equipment will not require calibration when their usage does not require a precise degree of accuracy.

2. The method of calibration for each item in the listing specified in item 1 above, including the National Bureau of Standards recognized standard used, for certification of calibrating equipment.

3. The established frequency of calibration.

4. The method of identification for each item under calibration control.

5. The method of determining the calibration status of each item, such as the attachment of a sticker showing the last calibration date, date when due for recalibration, and the person's stamp, initials or signature who performed the last calibration.

6. The type of records that will be maintained.

7. The method for determining and recalling equipment when calibration is due.

8. The measures to be exercised when equipment that is out of calibration has been found to have been used to accept parts, components, assemblies, etc.

17.1.12.2 Site Controls

The SCE&G QC Manager is responsible for maintaining the calibration of tools, gauges, instruments; and other inspection, measuring, and testing equipment and devices used by SCE&G onsite in activities affecting quality.

The calibration and control procedure approved by the SCE&G QC Manager assigns each discipline QC Supervisor the responsibility for establishing the criteria and documents required for the procurement of test and measuring equipment relating to his field of work and for assigning qualified personnel to perform calibrations. He is also responsible for developing checklists or special calibration instructions for all instruments, gauges, tools, and equipment for which special calibration and control is required, and for assigning identifying numbers to equipment that requires calibration, as well as classifying the equipment as to standard or field measurement use, and assigning the frequency of calibration.

QC inspectors are responsible for: applying a calibration tag upon receipt and at recalibration; the accurate calibration of equipment; and inspection of equipment prior to use for damage, proper working order, a current calibration tag, and for proper use of equipment in accordance with procedures or manufacturer's instructions.

The Warehouse Supervisor is responsible for adequate storage facilities until equipment is issued, and for maintaining an issue log for all instruments, gauges, tools, and equipment showing the discipline QC Supervisor to whom the equipment was issued.

The Document Supervisor maintains records of calibration and control of test and measuring equipment by retaining the Calibration Record forwarded to him by the discipline QC Supervisor. The Calibration Record shows identification for each item of equipment, giving the required calibration accuracy, frequency of calibration, and the date of each calibration for an item of equipment.

Standards are purchased from suppliers which can provide certified traceability to the National Bureau of Standards, when possible. When this cannot be done, the discipline QC Supervisor documents the calibration method to be used, justifying its use. The discipline QC Supervisor establishes the frequency at which standards are to be recertified.

Each discipline QC Supervisor maintains a recall system for equipment recalibration.

Additional calibrations are required whenever calibration is suspect, and equipment found consistently out of calibration is repaired or replaced. Out of tolerance equipment may be used temporarily only if correction factors are available and applied. The discipline QC Supervisor approves all such temporary use and documents this use. Accuracy and tolerance of test and measuring equipment shall in no case be of lower order of accuracy than the equipment under test.

Test equipment which is found to be out of calibration during a periodic test is clearly identified as such, and an evaluation is made by the discipline QC Supervisor of the validity of all equipment tests performed with this equipment since its last acceptable calibration.

The QC Group regularly assures that calibration equipment and records are used properly and maintained in good order.

The SCE&G/QA organization performs audits and surveillance of the SCE&G QC organization to assure that the requirements of the QC calibration procedure are followed.

17.1.13 HANDLING, STORAGE, AND SHIPPING

17.1.13.1 Vendor Controls

The handling, storage, shipping, cleaning, and preservation control measures used for NSSS suppliers are described in Reference [1] and Section 17.1.1.3.

The handling, storage, shipping, cleaning, and preservation measures of safety-related BOP vendors and site contractors are controlled by the requirements of current QC specifications.

The QA specifications require documented measures for protection of equipment during handling, storage, and shipping, including the use of specific procedures for control of special environmental controls or special handling equipment and verification of conformance to controls. Periodic inspections must be programmed for special handling equipment, as necessary, to ensure safe and adequate handling.

The QA specifications require that each item be identified, marked, and labeled to provide identity of the item and easy identification of special handling and storage requirements.

The documented measures required by the QA specifications must describe;

1. The methods and equipment that will be used for normal handling of items during fabrication, processes, storage, shipping, and installation.

2. The measures that will be utilized to protect items requiring special handling, storage, and shipping techniques.

3. Identification, marking, and labeling methods, i.e., stenciling (steel, paint), tag (metal, other).

4. Measures that will be used to protect identification, marking, and labeling from deterioration and loss of recognition when the method is not a permanent type.

5. Special protective environments that will be used for special products.

In addition, vendor procedures for cleaning, painting, packaging, storage, and shipping are regarded as special process procedures, and controlled as described in Section 17.1.9.

The SCE&G QA organization, the Gilbert QA Division, or other SCE&G QA agents review the QA Program of vendors, and perform audits and surveillance of vendors to ensure the existence and implementation of these requirements. The SCE&G QA organization performs audits and surveillance of site contractors to ensure the existence and application of these requirements.

17.1.13.2 Site Controls

Storage services onsite are provided by the SCE&G QC Group. The QC procedure for storage requires the classification of safety-related items to one of four protection levels provided. These are:

1. Level D includes those items not so sensitive to the environment as Level C (below), which may or may not require some protection against the elements, airborne contamination, and physical and mechanical damage. Level D items are stored outdoors in an area marked and designated for storage.

2. Level C items require protection from exposure to airborne contaminants, the environment, physical damage, and g-forces. Protection from water vapor and condensation may be required, but is not so important as for Level B (below). Level C items are stored indoors or in an environment equivalent to indoors. Temperature control is not required.

3. Level B items are sensitive to environmental conditions and require protection from the effects of temperature extremes in addition to the requirements for Level C, including protection from humidity and vapors. Level B items are stored within a fire resistant, weathertight and well ventilated building or equivalent tear resistant structure. Items are placed to allow air circulation, and temperatures are held within a range of 40°F minimum and 140° maximum.

4. Level A items are those which are exceptionally sensitive to environmental conditions or require special measures for protection from the effects of high or low temperature, sudden temperature changes, humidity and vapors, g-forces, physical damage, and airborne contamination such as rain, snow, dust, dirt, salt sprays, or fumes. Level A items are stored under conditions similar to those for Level B items, with additional requirements such as temperature control within a range of 60°F to 90°F, relative humidity to less than 60 percent, a filtered ventilation system, and other appropriate requirements.

The storage of items is periodically inspected by the SCE&G QC Group to ensure that the storage requirements are being satisfied.

The Constructor and Site Contractors prepare handling instructions for items which require special handling because of weight, size, or fragility. These instructions are reviewed by the SCE&G QA organization to ensure inclusion of quality criteria. The SCE&G QC Group observes these handling operations and the SCE&G QA

organization performs surveillance on selected handling operations, to assure that accepted handling procedures and instructions are followed, and to preclude damage to the items handled.

Review of handling procedures and instructions, and inspection of hoisting and rigging equipment is performed to assure that appropriate equipment and methods are used in handling.

17.1.14 INSPECTION, TEST, AND OPERATING STATUS

17.1.14.1 Vendor Controls

Requirements for the identification of inspection and test status for NSSS suppliers are described in Reference [1] and Section 17.1.1.3.

The QA specification requires vendors of safety-related items to have, within their material identification and control and nonconformance control programs, identification methods to assure that only correct and acceptable materials, parts, and/or components are used in the fabrication, assembly, processing, installation, and repair of items. These measures must include provisions for control of nonconforming items to prevent further processing of the item by such methods as segregation, tagging, marking or other positive means. The SCE&G QA organization, the Gilbert QA Division, or other SCE&G QA agents will review vendors programs and perform audits and surveillance of vendors to assure the existence and implementation of these requirements.

17.1.14.2 Site Controls

The SCE&G QC Group is responsible for applying inspection status tags to items onsite. These tags indicate that an item is accepted, on hold, conditionally accepted, or rejected.

Items with an ACCEPTED or CONDITIONAL tag applied may be installed in plant systems. Items with the CONDITIONAL tag applied are subject to further testing or inspection after issuance from the warehouse. Actions taken on items with a HOLD or REJECTED tag applied are described in Section 17.1.15.

Procedure requirements for identification of operating status for preoperational testing are described in Section 13.5.

The programs and procedures for identification of inspection, test, and operating status onsite are reviewed and commented on by the SCE&G QA organization. The SCE&G QA organization conducts audits and surveillance of onsite records and actions to verify the performance of site organizations to the accepted procedures.

17.1.15 NONCONFORMING MATERIALS, PARTS, OR COMPONENTS

17.1.15.1 Vendor Controls

The requirements placed on NSSS suppliers for control of nonconforming materials, parts or components is described in Reference [1] and Section 17.1.1.3.

Normally the QA specification requires the vendor to establish documented measures to control items when there is evidence of nonconformance to established requirements, including the identification, documentation, segregation, disposition, and notification of all concerned parties of the nonconforming condition. The only exception is when the contractor is working under the SCE&G/QA Program and the nonconformances are processed in accordance with SCE&G/QA Program. The review of nonconformances and disposition authority must be defined. Dispositions may be; accepted "as is", repair, rework, or scrap. The measures must include controls to prevent further processing where justified until the disposition has been approved. When the disposition is acceptance "as is", repair, or rework; the documentation shall verify acceptability and describe the "as built" item. Approval must be obtained from the SCE&G Nuclear Engineering Department and QA organizations, or their agents, whenever the disposition would result in an item which would not satisfy the contract documents. The request for such approval must be in writing to the SCE&G Production Engineering Department, or their agent.

17.1.15.2 Site Controls

At receiving inspection, the QC Inspector will identify those items which do not conform to requirements by placing a HOLD or REJECT tag on the item. REJECT items are removed from the site.

HOLD items are placed in segregated storage when practical, and maintained there until disposition of the nonconformance. Large items, or those which may not practically or physically be segregated shall have the HOLD tag placed on the item in a conspicuous location.

The QC Inspector or Engineer initiates a Deficiency Notice for the nonconformance, or, after consulting the discipline QC Supervisor, a Nonconformance Notice for nonconformances which require SCE&G Production Engineering resolution. Deficiencies are those nonconformances which can be corrected by existing approved instructions or procedures or by replacement of a broken or nonconforming part. The discipline QC Supervisor reviews all Deficiency Notices to determine whether a Nonconformance Notice must be prepared. Deficiency Notices and Nonconformance Notices are distributed to SCE&G QA and other involved organizations.

The QC Inspector or Engineer follows disposition action determined by the discipline QC Supervisor and records the completion of action and acceptance of the item, and replaces the HOLD tag with an ACCEPTED tag, or CONDITIONAL tag when further action must be taken after issuance from the warehouse. The completed Deficiency Notice is filed and copies sent to the SCE&G QA organization and other involved organizations.

Nonconformance Notices, except Daniel NCN B's, are sent to SCE&G Nuclear Engineering for determination of disposition, with copies to the SCE&G QA organization and other concerned organizations. SCE&G Nuclear Engineering determines disposition for the nonconformance and forwards the disposition to the SCE&G QC Group for action. SCE&G Nuclear Engineering evaluates the nonconformance to determine whether it should be considered a potential significant deficiency, and be processed by the applicable Nuclear Engineering procedure.

Comments on the nonconformance are obtained from the SCE&G QA organization and a disposition prepared on the Nonconformance Notice. The disposition may involve acceptance "as is", repair, rework, or direction to classify the item REJECT. Disposition action will be directed by SCE&G Nuclear Engineering. The SCE&G QC Group, and the SCE&G QA organization, under direction of the Director of Surveillance Systems or the QA Coordinator, follow-up on corrective action and assure that the QC Inspector or Engineer completes the disposition action portion of the Nonconformance Notice, documenting the final condition of the item, and forwards the form to the Document Supervisor for retention in the files.

Minor civil, mechanical and electrical construction items which do not comply with the design documents but do not affect the design of the structures, systems, or components, may be documented on "As-Built Documents" (ABD's). ABD's are filed with the associated quality records, and may be incorporated into drawing revisions as described in Section 17.1.3.2.

The discipline QC Supervisors analyze the logs of Deficiency Notices and Nonconformance Notices to determine whether any trend exists or any correction should be made to construction or QC procedures, and reports on this analysis quarterly to the SCE&G QC Manager.

Conformance to the SCE&G QC and SCE&G Nuclear Engineering procedures for the control of nonconformances is assured by audit and surveillance by the SCE&G QA organization and the Site QA organization.

17.1.16 CORRECTIVE ACTION

17.1.16.1 Vendor Controls

The corrective action controls for the NSSS supplier are described in Reference [1] and Section 17.1.1.3.

The QA specification requires vendors of safety-related items to have corrective action measures to assure that conditions adverse to quality are promptly identified, documented, and corrected. The only exception is when the contractor is working under the SCE&G/QA Program and the corrective measures are accomplished in accordance with the SCE&G/QA Program. These measures must identify the responsibilities for identification of the need for corrective action, and the preparation and approval of corrective action. The cause of the detrimental condition must be determined. When the corrective action is taken to preclude repetition of significant nonconforming conditions, the corrective actions must be monitored to assure that the corrective actions are effective. Guidelines for determining the need for corrective action must be given in the measures, and management distribution for notification identified.

The SCE&G QA organization, the Gilbert QA Division, or other SCE&G QA agents evaluate the vendor's QA Program to ensure the existence of adequate corrective action measures, and perform surveillance of the vendors to ensure the implementation of these measures.

17.1.16.2 Site Controls

The SCE&G QA organization conducts audits and surveillance of organizations and contractors performing safety-related actions, and prepares reports on these audits and surveillances. Whenever a condition is discovered which indicates a significant omission of controls in an approved QA Program, or a deficient QA Program, a Corrective Action Request (CAR) is issued. The CAR must be acknowledged by the responsible individual and corrective action initiated to correct the condition.

The SCE&G Site QA staff also reviews Nonconformance Notices, Deviation Notices, and As-Built Documents; and evaluates and examines the trend analysis data gathered by the SCE&G QC Group described in Section 17.1.15.2, to determine the existence of conditions significantly adverse to quality requiring the issuance of a CAR.

The SCE&G QC Group and the Site QA staff follow the implementation and effectiveness of corrective action.

SCE&G has established a Field Review Board and assigned it prime responsibility for identification and follow-up onsite corrective action.

The Field Review Board is composed of the SCE&G QC Manager as chairman, the SCE&G Nuclear Site Manager, the Daniel Project Manager, the Daniel Project Quality Manager (for ASME Code activities), SCE&G Group Manager, Nuclear Engineering and Licensing, the SCE&G Manager of QA and the SCE&G Group Manager Production Engineering QC and Construction or their designee as permanent members. Other temporary members may be included to lend technical support as the need arises. Each permanent member designates a replacement to act in his stead in the case he is absent.

The Field Review Board reviews major Deficiency and Nonconformance Notices, change requests, stop work orders, and SCE&G QA Corrective Action Request as deemed necessary by its members, and quality trend analyses. Through review of these documents overall site quality performance is evaluated. Requests for corrective action are made for the purpose of improvements to construction and quality control operations.

The SCE&G QC Group ensures implementation of Field Review Board specified corrective action. The SCE&G QC Group also conducts trend analyses of deficiencies and nonconformances for presentation to the Field Review Board, as described in Section 17.1.15.2.

17.1.17 QUALITY ASSURANCE RECORDS

17.1.17.1 Vendor Records

The program for control of QA records for NSSS suppliers is described in Reference [1] and Section 17.1.1.3. In addition, the data packages in support of the Westinghouse Quality Release are forwarded to SCE&G for retention and storage at the Virgil C. Summer Nuclear Station.
The QA specification requires vendors of safety-related items to submit a list of required documentation as a part of the Contractor's QA Identification Report. The SCE&G QA representative then prepares the list of minimum required documentation based on this submission and transmits it to the vendor for compliance. The required documentation package is forwarded to SCE&G for retention and storage at the Virgil C. Summer Nuclear Station.

The following are examples of the minimum records to be forwarded to the owner:

1. NDE reports.

2. Material test reports (shall be available for review prior to fabrication).

3. Final inspection reports/certificates.

4. Performance test reports.

5. Code data inspection reports.

6. Hydrostatic and leak test reports.

7. Electrical test reports.

8. Design changes/specification deviation requests.

9. Radiographs.

10. Weld maps and joint history records.

11. Verification of wall thicknesses.

The vendor's inspection and test procedures must require documentation of results and acceptability, identification of the inspector or data recorder, the type of observation performed, action taken to resolve nonconforming conditions, and the indexing of the documents for ready retrieval. Data related to the qualification of personnel, procedures, and equipment used to perform special processes is a part of the vendors records. Document packages bear identification of the owner (SCE&G), the owner's purchase order number, and the station name. The vendor must provide secure and fire-resistive or other acceptable storage for the nonreplacable records.

When required by contract documents, the data packages forwarded to SCE&G by the vendor's will include, in addition to QA records specified in procurement packages, a certificate of conformance, a Certificate of Inspection or Waiver of Inspection provided by SCE&G QA or its agent and an index of the required documentation, and the documentation.

The existence of requirements for these actions is verified by audit, and their implementation by surveillance by the SCE&G organization, the Gilbert QA Division, or other SCE&G agents, and by audits of data packages onsite conducted by the Site QA organization.

17.1.17.2 Site Controls

The preparation and retention of documents onsite is controlled by the QA specification for site contractors and the SCE&G QA Plan and SCE&G QC Procedures. The requirements for inspection and test document preparation are as given in Section 17.1.17.1, above.

During the construction phase the SCE&G QC Group maintains the Plant Numerical Records System, which is the permanent file for QA records at the Virgil C. Summer Nuclear Station. Complete records are maintained covering all aspects of QC activity. Inspection reports, fabrication and test procedures, radiographs and other nondestructive examination test reports, and any other documentation as required by applicable procedures, specifications, codes and standards are retained and handled in accordance with written procedures. Receiving record reports, documentation

packages and other records are placed in the permanent QA file where they are available for record, information, and QA audit. The storage area affords protection against destruction or deterioration caused by fire, water, humidity, temperature, tornadoes, insects and rodents as required by the QA and QC procedures and all records are required to be indexed for proper placement and ready retrieval. Access to the permanent files is controlled by the SCE&G QC Group through the site Documents Supervisor, who controls access to the records vault and files.

The SCE&G QC Group inspects equipment data packages against the package index before placement in the Plant Numerical Records System, and directs indexing and placement of the package. The SCE&G QA organization audits these records to assure that data packages are correct and complete.

SCE&G has prepared a Records Accumulation and Retention Chart giving the retention period for plant records by the type of record, and the SCE&G QC procedure for record filing and retention requires that the retention requirements be adhered to. The Chart is revised as necessary to assure adequate identification, accumulation and retention of records.

The SCE&G QA audits the site records filing and retention function to assure conformance to the SCE&G QC procedures on QA record filing and retention.

17.1.18 AUDITS

The overall SCE&G Audit Program is composed of two sources of input, surveillances and audits. In the SCE&G program an audit is normally a broad based multi Appendix B criteria programmatic evaluation which considers "could it work" system functionality. Surveillance is normally much narrower in scope (one or several criteria) and is deeper penetrating into examining sufficient evidence of actual work activity (in-process or documentation) to confirm satisfactory results. Extensive system surveillance (system attribute and type II) provide a much sharper, more detailed conclusion of the implementation status and adequacy of any QA program provided that a series of surveillance is evaluated to cover all applicable criteria. A lead auditor is able to judge QA program compliance and adequacy by a thorough evaluation of surveillance report, corrective action, followup, and quality history. In the most positive case a combination of surveillances may confirm adequacy and implementation of a complete QA program therefore may, upon evaluation and documentation by a certified lead auditor, preclude the need for audit. In the most negative case, the evaluation will identify to the lead auditor where further audit activity should be concentrated.

17.1.18.1 Internal Audits

The internal audit program of Westinghouse is described in Reference [1] and Section 17.1.1.3.

The Gilbert Design Control Program includes procedures requiring audits of each Project Engineer, Project Management, and the Service Department, using the Gilbert QA Division as a consultant to the Gilbert Utilities Division. These audits are conducted across all Project lines to assure that the Design Control Program is operating successfully. Audits are conducted in accordance with the Gilbert QA Manual procedures with formal written reports transmitted to Department Heads for resolution, with copies to the Engineering Manager and Project Manager involved. The Departmental Head response is transmitted to the QA Audit Team Leader for evaluation. When necessary to assure that adequate action is taken in response to audits, reaudit is scheduled during subsequent design control audits.

The SCE&G QA organization conducts audits/surveillances of the SCE&G activities affecting quality to assure compliance with the SCE&G QA Plan, the QA Manual, the Nuclear Engineering Procedures Manual, the Purchasing Procedures Manual, the SCE&G Site QC and Inspection Plan, and the Field QC Procedures Manual. These audits/surveillances are scheduled to cover each area of SCE&G performing safety-related work annually, or as frequently as deemed necessary to ensure that policies and procedures are effective.

The QA specification requires all vendors of safety-related materials, equipment, or services to conduct audits to determine the effectiveness of the vendor's QA Program. A description of the following is required of each vendor:

1. The criteria for determining when and at what frequency audits will be performed,

2. The system that will be used to conduct the audits,

3. How the audit findings, corrective actions, and results will be documented and to whom they will be distributed, and

4. The titles and duties of persons having responsibility for the audit.

17.1.18.2 External Audits

The audit program for suppliers of NSSS materials, equipment, or services is described in Reference [1] and Section 17.1.1.3.

Safety-related BOP purchases are made by SCE&G purchase order, and each vendor of safety-related materials, equipment, or services is required to have a QA Program consistent with the complexity and importance of the materials, equipment, or services to be provided. The SCE&G QA organization, or the Gilbert QA Division or other SCE&G QA agents, conduct audits of each of these vendors to assess their program, and evaluate the capability of their vendor evaluation programs, including the audits conducted by the vendors.

The SCE&G QA organization conducts audits and surveillance of vendors of safety related materials, parts, components, and services to verify continuing existence of an acceptable QA program. The audits and surveillances are conducted and reports are forwarded to the management of the vendor for response to the deficiencies identified during the audit, and to concerned management within SCE&G. The frequency of audits and surveillance are commensurate with the item or service to be provided. Each vendor which is required to have formal written QA program will be audited at least once during the performance of his work and vendors performing work over an extended period of time will be evaluated at least annually and audited on a triennial basis. Sufficient system surveillance or other inspection, testing, and verification defined in 17.1.7.3 will be performed to satisfy the intent of and preclude the need for audit, when properly evaluated and documented by a certified lead auditor.

The SCE&G QA organization, or the Gilbert QA Division as agent for the SCE&G organization conducts audits of Westinghouse WRD to determine the effectiveness of the NSSS QA Program. The SCE&G QA organization audits Gilbert to determine the effectiveness of the Gilbert QA Program for BOP design.

Personnel from the Gilbert QA Division acting through the Gilbert Project Quality Coordinator, may participate in or conduct these audits as agents of the SCE&G QA organization.

The SCE&G QA organization also audits the Gilbert QA Division and Gilbert Project Quality Coordinator to assure that the requirements of the Gilbert QA Program are being applied as described in the Gilbert QA Plan for the SCE&G project.

17.1.18.3 Audit Requirements

SCE&G conducts audits under the following requirements, and requires its agents, the NSSS supplier, contractors, and vendors to have an audit program applying similar requirements, consistent with the complexity and importance of the materials, equipment, or service being provided.

In all cases, audits are performed by a group which does not have direct responsibility for the area being audited. Audits are conducted in accordance with established procedures by appropriate individuals with the necessary education, training and experience. The areas of design, procurement, shipping, storage, installation, manufacturing, and construction are audited for conformance to previously established QA requirements which have an effect on product quality. Audits include a review of completed and accepted operations, a review of documentation and records, and an evaluation of the adequacy and effectiveness of QA Program systems. Procedures for audits to be performed by the SCE&G QA organization are contained in the SCE&G QA Manual.

When required to fully assess a preferred bidder's QA Program, a pre-award survey is conducted to determine whether the bidder has an effective QA Program. Audits of each vendor or contractor are conducted as frequently as necessary during the term of a contract to determine that an effective QA Program is being applied. The frequency of audits is scheduled commensurate with the item or service being provided and the vendor history of supplying quality related items or services.

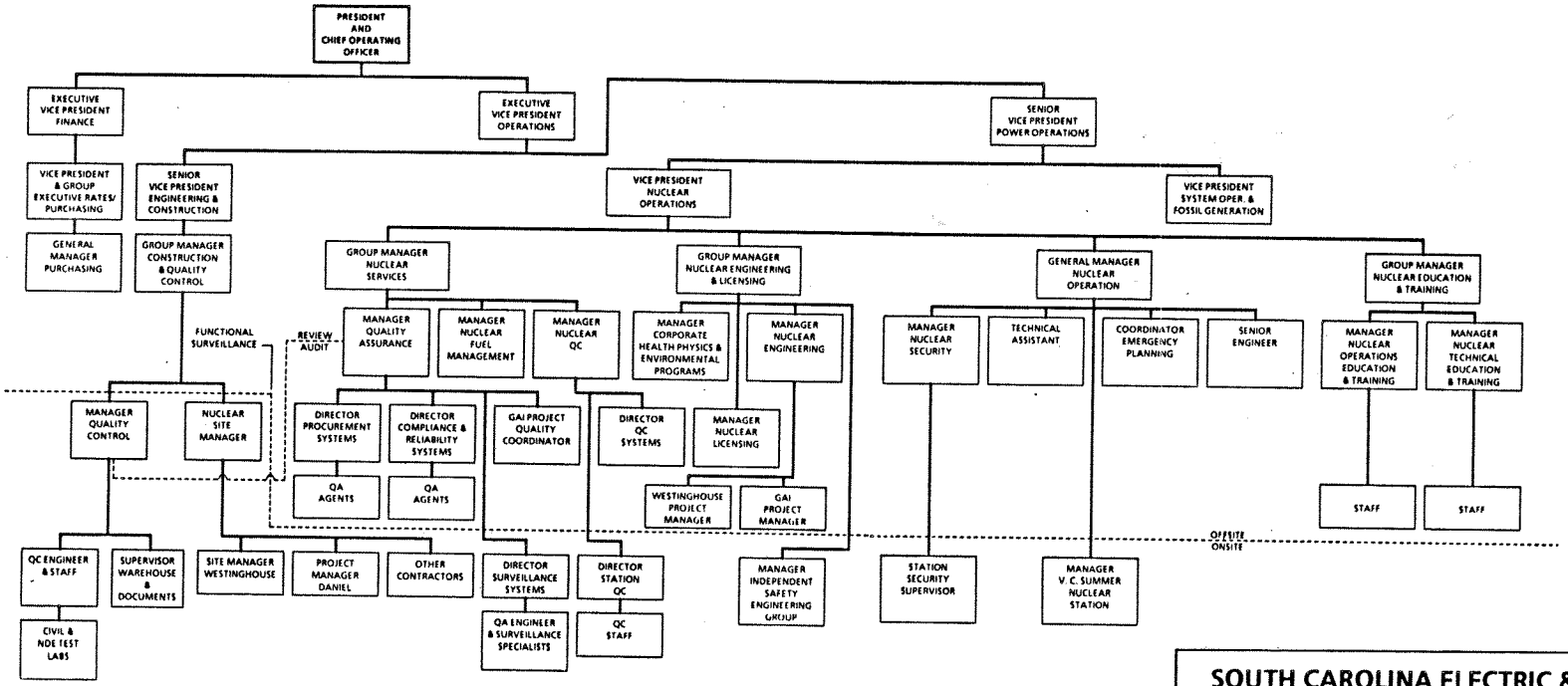
An SCE&G QA Procedure provides guidelines and a format for the preparation of reports on audits conducted by SCE&G QA personnel. Program audit results are reported to the management of the organization being audited and to SCE&G QA management. The organization's QA management in cooperation with SCE&G QA management take appropriate action to ensure corrective action when it is required. The SCE&G QA organization reviews and analyzes pertinent quality assurance reports and data submitted for information by contractors and reports generated by agents of the SCE&G QA organization.

Similar controls on the preparation of audit reports and the forwarding of reports to management are required of vendors and contractors.

17.1.19 REFERENCES

1. "Westinghouse Electric Corporation Water Reactor Division Quality Assurance Plan," WCAP-8370.

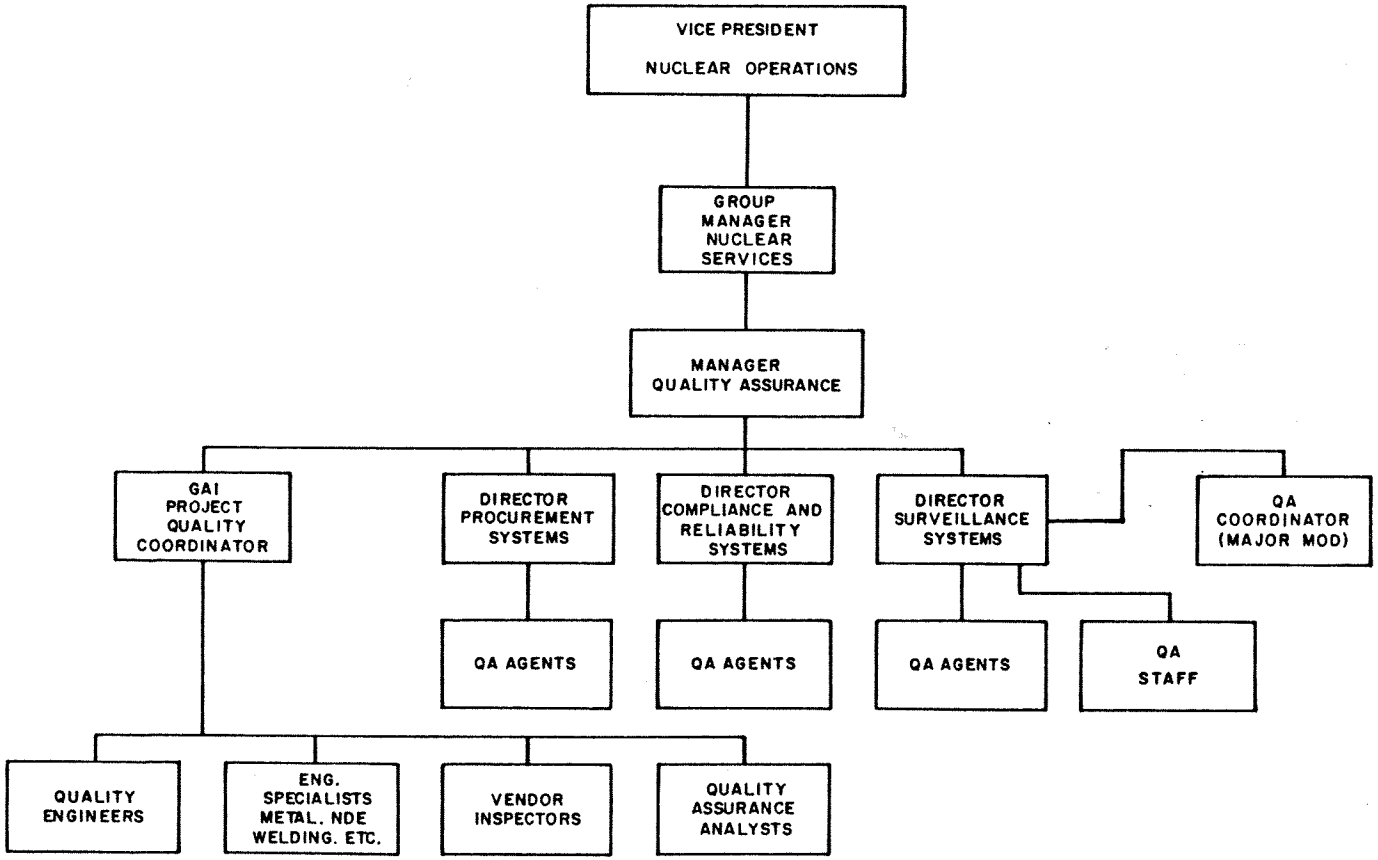
2. "Nuclear Fuel Division Quality Assurance Program Plan," WCAP-7800.



SOUTH CAROLINA ELECTRIC & GAS CO.
VIRGIL C. SUMMER NUCLEAR STATION

South Carolina Electric & Gas Company
Virgil C. Summer
Nuclear Station Quality Assurance
Organization Chart
Figure 17.1-1

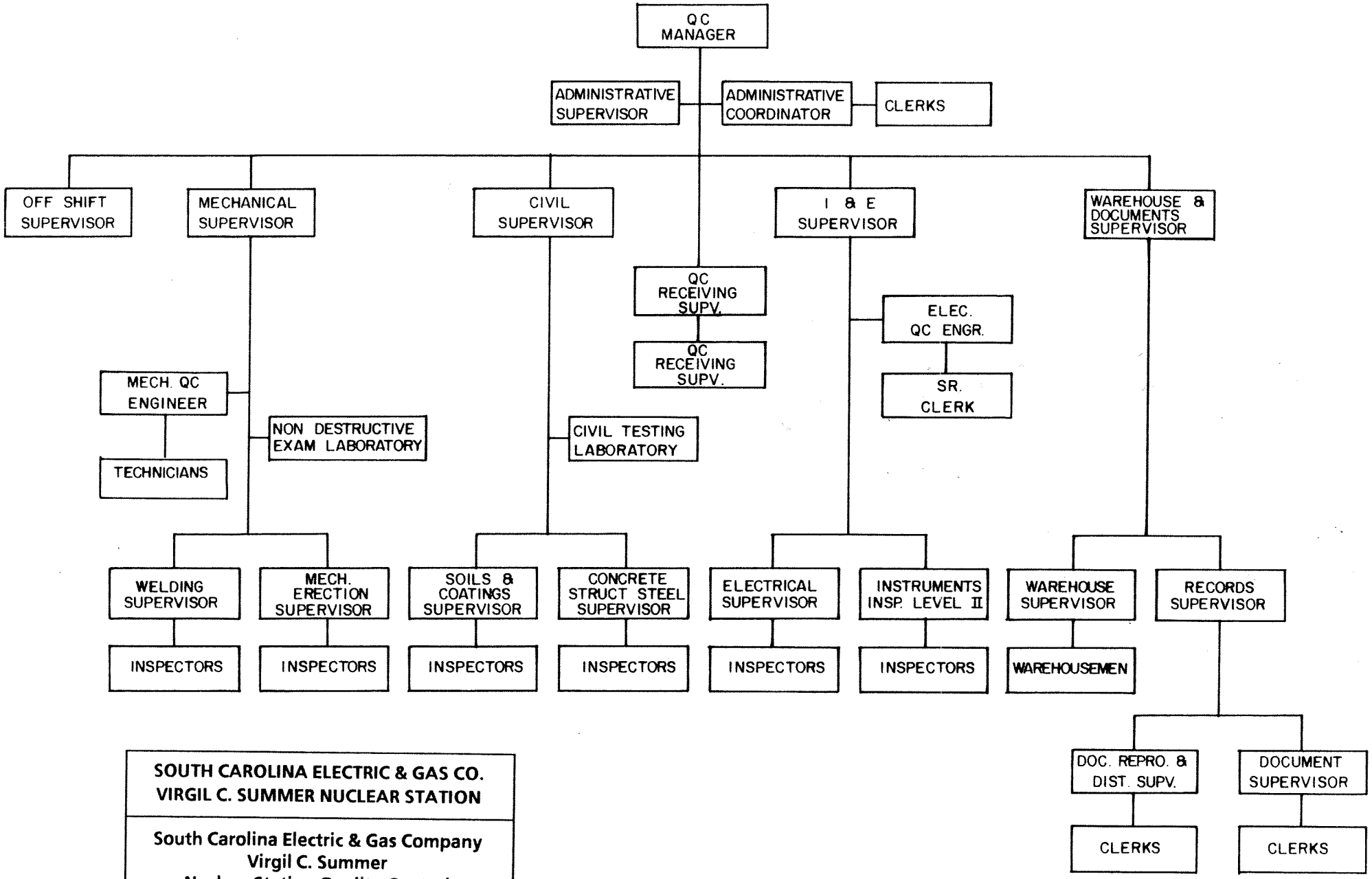
Amendment 0
August 1984



SOUTH CAROLINA ELECTRIC & GAS CO.
VIRGIL C. SUMMER NUCLEAR STATION

South Carolina Electric & Gas Company
Virgil C. Summer
Nuclear Station Quality Assurance
Organization Chart
Figure 17.1-2

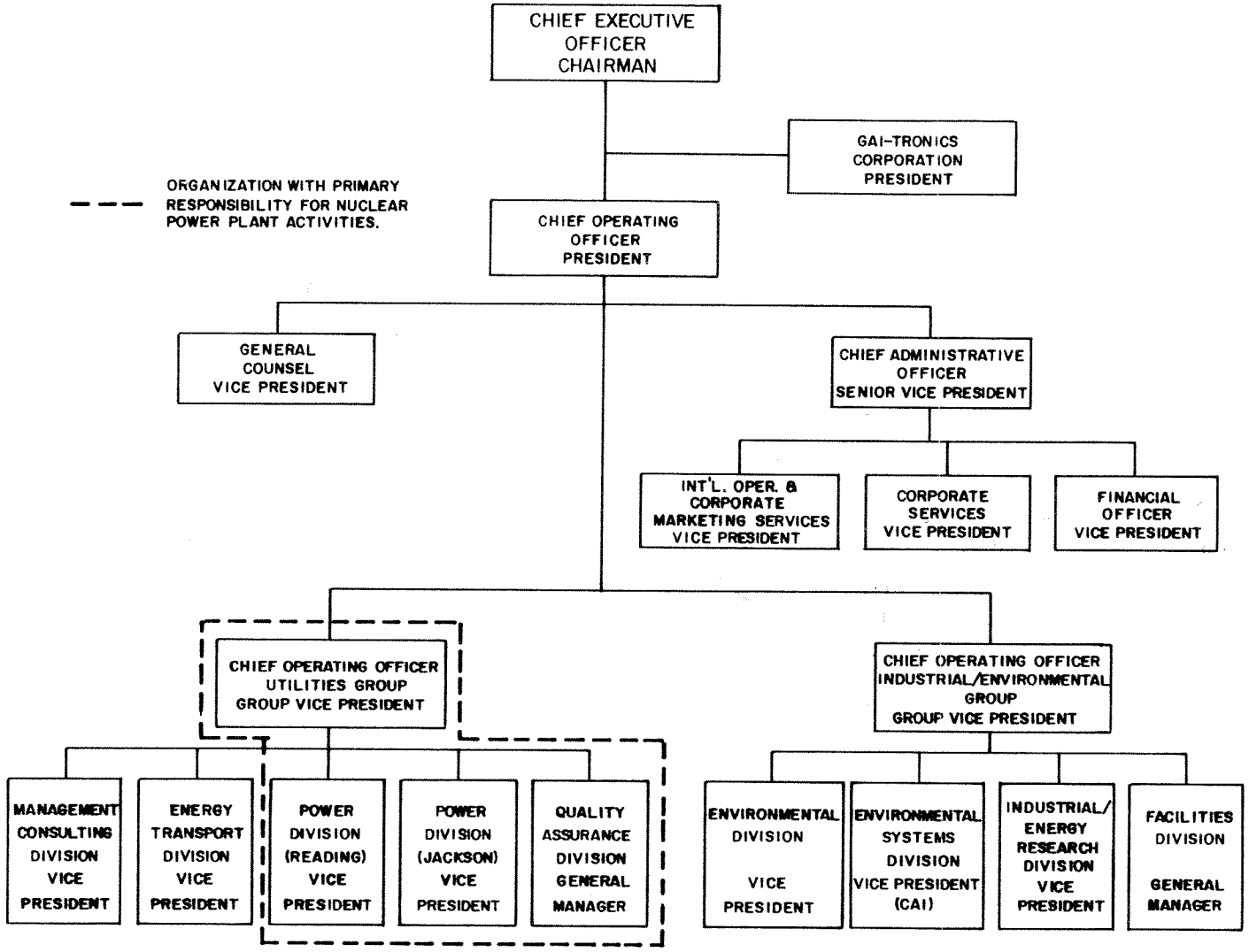
Amendment 0
August 1984



SOUTH CAROLINA ELECTRIC & GAS CO.
VIRGIL C. SUMMER NUCLEAR STATION

South Carolina Electric & Gas Company
Virgil C. Summer
Nuclear Station Quality Control
Organization Chart
Figure 17.1-3

Amendment 0
August 1984

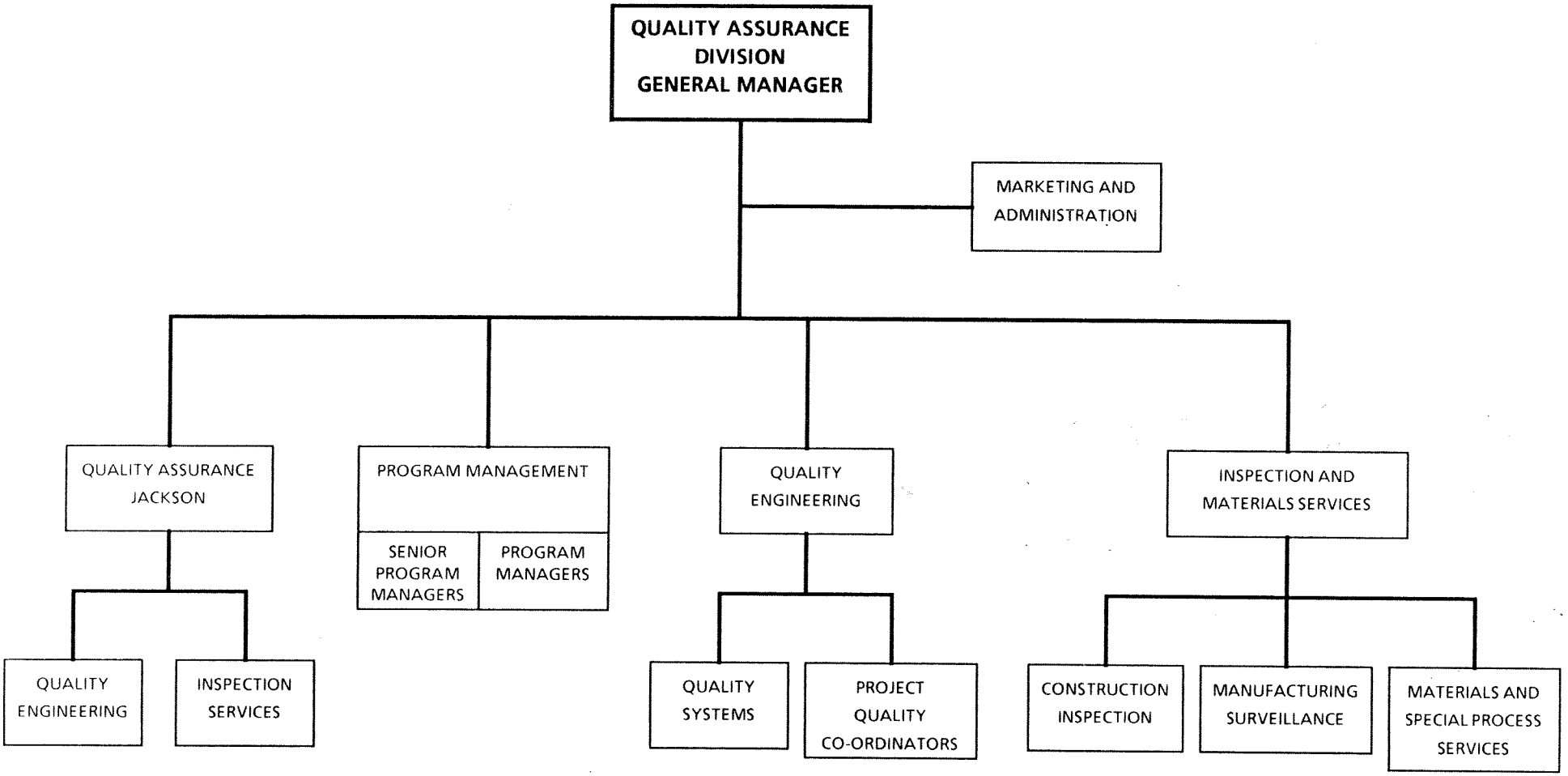


SOUTH CAROLINA ELECTRIC & GAS CO.
VIRGIL C. SUMMER NUCLEAR STATION

Gilbert Associates, Inc.
Corporate Organization Chart

Figure 17.1-4

Amendment 0
August 1984

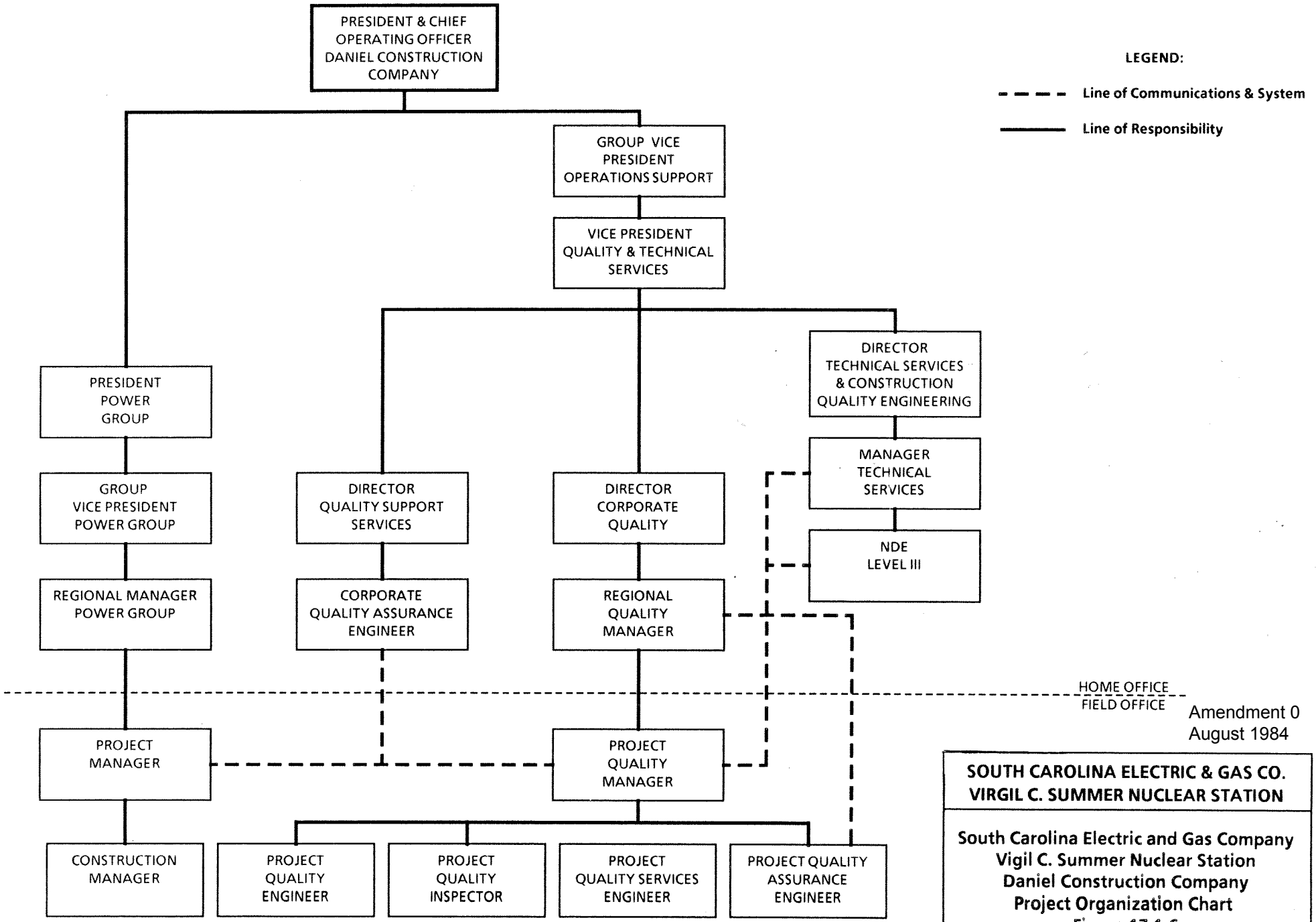


SOUTH CAROLINA ELECTRIC & GAS CO.
VIRGIL C. SUMMER NUCLEAR STATION

Gilbert Associates, Inc.
Quality Assurance Division
Organization Chart

Figure 17,1-5

Amendment 0
August 1984



Amendment 0
August 1984

SOUTH CAROLINA ELECTRIC & GAS CO.
VIRGIL C. SUMMER NUCLEAR STATION

South Carolina Electric and Gas Company
Vigil C. Summer Nuclear Station
Daniel Construction Company
Project Organization Chart
Figure 17.1-6

17.2 QUALITY ASSURANCE DURING THE OPERATIONS PHASE

The description of the Quality Assurance Program at the Virgil C. Summer Nuclear Station Unit 1 is found in the Virgil C. Summer Nuclear Station Unit 1 Quality Assurance Program Description (QAPD). The QAPD is governed by 10 CFR 50.54(a).

RN 11-040