TABLE OF CONTENTS

TABLE OF CONTENTS (Continued)

TABLE OF CONTENTS (Continued)

LIST OF TABLES

LIST OF FIGURES

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 November 2006. 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	02-01	October 2005
	17.ii	02-01	October 2005
	17.iii	02-01	October 2005
	17.iv	00-01	October 2005
	17.v	00-01	October 2005
	17.vi	Reset	November 2006
	17.vii	Reset	November 2006
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
Page	17.1-27	97-01	August 1997
	17.1-28	97-01	August 1997
	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	RN03-031	October 2003
	17.2-2	RN03-031	October 2003
	17.2-3	RN02-003 RN03-031	June 2003 October 2003
	17.2-4	RN03-031 RN04-034	October 2003 September 2004
	17.2-5	RN02-054 RN04-034	July 2003 September 2004
	17.2-6	RN02-037	January 2005
	17.2-7	02-01	May 2002
	17.2-8	02-01	May 2002
	17.2-9	RN01-107	February 2003
	17.2-10	RN03-031 RN04-044	October 2003 February 2005

Page / Fig.No.		Amend. No.	Date
Page	17.2-11	RN03-013	June 2003
	17.2-12	00-01	December 2000
	17.2-13	00-01	December 2000
	17.2-14	RN04-036 RN02-037	October 2004 January 2005
	17.2-15	RN03-031 RN04-025 RN02-037	October 2003 August 2004 January 2005
	17.2-16	RN03-031	October 2003
	17.2-17	RN03-031 RN02-037	October 2003 January 2005
	17.2-18	RN03-031	October 2003
	17.2-19	02-01	May 2002
	17.2-20	RN02-037	January 2005
	17.2-21	02-01	May 2002
	17.2-22	02-01	May 2002
	17.2-23	02-01	May 2002
	17.2-24	RN02-037	January 2005
	17.2-25	00-01	December 2000
	17.2-26	RN02-037	January 2005
	17.2-27	02-01	May 2002
	17.2-28	RN04-034	September 2004
	17.2-29	02-01	May 2002
	17.2-30	RN02-037	January 2005
	17.2-31	RN02-037	January 2005
	17.2-32	00-01	December 2000
	17.2-33	02-01	May 2002
	17.2-34	RN02-037	January 2005
	17.2-35	RN02-037	January 2005
	17.2-36	RN04-034 RN02-037	September 2004 January 2005
	17.2-37	RN02-054 RN04-034	July 2003 September 2004
	17.2-38	RN03-031 RN04-034	October 2003 September 2004
	17.2-39	RN04-034 RN05-027	September 2004 September 2005
	17.2-40	RN04-044	February 2005
	17.2-41	RN04-044	February 2005
	17.2-42	RN03-031	October 2003
	17.2-43	RN06-035	November 2006
	17.2-44	02-01	May 2002
	17.2-45	RN05-003	May 2005
	17.2-46	RN03-031	October 2003
	17.2-47	RN03-031	October 2003
Fig.	17.2-1	RN01-123 RN03-013	May 2003 June 2003

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.

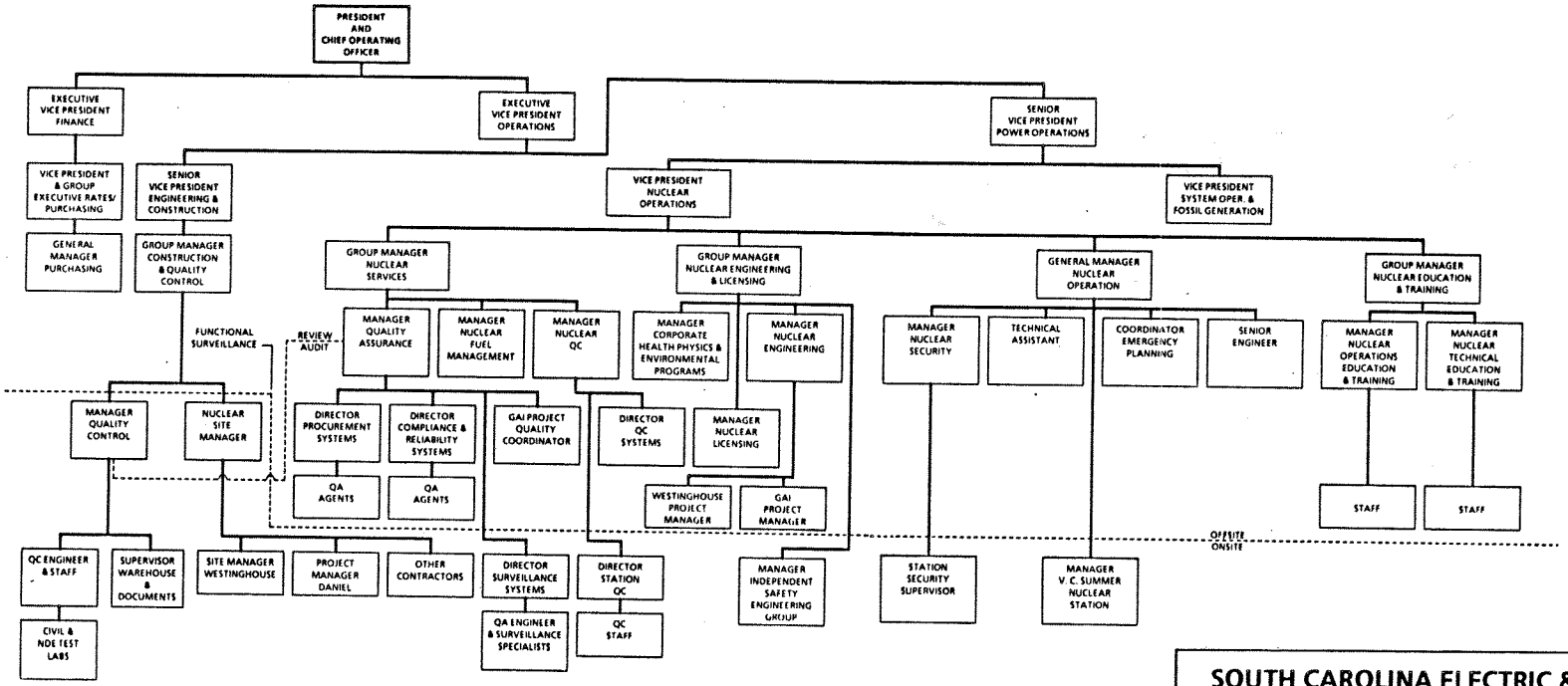
An SCE&G QA Procedure provides guidelines and a format for the preparation of reports on audits conducted by SCE&G QA personnel. Program audit results are reported to the management of the organization being audited and to SCE&G QA management. The organization's QA management in cooperation with SCE&G 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.

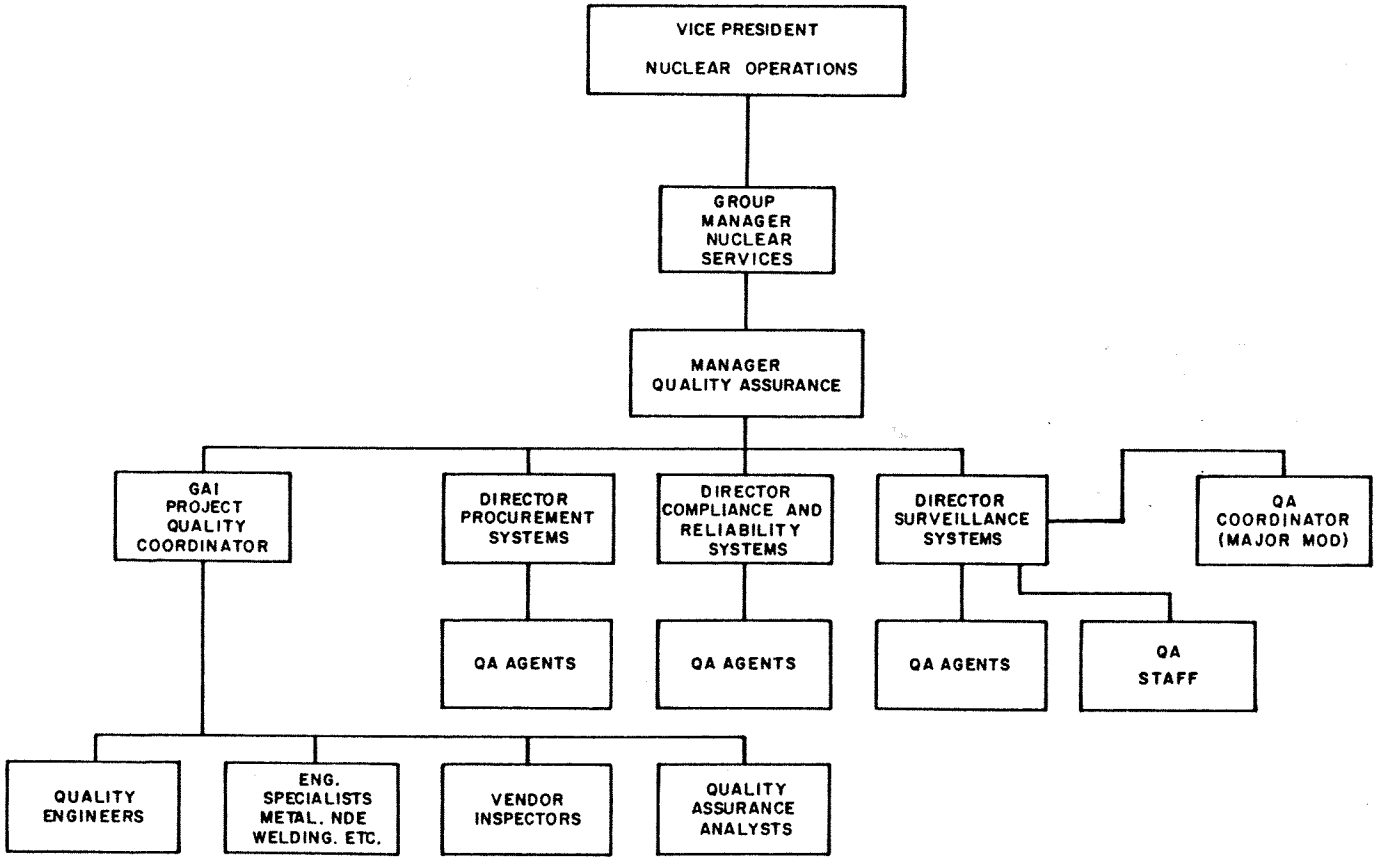
2. "Nuclear Fuel Division Quality Assurance Program Plan," WCAP-7800.



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

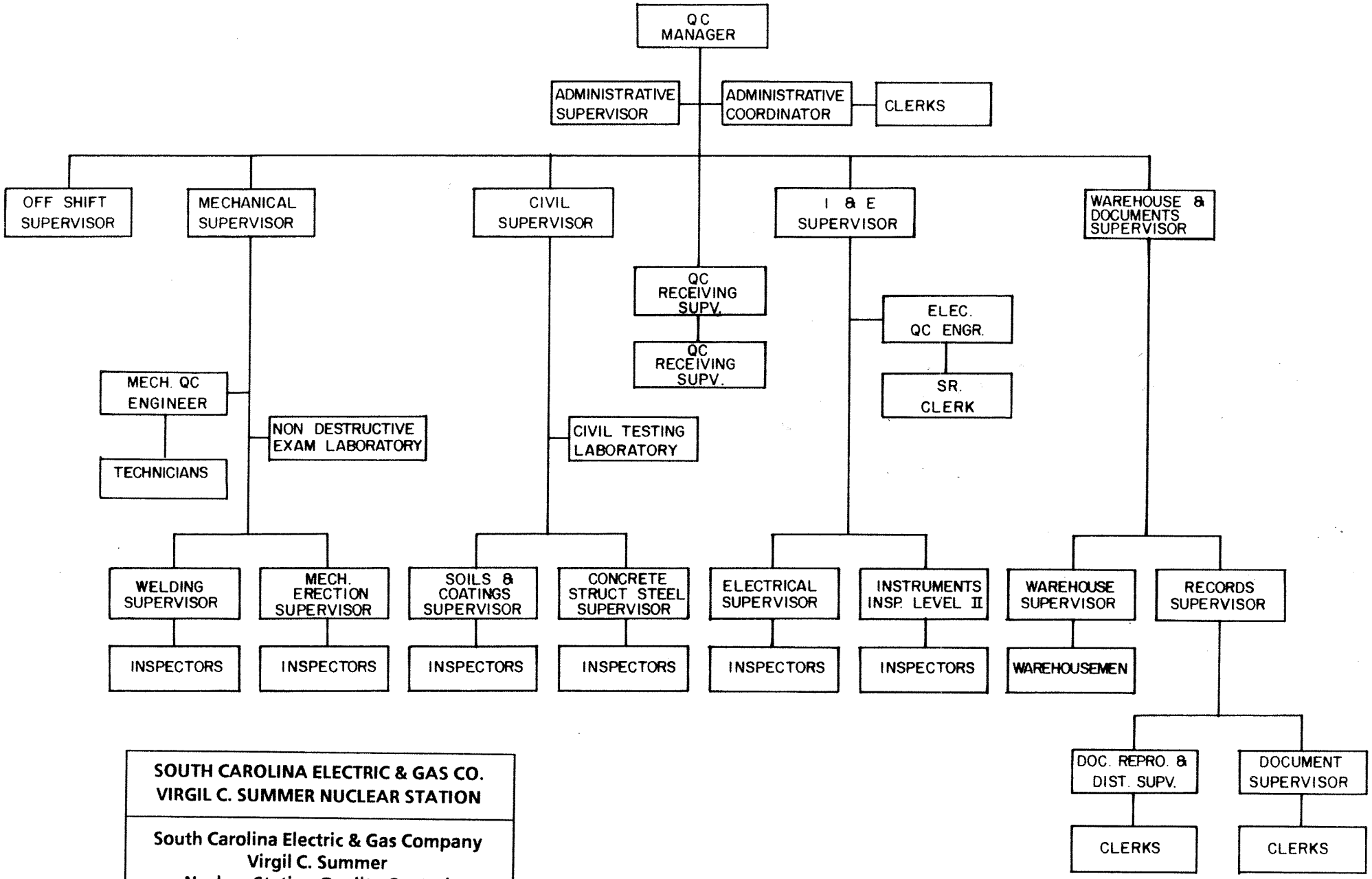
Amendment 0
August 1984



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

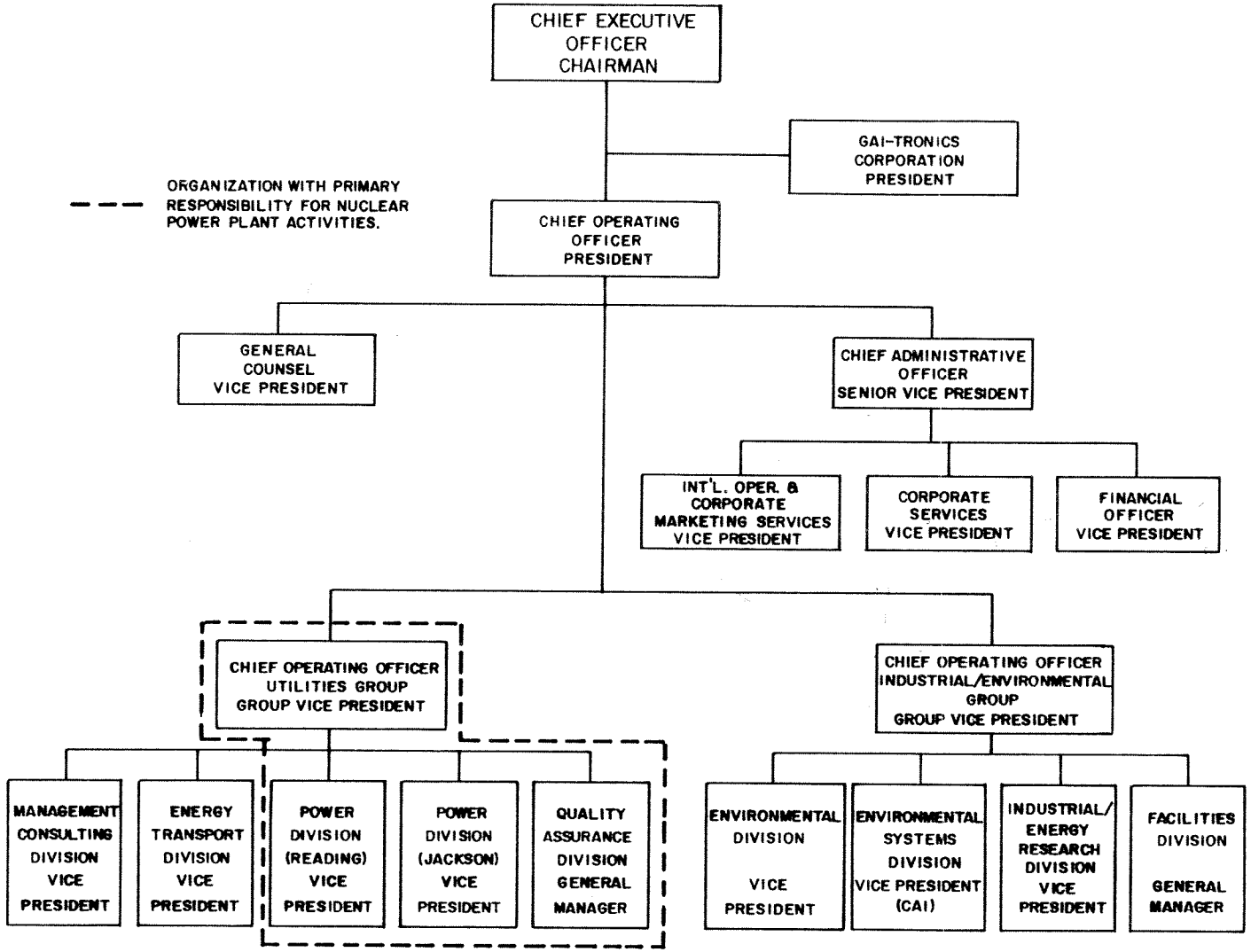
Amendment 0
August 1984



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

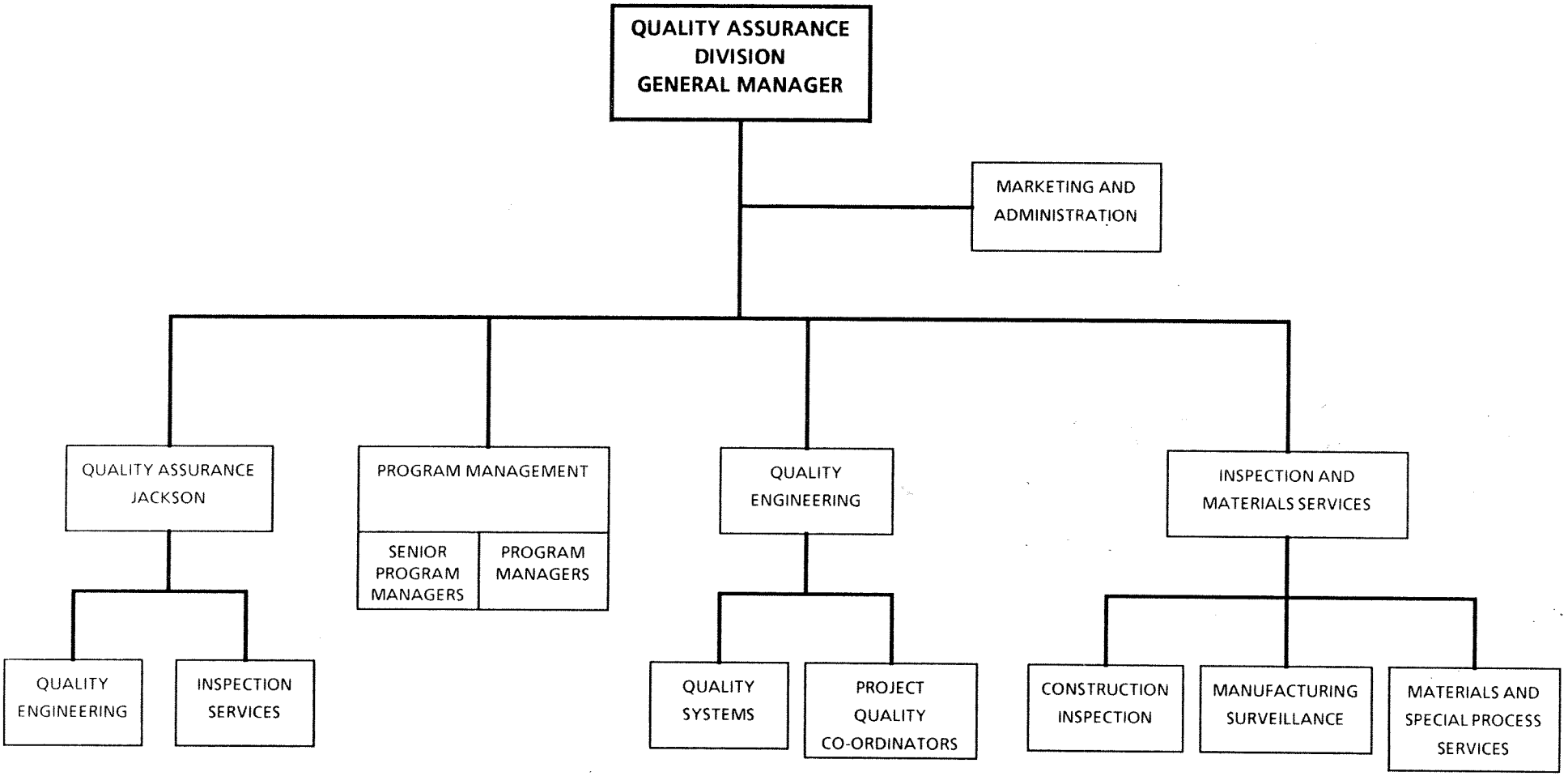


SOUTH CAROLINA ELECTRIC & GAS CO.
VIRGIL C. SUMMER NUCLEAR STATION

Gilbert Associates, Inc.
Corporate Organization Chart

Figure 17.1-4

Amendment 0
August 1984

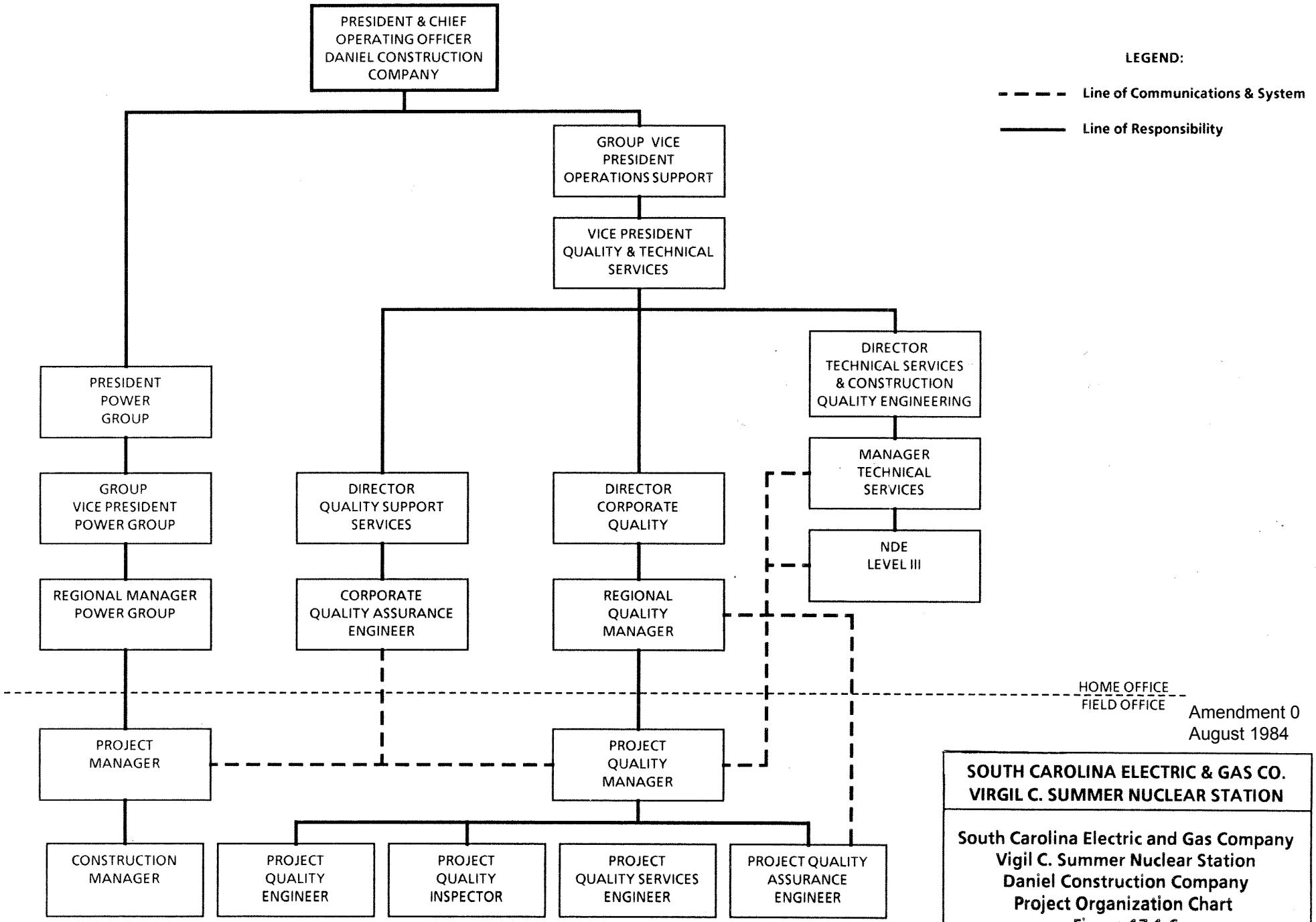


SOUTH CAROLINA ELECTRIC & GAS CO.
VIRGIL C. SUMMER NUCLEAR STATION

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

NOTE 17.2

The titles Senior Vice President Nuclear Operations and Vice President Nuclear Operations, as used throughout this entire section, are synonymous.

RN 03-031

17.2 QUALITY ASSURANCE DURING THE OPERATIONS PHASE

The Operational Quality Assurance Program for the Virgil C. Summer Nuclear Station is designed to assure its safe operation, to assure that the installed quality of the station is maintained throughout the life of the plant, and to satisfy the quality assurance requirements of 10 CFR 50, Appendix B, and those quality related regulatory guides as described in Appendix 3A. Regulatory Guide 1.33, Revision 2, recommends compliance with the stipulations of ANSI N18.7-1976. Compliance with these requirements constitutes administrative controls for the operation of nuclear power plants in a manner that is consistent with the applicable criteria for quality assurance (QA).

Section 17.2 is written so as to address each of the 18 criteria of 10 CFR 50, Appendix B, and describes the actions taken by organizational units and individuals within South Carolina Electric and Gas Company (SCE&G) to assure that safe operation and the installed quality of the plant are maintained throughout the operational life of the plant. The relationship between the 18 criteria and the sections of the Operational QA Plan which is the implementation document sub-tier to this document is shown in Table 17.2-1.

17.2.1 ORGANIZATION

This section identifies the organizational structure, the management positions and responsibilities, and delegation of authority for the development, implementation, and maintenance of the Operational QA Program. It describes the authority and duties of organizations performing activities which may affect quality. It describes the independence and organizational freedom of the QA and the operational quality control (QC) functions to identify quality related problems, to initiate, recommend or provide solutions, and to verify implementation of solutions. It identifies those who will perform audits of quality related activities.

SCE&G recognizes the need for its nuclear power plant to be operated under formalized control to assure safety and requires that proper administrative and procedural controls be developed.

RN 03-031

The Senior Vice President, Nuclear Operations, is responsible for all aspects of the operation of the nuclear power plant. Purchasing services are provided to requirements generated within Nuclear Operations through approved external or internal sources.

98-01

Quality assurance services are provided under the direction of the Senior Vice President, Nuclear Operations. This senior company officer causes the Operational QA Program policy and plan to be developed and specified. SCE&G Executive level endorsement of and commitment to implementation and support of an effective operational quality assurance program is demonstrated by the President and Chief Operating Officer's signature on the policy statement in the Operational QA Plan. This statement requires conformance to the Operational QA Plan by all organizations performing safety related work at V. C. Summer Nuclear Station. The policy also assigns sufficient authority to organizations to assure attainment of quality objectives. RN 03-031 RN 03-031

The senior management is provided periodic reports as to the status and adequacy of the Operational QA Program. In addition to the senior management review, a periodic review is performed by the Nuclear Safety Review Committee. 98-01

17.2.1.1 Nuclear Operations

The Senior Vice President, Nuclear Operations, exercises managerial control over the operation, maintenance, and modification of the Virgil C. Summer Nuclear Station through the General Manager, Nuclear Plant Operations (GMNPO), as shown in Figure 13.1-4. RN 03-031

The GMNPO reports to the Senior Vice President, Nuclear Operations. The GMNPO, with the assistance of the Nuclear Plant Operations Staff, has supervisory control over all employees of SCE&G assigned to the Virgil C. Summer Nuclear Station Operations staff. He is empowered to implement company policies to the facility. He controls station functions through the Nuclear Plant Operations staff. He coordinates the operating and maintenance requirements of the plant, ensures that the plant is adequately staffed, and that operation is within the Technical Specifications and the Operating License. He controls plant operating schedules to meet production. He is the approval authority for plant modifications and he utilizes information from the plant staff to determine that plant operation is within acceptable operating limits. He concurs with the implementation of plant modifications and plant enhancements and coordinates the activities associated with engineering changes through interface with Engineering Services as necessary. He monitors the supporting functions at the plant. The Quality Control function reports to the Nuclear Support Services Group. 98-01 02-01 98-01 98-01 02-01

Supervisory personnel assigned to the plant staff shall have at least the minimum qualifications required by Regulatory Guide 1.8, "Qualification and Training of Personnel For Nuclear Power Plants," as addressed in FSAR Section 3A, before assuming full responsibilities for their positions, as described in Section 13.1.3. 02-01 98-01

Descriptions of the duties and responsibilities of the Nuclear Plant Operations Staff are given in Section 13.1.2.

17.2.1.2 Quality Assurance, Supplier Quality, Quality Control

RN 03-031

The Senior Vice President, Nuclear Operations, is responsible for ensuring that an independent quality assuring function exists within SCE&G to comply with 10CFR50, Appendix B. He exercises executive control of this activity through the General Managers of Nuclear Support Services and Engineering Services. Responsibility for quality program administration is delegated to the Manager, Quality Systems, and Manager, Materials and Procurement (MMP), who are responsible for the establishing and assuring implementation of the Operational QA Program in accordance with applicable regulatory requirements.

98-01

98-01

The General Manager, Nuclear Support Services (GMNSS), provides administrative control and coordination of the role and mission of the quality assuring organization. He has the responsibility to evaluate the performance of the QA program and to assure that adequate and sufficient resources to perform the role and mission are available. He is the link to effective group and executive corrective action. He and the Managers of Quality Systems and Materials and Procurement have the authority to report quality matters to any management level necessary within SCE&G in order to establish timely and effective corrective action. Disputes arising between QA/QC and any other organization will be resolved in the best interest of quality at the lowest possible management level. If this becomes difficult, resolution will be escalated through the layers of management with final responsibility for resolution residing with the Senior Vice President, Nuclear Operations.

98-01

RN 03-031

The Manager, Quality Systems, and the Manager, Materials and Procurement, are required to have a B. S. Degree in Engineering or its equivalent in experience. They shall be experienced in design, manufacturing, operations, construction, and/or administration in utility or related industries; have participated in a QA/QC function or involved in programs subject to QA audits and be knowledgeable with the applicable codes and standards. The indoctrination and training requirements for the QA and QC staffs are given in the Quality Systems and Engineering Services Procedures and/or instructions.

RN 02-003

98-01

The GMNSS is responsible for evaluating the overall effectiveness of the QA Program. The Manager, Quality Systems has the responsibility to transmit periodic reports as to the status of the program and degree of implementation.

98-01

SCE&G Quality Systems (QS) has the responsibility, authority, and organizational freedom to:

1. Identify quality related problems.

2. Initiate, recommend, or provide solutions through designated channels.

3. Verify implementation of solutions.

4. Enforce methods to prevent: (a) further processing, (b) delivery, (c) installation or operation (d) use of a nonconforming item or procedure (e) or continuance of a deficient or unsatisfactory condition until proper dispositioning has occurred. This will include the authority to issue stop work orders as defined in approved procedures. This shall not include direct control of plant operations. RN 04-034

Functions, as applicable, of SCE&G Quality Systems (QS) and Materials and Procurement (M&P) groups include, but are not limited to, the following: 02-01

1. Auditing all participating organizations for compliance with the Operational QA Program, and compliance with departmental procedures, administrative control procedures, quality control procedures, regulatory requirements, and applicable documents.

2. Issuing audit reports for action to management of the area audited. Forwarding copies or appropriate summaries of audits as required by Section 6 of the Technical Specifications to the NSRC and the Senior Vice President, Nuclear Operations. RN 03-031

3. Conducting follow-up audits to ensure that necessary corrective action is accomplished.

4. Performing surveillance on safety related site functions and organizations. Issuing surveillance reports for action to the supervision of the area on which surveillance was conducted, and conducting follow-up surveillance, as described under 1, 2, and 3 for audits. 98-01

5. Maintaining cognizance of all NRC and Code or Standard changes of a QA nature, which could affect QA policies, programs, procedures, or nuclear safety.

6. Initiating changes in the Operational QA Plan, which may be necessary from time to time, to assure that the plan is current with regulatory requirements, reorganizations, and variations of functional responsibilities subject to the documented review and concurrence of the operating organization.

7. Recommending quality related procedure changes to appropriate levels of management.

8. Providing assistance and overviews to design and procurement activities, such as identification of quality data in design and procurement documents, vendor or contractor qualification, and arranging vendor audits and surveillance. RN 03-031

9. Relaying quality related problems to appropriate management levels to expedite corrective action.

10. Issuing stop work orders in accordance with approved procedures, not including direct control of operations, when the resolution and correction of a deficient condition cannot be promptly obtained, and the continuation of work would preclude the verification of corrective action or augment the deficient condition.

11. Provide input from QA Audits/Surveillances to the responsible organization for trending purposes. RN 02-054

The Manager, QS will establish and maintain the Operational QA Plan in an up-to-date condition by reviewing the plan at least annually (or as deemed necessary), and submitting to Nuclear Plant Operations and other concerned organizations any proposed changes for concurrence. Changes to the plan may be initiated by any affected organization. 98-01

These functions are performed throughout the operational life of the Virgil C. Summer Nuclear Station, during preoperational testing, fueling, startup, operation, maintenance, modification, and refueling.

These functions are accomplished by the Quality Systems and Materials and Procurement staffs performing in accordance with the SCE&G Operational QA Plan with the following organizational arrangement: (See Figure 17.2-1). 02-01

17.2.1.2.1 Quality Systems and Materials and Procurement Personnel 02-01

Quality Systems and Materials and Procurement (QS & M&P) personnel perform activities to support plant operations. As such, these personnel interface with station organizations, as applicable, to provide services in the following areas: 02-01 99-01

1. Administrative controls including safety and access requirements.

2. Work hours and schedules.

3. General personnel conduct and professionalism.

4. Scheduling of audit, surveillance, and inspections.

5. Reporting requirements for audits, surveillance, and inspection including debriefing. 98-01

6. General Quality Program consultation.

7. Procurement services.

8. Quality related procedure reviews.

9. Establish procedures for oversight of nonconformances. RN 04-034

QS & M&P personnel report to their respective managers for issues relating to: 02-01

1. Salary, personnel, and employment administration.

2. Qualification, training, and certification.

3. Technical guidance (methods, procedures, etc.).

4. Audit services.

5. Releases To Work (PQ function only for control of offsite vendor/contractor related activities). RN 02-037

6. Stop work.

7. Corrective action requests.

8. Overall program effectiveness.

9. Identification of any undue production, schedule, or cost pressure.

These split organizational responsibilities for personnel on station assure direct (review, surveillance, audit, and inspection) and indirect staff interface to assure that verification of conformance to established requirements is performed by personnel not having direct responsibility for the work being performed.

17.2.1.2.2 Materials and Procurement Department Responsibilities

Management of materials and procurement activities associated with the Nuclear Operations Department is performed by the Engineering Services, Materials and Procurement Department. The Materials and Procurement Department provides the administrative, technical and quality support necessary to process and/or coordinate the development of safety related, quality related, and other designated procurement documents for hardware and services. It is an on station service organization which will work in an expeditious manner to provide services or items which will be incorporated into plant systems, structures, or components. Other procurement documents for consultant services, etc., are processed in a like manner. 98-01

Within the Materials and Procurement Department, the Manager and his staff interface with the assigned Engineer(s) during the Engineering change process to provide for procurement of items or services necessary to implement the desired Engineering change(s). Where additional expertise is needed outside of this Department, the Engineering Services Group may designate a Responsible Engineer, as necessary, to interface in the development of Procurement Technical Requirements. Where a Responsible Engineer exists, the Procurement Engineering activities shall be accomplished with the concurrence and approval of the Responsible Engineer as necessary. 00-01 98-01 00-01

When, in the performance of the procurement engineering function, the Procurement Engineering unit performs Design or System engineering activities, the work is performed to appropriate design or systems engineering procedures. The Design and Systems Engineering Departments maintain the procurement engineers qualification to the applicable procedures through the Engineering Services Training and Qualification Program. 98-01

The Materials and Procurement Department will provide a single-point accountability for the entire administrative flow of the procurement cycle for items processed. This organization will provide a positive synergistic effect on the procurement cycle by effective interaction of its members. The following activities will be performed, as necessary, by the Materials and Procurement Department after the need for a procurement is identified:

1. Specification of technical and quality requirements.

2. Equipment qualification requirements.

3. Quality and procurement classification determination.

4. Receipt inspection requirements and execution.

5. "Approved equal" determinations.

6. Quality review of design documents and procedures to assure conformance with specified codes and standards, acceptance criteria, special processes or control methods, FSAR commitments, and license requirements. 02-01

7. Specification of appropriate documentation.

8. Listing of Potential Bidders.

9. Proposal evaluations.

10. Resolution of exceptions.

11. Performance of manufacturing surveillance and release for shipment.

12. Performance of receipt inspection and resolution of receiving/parts problems.

13. Supplier audit and qualification.

14. Ensure that quality problems at vendors are identified and appropriate corrective action is achieved.

15. Control of material at receipt, through storage, and upon issue to the plant.

16. Issue of purchasing documents. 02-01

17.2.1.2.3 Quality Assurance Section Responsibilities

Management of quality assurance activities associated with the Nuclear Operations Department is performed by the Quality Assurance Section. Tasks included within these activities are:

1. Development, implementation, and continuing evaluation of Quality Assurance programs which provide adequate confidence that safety related structures, systems, or components will perform satisfactory in service. This responsibility is accomplished by utilizing the techniques of review, surveillance, audit, and system feedback.

2. Identify quality problems or potential problems, and ensure responsible management is aware of any problems and their extent. Verify that satisfactory corrective action is achieved by the management of the responsible organizational element.

3. Pursue corrective action, if necessary, through succeeding levels of management within the Nuclear Operations Division to assure that a satisfactory solution is achieved.

4. Ensure proper application of the Quality Assurance Program throughout safety related aspects of design, procurement, fabrication, construction, operation, modification, maintenance, and decommissioning.

5. Review documents and procedures within the Quality Assurance program to assure conformance with specified codes and standards, acceptance criteria, special processes or control methods, FSAR commitments, and license requirements.

6. During the accomplishment phase of activities, conduct QA surveillance to assure acceptable and effective implementation of applicable design documents, specifications, procedures, and programs.

7. Utilize audits to assure that the status, adequacy, and proper implementation of the programmatic elements contained in QA manuals, plans, and procedures are achieved. These activities include organization, element, and activity audits.

17.2.1.2.4 Quality Control Section Responsibilities

Management of quality control activities associated with Nuclear Operations is performed by the Quality Control Section. Tasks included within these activities are:

1. Develop and implement quality control and inspection programs to support Nuclear Operations.

2. Provide timely and effective inspection services in support of priorities and schedules established or approved by the station manager.

3. Provide management, administration, and control of the applicable portions of the inservice inspection program.

4. Provide ASNT-TC-1A certified Level III Examiners. Training for ASNT-TC-1A certified personnel is provided by qualified SCE&G personnel or approved outside sources. 98-01

5. Provide necessary inspection interface related to ASME code compliance.

6. Provide administrative coordination and close-out inspection for the nonconformance program.

7. Provide measuring and test equipment calibration and control for inspection equipment.

8. Provide coordination and control of outside NDE and inspection service provided to support specialty ISI work.

RN 01-107

17.2.1.3 Engineering for the Operating Plant

All design engineering activity for the operating plant is under the direction of the General Manager, Engineering Services through the Department Managers and includes, but is not limited to:

a. Perform or manage design work related to the Engineering change package until the system/component is operable through interface with the Station Administrative Procedures and development of final as built records for the package. 98-01

b. Manage and coordinate all design activities which are delegated to an Architect Engineer or consultant.

c. Prepare or have prepared by outside organizations, a safety analysis for structures, systems or components and changes thereto per 10CFR50.59.

d. Provide technical assistance to the nuclear power plant operating staff when requested.

e. Accumulate, maintain or develop information concerning the Virgil C. Summer Nuclear Station and incorporate the information in engineering documents such as drawings and specifications, to reflect the as-built condition of the plant.

f. Provide engineering input to procurement documents for purchasing new, replacement, and spare parts when requested.

g. Management of nuclear fuel conversion, enrichment and fabrication including technical support of required acquisitions.

h. Incore technical support as required.

i. Spent fuel and high level waste disposition.

j. Accounting for special nuclear material.

17.2.1.4 Document Control and Records Retention

All document control and record retention activities are controlled by the General Manager, Organizational Effectiveness. These activities include, but are not limited to: RN 04-044

1. Provide permanent records retention and associated storage facilities as required by Technical Specification.

2. Provide drawing and document control services to the Nuclear Operations Division. 98-01

3. Provide a library of controlled reference materials for the Nuclear Operations Division. 98-01

4. Provide computer support activities associated with record retention, maintenance, and retrievability. 98-01

Document Control and Record Retention functions will be performed in accordance with written approved procedures.

17.2.1.5 Education and Training

Education and training services are provided under the General Manager, Nuclear Support Services through the Manager, Nuclear Training. This organization is responsible for management of all operator licensing training. In addition, the organization provides non-licensed technical training services as requested by the affected General Managers. 98-01

17.2.1.6 Purchasing

Purchasing Services are provided by SCANA Services. Items, components, or services procured for safety or quality related applications are and will continue to be procured to technical/quality specifications generated and controlled under the VCSNS Quality Assurance Program. Purchasing Services will not impact or change these technical or quality requirements. Purchasing Services will only act as an Agent to fulfill the commercial aspects of purchase orders generated under the VCSNS Quality Assurance Program. The functions of purchasing in the Operational QA Program include, but are not limited to, the following: RN 03-013 98-01

1. Processing requisitions for the Virgil C. Summer Nuclear Station in accordance with purchasing policies and procedures.

2. Assuring provisions of a listing of bidders for each purchase of safety-related structures, systems, and components.

3. Requesting quotations for safety-related structures, systems, and components from firms on the bidder list.

4. Requesting evaluation and approval of preferred bidder QA programs for safety-related structures, systems, and components.

5. Requesting technical evaluations of vendor proposals of safety-related structures, systems, and components.

6. Evaluating bids in conjunction with proposal evaluations from appropriate groups within SCE&G.

7. Placing purchase orders including changes thereto.

8. Expediting delivery of orders to the Virgil C. Summer Nuclear Station as required to meet schedule commitments.

9. Acting in a liaison capacity, as appropriate, between vendor or contractors and groups within SCE&G.

Activities of Purchasing which may affect the quality of safety-related structures, systems, or components shall be accomplished in accordance with written procedures, instructions, or directives.

17.2.1.7 Supporting Companies, Vendors or Contractor Organizations

SCE&G may utilize the services of other companies to provide materials or services and augment and support its staff in selected plant operations, or engineering changes and maintenance projects. To qualify for safety-related work, supporting companies must implement an approved QA program or work under the requirements of the SCE&G Operational QA Plan. Use of the SCE&G Operational QA Plan is limited to those cases where management functions are not performed. After purchase order or contract award; the vendor, supplier, or contractor shall conduct all quality related activities for safety-related structures, systems, or components; whether at the plant or other locations, in accordance with the appropriate approved QA program. 98-01

17.2.2 QUALITY ASSURANCE PROGRAM

The Operational QA program for the Virgil C. Summer Nuclear Station consists of managerial and administrative controls by involved SCE&G organizations, combined with reviews, surveillance, audits, and inspections by the SCE&G QS Sections. As described generally in this section and the following sections of this chapter, the organizations responsible for implementing safety-related action are clearly identified. These controls also apply to items as stipulated by Engineering Services that do not perform a Safety Related function but could affect the performance of a Safety Related item (i.e., chemicals, lubricants, etc.). "Safety Related" will include these items when used herein. Additionally, it is the intent of SCE&G to develop separate "Quality Related" plans for other non-nuclear safety items as required by regulation or at the discretion of SCE&G management which may utilize the control techniques described in this program. In the absence of a required Quality Related Plan, the provisions of this program apply commensurate with the item’s function and complexity.

17.2.2.1 Applicability

The Operational QA program is applicable to startup, operation, maintenance, and modification of the structures, systems, and components of the Virgil C. Summer Nuclear Station classified as safety-related. The safety-related designations for those Mechanical and Structural items are listed in Tables 3.2-1 and 3.2-2. The list of Class 1E equipment required to function during and/or subsequent to design basis accidents is included in Tables 3.10-1, 3.10-2, 3.11-0 and 3.11-0a. The Operational QA Program, as detailed in the Operational QA Plan, shall be in force throughout the operational lifetime of the Virgil C. Summer Nuclear Station.

17.2.2.2 Indoctrination and Training

The job specific technical indoctrination and training for personnel in the Nuclear Operations Division is the responsibility of the respective General Managers. Assistance, coordination, and instructional facilities are provided by the Manager, Nuclear Training.

Indoctrination and training shall be given to affected Site personnel on the content of the Operational QA Plan and include policy and application of job safety-related procedures. Emphasis shall be provided periodically at intervals determined by the General Manager, Nuclear Plant Operations for Plant Staff and each respective Manager for other personnel including affected Site organizations. Each Manager is responsible to assure documented evidence of: a) personnel indoctrination conducted, b) scope, objective, and method of indoctrination and training, c) content of indoctrination/training material as it related to the principles and techniques of activities performed. Proficiency of personnel performing quality-affecting activities is maintained through retraining, reexamining, and/or recertifying.

The requirements for training of station operating personnel are described in Section 13.2. The Manager, Nuclear Training, is accountable for organizing and directing the overall station training program and maintaining records of personnel qualifications and qualification requirements.

The General Manager, Nuclear Support Services, is responsible for training and qualification of Quality Systems personnel, including specific QA and QC training. 98-01

The General Manager, Engineering Services, is responsible for training of personnel within the Engineering Services Group.

SCE&G personnel performing complex, unusual, or potentially hazardous work shall be instructed in special indoctrination or briefing sessions.

Emphasis shall be on special requirements for safety of personnel, radiation control and protection, unique features of equipment and systems involved, operating constraints, and control requirements in effect during performance of work.

SCE&G personnel assigned to perform specialized work tasks or to augment the station staff for major modifications, and contractor personnel performing work at the Virgil C. Summer Nuclear Station shall receive indoctrination in the following subjects for the specialized work tasks prior to commencing work:

1. Safety Rules unique to the operation of the Virgil C. Summer Nuclear Station.

2. Health physics control and monitoring of radiation exposure.

3. Plant security rules, as needed.

4. Emergency evacuation provisions.

5. Applicable QA Program requirements.

6. Technical Specifications.

7. Station Administrative Procedures.

17.2.2.3 Administrative Controls

The Operational QA program consists of two tiers of documents.

1. The Operational QA Plan which contains a statement of SCE&G Policy concerning QA and establishes the governing principles in accordance with the requirements of 10 CFR 50, Appendix B (See Table 17.2-1).

2. Procedures prepared by each organization, including Nuclear Support Services, Purchasing, Engineering Services, Operations, and any other organizations performing safety-related work at the Virgil C. Summer Nuclear Station, establish a particular course of action relative to the requirements of the Operational QA Plan. These procedures envelop how an independent safety review is performed in accordance with the functions described in NUREG-0737, item I.B.1.2. These reviews include reviews of plant activities to verify compliance to the operating license and may include plant operating characteristics, NRC issues, industry advisories, or others. 98-01 RN 04-036

   Each manager is responsible for identifying the activities affecting quality and ensuring that such activities are adequately described by procedures, documented instructions, vendor technical information, or drawings, as appropriate. Procedures shall contain directions or orders and indicate the manner in which a particular task is to be performed within each organizational unit within SCE&G, as it relates to operation of the Virgil C. Summer Nuclear Station. Procedures are approved by the responsible General Manager or his designated alternate. Each manager is responsible for the timely writing, implementing, controlling and maintaining of procedures for his department. RN 02-037

The Manager, Quality Systems has been delegated the responsibility for the development, maintenance, assurance of implementation, control and distribution of the Operational QA Plan. He shall annually, or as deemed necessary, have the QA Plan reviewed and revised in accordance with approved procedures. Affected organizations may submit recommended changes as they see fit. Proposed revisions are submitted to those departments having responsibilities for implementation. Comments are resolved by the Manager, Quality Systems with the concerned parties. Comments which cannot be resolved at the manager level will be referred to the next higher level of management, with ultimate resolution by the Senior Vice President, Nuclear Operations. After resolution has been affected, the revision control sheet is signed by the Manager, Quality Systems signifying the documented resolution of comments. 98-01 98-01 RN 03-031 98-01

Activities affecting quality shall be performed in accordance with written directives, procedures, instructions, or drawings throughout the operational life of the Virgil C. Summer Nuclear Station.

The documents which prescribe these activities are considered controlled documents and shall be prepared, revised, approved for release and used in accordance with document control procedures. A system of temporary approval of procedures, when necessary, is available as indicated in the Technical Specifications. RN 02-037

Documents and procedures contain explicit instructions for the action to be performed, identifying in each procedure the unique requirements for special controls, special processes, test equipment, tools and special equipment, suitable environmental conditions, and skills which are necessary for quality achievement, and also identifying the need for quality verification by inspection, examination, or test.

During the operating life of the Virgil C. Summer Nuclear Station, SCE&G may delegate the work of executing portions of the Operational QA program to contractors or consultants, however, SCE&G shall retain the responsibility for the overall effectiveness of the program.

Organizations which participate in the design, procurement, fabrication, modification, inspection, tests, or maintenance of the safety-related structures, systems, or components of the plant, shall be required to establish and implement a QA program consistent with the pertinent provisions of 10 CFR 50, Appendix B, and the SCE&G Operational QA Plan for the activity which they are performing. Certain organizations may work within the SCE&G QA program and shall receive adequate indoctrination prior to commencing work.

The QA programs for such contractors or consultants will be subject to review, evaluation, and acceptance by SCE&G as described in Section 17.2.4.

17.2.2.4 Management Review

A management review to assess the status and adequacy of the Operational QA Plan shall be conducted on an annual basis by senior management of SCE&G. This review will be performed by the Senior Vice President, Nuclear Operations based on input such as the annual QA report on the status and adequacy of the QA program. The results of the review and any directed resolution and the results of the corrective action shall be documented.

RN 03-031

17.2.2.5 Preoperational Testing to Full Power Operation

A comprehensive preoperational testing program was conducted by SCE&G under the requirements of the Operational QA Plan to assure that system performance is in accordance with the design requirements. To demonstrate that systems and structures will perform satisfactorily in service, written procedures were provided which included the acceptance limits and requirements contained in the applicable specifications, system descriptions, and other applicable documents. The program included preoperational tests and actual operational tests of the plant structures and systems. The program included operations necessary to ensure that initial fuel loading, initial criticality, and power operation could be safely undertaken to meet all regulatory requirements including 10 CFR 50, Appendix B.

The plant initial fueling, startup, and initial power operations program was conducted by the Virgil C. Summer Nuclear Station staff, with the assistance of personnel from other SCE&G organizations and consultants who have been indoctrinated and trained as described in Section 17.2.2.2. The GMNPO was responsible for the preparation of the plans and procedures for conducting these tests and operations. He directed the preparation and implementation of the plans and procedures by the Virgil C. Summer Nuclear Station staff, and such consultants and contractors as necessary to prepare the program and conduct the tests and initial operations.

Preoperational system procedures included requirements that prerequisite work and installation were acceptable, that the test was properly instrumented, that the necessary data was recorded, that the test was conducted under suitable environmental conditions and that test results were properly documented.

Each preoperational procedure or checklist normally contained acceptance criteria which must be met prior to acceptance of the test. Results were evaluated by SCE&G; although Westinghouse, Gilbert or other engineering personnel may have provided technical consultation. Final system test results, as accepted, were documented and placed in the permanent record file. The status of the overall preoperational testing system was controlled so that overall progress would at all times be clearly defined.

The SCE&G QA organization performed procedure review, surveillance, and audits of the preoperation and initial operation programs to assure that the criteria and guidelines described above are incorporated, and that the procedures were available prior to use.

The SCE&G QA organization on site performed surveillance of the performance of these tests to ensure procedural conformance and assured that prerequisites were met, that the tests were conducted according to the procedures, and that test data was recorded as required by the procedures for those procedures on which surveillance was performed.

17.2.2.6 Power Operation

The goal of the Operational QA program is to satisfy the requirement for safe production of electrical power from nuclear energy. The achievement and verification of quality performance is intended to assure that the design intent of providing a safe plant is obtained and maintained throughout its operating life.

Station Administrative Procedures are developed for the operations phase of the Virgil C. Summer Nuclear Station. The Station Administrative Procedures are written to conform to applicable requirements of the following subjects:

1. Administrative policies of SCE&G.

2. Final Safety Analysis Report.

3. Operating License and Technical Specifications.

4. SCE&G Operational QA program.

The Station Administrative Procedures provide a clear understanding of the operating philosophy and administrative policies of SCE&G and establish the rules and instructions pertaining to personnel conduct and control, availability "on call" of professional and supervisory personnel, method of conducting operations, and preparing and retaining plant documents. RN 03-031

The Station Administrative Procedures include procedures which govern activities affecting safety-related structures, systems, and components. Included are procedures controlling activities such as operating, test, engineering change interface with Engineering Services, equipment control, maintenance, modification, refueling, and document/record control. Instructions in the Station Administrative Procedures require that procedures governing activities such as those described above are reviewed and approved for release, as a minimum, by the supervisor of the function described by the procedure, and by the GMNPO or his designated alternate. These instructions shall also require that controlled copies of these procedures are available to personnel performing the activity. 98-01 RN 02-037

17.2.2.7 Maintenance and Engineering Change Activities 98-01

A work request system shall be used to initiate and authorize safety-related maintenance or modification activities as described in the plant maintenance procedures.

The Maintenance Planning & Scheduling Department is responsible for scheduling work. The approval of the Shift Supervisor shall be obtained, as required, by Station Administrative Procedures.

When an engineering change relates to safety-related structures, systems or components, it requires generation of design information by Engineering Services and review and approval by departmental management and the GMNPO prior to implementation. 98-01

If an engineering change is approved, a package containing, as applicable, the approved work request, the approved engineering change package, work procedures, inspection and test requirements, and direction for removing the items to be modified from service and returning the items to service will be developed. 98-01

SCE&G QS organization shall overview, through a combination of audits and surveillances, the design information to assure that quality related requirements are specified and that an independent design verification (or documented justification to proceed without it) is completed.

The plant station maintenance staff may be augmented by personnel from other SCE&G organizations and/or contracted services. Provision shall be made for the indoctrination and/or training of such personnel. Maintenance and engineering change work shall be performed under the supervision of station personnel through interface with Engineering Services as applicable. The inspection of such work is described in Section 17.2.10. 98-01

Surveillance and audit of maintenance and engineering change work is conducted by the SCE&G QS organization to verify conformance to the administrative procedures and requirements of the approved work requests, as described in Section 17.2.18. RN 03-031

17.2.3 DESIGN CONTROL

This section describes the design control measures utilized to maintain the levels of safety and quality designed into the plant by controlling the design of proposed engineering changes. The control requirements are applied to engineering changes. 98-01

17.2.3.1 Design Initiation

Engineering change requests may originate from many sources, including, but not limited to, Nuclear Support Services, Nuclear Plant Operations, or Engineering Services. 98-01

Engineering change requests will be forwarded to Engineering Services for initiation and processing of design work. During the implementation interface review period, Nuclear Plant Operations will be advised of the design intent to support their efforts. Engineering Services will obtain their feedback. 98-01

The use of other Nuclear Operations Division personnel or outside contractual or consulting services may be necessary at the discretion of Engineering Services. The decision to secure outside contractual services falls within the discretion of Engineering Services. 98-01

The General Manager, Nuclear Plant Operations, will review and approve all plant modifications. He will also concur with the implementation of all plant enhancements and plant modifications. Nuclear Plant Operations will be responsible for the scheduling and implementation of all engineering changes through interface with Engineering Services. 98-01

17.2.3.2 Design Controls

SCE&G QS will overview engineering changes, through a combination of audits and surveillances, to assure the requirements of this FSAR have been complied with, appropriate codes and standards are imposed, and appropriate inspection and test criteria have been identified. QS will also overview to assure that an equipment classification has been performed by Engineering Services and that affected plant areas and design documents are included in the request. As requested, the NSRC reviews the proposed engineering change and equipment classification. As requested, the NSRC also reviews the proposed engineering change to determine whether the change requires a license amendment, as defined in 10CFR50.59. When such a case arises, the NSRC will recommend in writing that an operating license amendment application be prepared for submission to the NRC as soon as sufficient design and safety analysis information is available. 98-01 98-01 98-01 02-01

Engineering Services will be responsible for all design work.

The design control procedures require that:

1. The FSAR design bases, FSAR safety analyses, design regulations, codes and standards for safety-related equipment, and plant Technical Specifications be adhered to in design work, except for those changes which will be the subject of an operating license amendment application. 98-01

2. The materials, parts, and processes selected by design are reviewed to assure that they are suitable for the intended application, including evaluation of probable events during the plant lifetime and evaluations of reactor physics, stress, thermal conditions, hydraulic conditions, compatibility of materials, accessibility for inservice inspections or tests, and accessibility for maintenance, as each of these apply to the design.

3. Design interfaces within the area affected by the change and with affected structures, systems, and components be controlled.

4. The applicable regulations, codes and code classes, and standards be described, including the use of editions of codes and standards no earlier than the editions originally used which assure a level of quality at least equal to that of the original structure, system, or component.

5. New or revised documents resulting from the engineering change adequately describe the redesigned systems, including such documents as specifications, drawings, and system design descriptions. 98-01

6. Requirements for special system plant conditions at the start of installation, special installation and integration procedures, and preoperational tests are given, when necessary to accomplish the change.

7. The personnel selected to perform the design analysis and review work are competent in the applicable field of work and cognizant of related nuclear power plant requirements. Audits are performed by SCE&G QS to assure the existence of appropriate controls and conformance to the procedural requirements. RN 02-037

17.2.3.3 Design Verification and Interface Control

The Engineering Services Group is responsible for assuring that verification and interface controls are used in design. Design verification will be accomplished with approved procedures which meet the criteria of 10 CFR 50, Appendix B. Designs will be verified by one or a combination of the following methods:

a. Design Review Committee.

b. Documented check calculations performed by an appropriately trained individual not involved in the original design and not the designers' supervisor.

c. A qualification testing program incorporating the most severe design conditions as defined in the design basis.

17.2.3.4 Safety Evaluation

A safety evaluation consideration shall be made for all engineering changes. A determination of whether or not a license amendment is required as defined in 10CFR50.59, shall be made for all engineering changes. Engineering Services assures that the safety analyses are performed and that design information is provided to the organization assigned responsibility for the safety analyses. 02-01

When the engineering change requires a license amendment, as described in 10CFR50.59, approved procedures ensure that an application for an operating license amendment is prepared and filed with the NRC. 02-01

17.2.3.5 Approvals

As design is being performed, approval of each of the design documents is indicated on the document, as required by the Engineering Services Group procedures for each of the documents. This evidence of approval is also required of any design agent or consultant.

When the design is complete, the Engineering Services Group submits the necessary design information for additional processing and review in accordance with Engineering Services and Station Administrative Procedures.

17.2.3.6 Change Control

Plant modifications and plant enhancements are allowed only after concurrence is received by the GMNPO as described in approved procedures. Requests for such changes may be initiated by any organization. 98-01

Engineering changes are included in the drawings, specifications, or procurement documents by revision. All engineering changes are approved by Engineering Services. 98-01

17.2.3.7 Design Deficiencies

Any error in the design process or resultant design found after being released for implementation will be processed as an engineering change in accordance with approved procedures. 98-01

17.2.4 PROCUREMENT DOCUMENT CONTROL

17.2.4.1 Scope

Procurement of services, materials, equipment, and parts is performed in accordance with approved procedures. 98-01

17.2.4.2 Bidder Qualification

The Supplier Quality (SQ) or Procurement Quality (PQ) staff assesses the qualifications of bidders for safety-related services, equipment, spare parts, and materials. A change in the list of approved bidders for each procurement may be initiated by any of the parties involved in initial requisition review. PQ or SQ concurrence is obtained prior to bidders being added. Bidders will be qualified by audit, survey, quality history information, review of their QA programs, or other sources such as vendors listed in the Nuclear Procurement Issues Committee (NUPIC), NRC publications, and holders of ASME Certificates of Authorization. 02-01 02-01

17.2.4.3 Purchase Requisitions

Purchase of safety-related materials, parts, equipment, and services is initiated by the preparation of a purchase requisition. The purchase requisition must contain technical requirements for the order, either by reference to design documents prepared under the design control program, Sections 17.1.3 or 17.2.3, or by inclusion of the requirements in the requisition with equivalent consideration for suitability of application, etc., as specified in Section 17.2.3.2; and the QA requirements to be imposed on the purchase either by reference to the SCE&G QA program requirements or by listing the requirements in the requisition. Commercial grade items intended for safety related applications may be procured non safety related and dedicated using approved procedures. These procedures provide for documenting the basis of the dedication. Purchase requisitions are approved in accordance with approved procedures. 98-01

The SCE&G QA program requires vendors to have a QA Program, which meets the applicable requirements of 10 CFR 50, Appendix B unless working under the SCE&G QA program, or when the quality of the item can be verified by means such as receipt inspection, testing, verification by an independent laboratory, or performance testing prior to returning the affected system to service, etc. This method is used when non-safety 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 PQ staff concurrence prior to utilization. When required by contract, vendors shall give SCE&G 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. 02-01

Purchase requisitions and associated documents are reviewed prior to implementation to ensure the inclusion of technical and QA requirements, including specification of required QA records. This review includes a determination of whether the same requirements for codes and standards should be applied as for the original equipment, or if the use of later codes and standards should be applied. If later revisions are used, approval shall be by design change control.

Materials, parts, and equipment are selected through the design control program to assure that they are suitable for the intended application. The QC inspection process provides assurance that the proper materials, parts, and equipment are installed in the plant. Quality Assurance performs audits/surveillances to assure that this is being accomplished. 98-01

17.2.4.4 Supplier Evaluation

Vendor proposals are evaluated by the responsible technical group requesting the item. All safety related proposals are reviewed by PQ staff prior to order placement unless the review by the purchasing agent establishes no implicit or explicit exceptions to the request for quotation. These evaluations are coordinated by the Purchasing Department. Once a preferred bidder is selected, PQ staff performs an in-depth evaluation as to the basis of bidder qualification and new information related to quality submitted with the proposal. Consideration is given to quality history information available within SCE&G and information from other sources, such as: NUPIC, NRC publications, and the ASME List of Holders of Certificates of Authorization. (Relevant to only pressure boundary adequacy; operability must also be satisfied). Where in the judgment of PQ staff sufficient information is not available, a pre-award survey of the bidder's QA program must be performed, and a report prepared according to approved procedures. The use of NUPIC information in lieu of a pre-award survey will require review of NUPIC documentation equivalent to that produced by a SCE&G vendor survey and development of additional procurement document controls to resolve reported problem areas. SCE&G files will contain copies of the substantiating documents. The recommendation of a preferred bidder and evaluation by PQ staff is repeated if a bidder with a deficient QA program was first selected. This process continues until an acceptable bidder is selected. Objective evidence will be retained in SCE&G files to demonstrate that PQ staff acceptance is based on one or more of the following: 02-01 02-01 02-01 98-01 02-01 02-01

a. The supplier's capability to comply with the elements of 10 CFR 50, Appendix B that are applicable to the type of material, equipment, or service being procured.

b. A review of previous records and performance of suppliers who have provided similar articles of the type being procured. Included in these considerations are the results of programmatic system attribute surveillance conducted during previous manufacturing. If review of supplier history including attribute surveillance is being used as the sole basis for contract placement, the last information in the history may be no older than 18 months. In addition, an evaluation must be performed and documented by a certified lead auditor to confirm that no major QA programmatic changes have occurred in that time frame.

c. A survey of the supplier's facilities and QA program to determine his capability to supply a product which meets the design, manufacturing, and quality requirements.

17.2.4.5 Purchase Order

After an acceptable bidder has been selected, the purchasing agent prepares a purchase order, with input as required from the responsible Technical group, Procurement Engineering, Procurement Quality, the bidder's proposal, and the procurement specification used to obtain the proposals. The actual provisions of the contract will appear within the purchase order by reference to the specifications or incorporation of requirements in lieu of or in addition to the specifications within the purchase order. PQ staff will review safety related requisitions in accordance with approved procedures prior to purchase order preparation to assure that procurement documents contain or reference applicable regulatory requirements, material and component identification requirements, drawings, specifications, test and inspection requirements, special process instructions, and applicable controls of quality as required by Regulatory Guides and ANSI Standards. In addition, the requisition directly or by attachment must identify the documentation (e.g. drawings, specifications, procedures, inspection and fabrication plans, inspection and test records, personnel and procedure qualifications, and chemical and physical test results of material) to be prepared, maintained, and submitted to SCE&G for review and approval. The total procurement document must satisfy the intent that SCE&G will be provided and retain all safety related quality records. Any change to the requirement indicated on the purchase requisition will be concurred with by PQ staff prior to inclusion. The standard contractual provisions are incorporated and the purchase order is issued to the successful bidder by the purchasing agent and copies distributed to appropriate areas. Any changes (commercial and quantity changes excluded) to a safety related procurement document receives PQ staff review prior to issue. Procurement documents or changes which utilize previously approved items in a different application will be reviewed by PQ staff prior to placement to assure sufficient QA controls. Spare and replacement parts for safety related structures, systems, and components are subject to controls at least equivalent to those used for the original equipment.

02-01
98-01
02-01
02-01
02-01
02-01

17.2.5 INSTRUCTIONS, PROCEDURES AND DRAWINGS

Each of the organizations involved in safety-related work on the Virgil C. Summer Nuclear Station is required to prepare program documents, instructions, procedures and drawings, as applicable, to describe the work to be accomplished. The manuals and procedures for SCE&G organizations are described in Section 17.2.2.3.

The responsible user group and/or PQ or SQ will, as required by the purchase order/contract, review documents from vendors/contractors which affect quality to verify the following:

RN 02-037

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, and

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).

17.2.6 DOCUMENT CONTROL

The procedures for the preparation, review, approval, and distribution of instructions, procedures and drawings described in Section 17.2.5 require that all specified approvals be obtained prior to the issuance of the documents for use. These same requirements are imposed on design documents. The required reviews and approvals ensure that issued documents are adequate and correct for the use intended. The procedures controlling each document require review and approval of changes to the document by the same organizations which approved the original document, or specify any required alternate change approvals.

Each functional department is responsible for administration of its document control system at the Virgil C. Summer Nuclear Station. The Document Control System may be used by other organizations as necessary. The procedures for issuance and control require:

1. Documents are issued for implementation only after review and approval as required by the controlling procedure for the document,

2. A history of revisions is maintained in accordance with station procedures. | 98-01

3. A descriptive title, document date, revision number, and approval signatures are displayed on each document prior to release for distribution.

4. Documents are released to a list of predetermined, responsible personnel. The list is maintained by the organization responsible for the documents or facilities and administration document control as applicable. Receipt of documents is controlled by a system of acknowledgment slips or other controls as specified in the document control procedures. The releases have provisions to assure identification of current revisions. | 98-01

5. Documents affected by design changes are identified and the area of change described to limit their use until revised documents are issued (see Section 17.2.3). | 98-01

Agents, vendors, and contractors for dedicated safety-related equipment, materials, and services are required to have a document control system which meets the requirements of the SCE&G QA program. 98-01

Control of documents to assure use of applicable revisions is one of the activities conducted during audits, surveillances, and inspections performed by the Quality Systems Department and/or the Materials and Procurement Department. 98-01

The existence of documents prior to fabrication, and installation is assured by the review, concurrence, and issuance of the release to work by SCE&G PQ or SQ as appropriate per Sections 17.2.2.7 and 17.2.7.2. RN 02-037

17.2.7 CONTROL OF PURCHASED MATERIAL, EQUIPMENT AND SERVICES

17.2.7.1 Source Selection

Vendors of safety-related materials, equipment, and services are evaluated and selected as described in Section 17.2.4. The QA Program evaluation performed during this section includes evaluation of the vendor's program for control of purchased material, equipment, and services to assure that the vendor's program is commensurate with the item supplied. Adequacy of QA program and implementation status is confirmed prior to purchase order placement as indicated in 17.2.4.4.

17.2.7.2 Work Releases

Each vendor or contractor, as required in the contract documents, is required to submit a list of all special process procedures (see Section 17.2.9) to be used on the contract. The manufacturing, quality control, inspection, and test procedures identified are then submitted to the responsible SCE&G user group and/or PQ or SQ representative for review. Work cannot begin until all requested special process and quality control procedures have been reviewed and concurred with as described in approved procedures. The SCE&G QA program identifies the minimum special process procedures to be, as applicable; welding procedures, nondestructive examination (NDE) procedures, chemical cleaning procedures, heat treating procedures, leak test procedures, and procedures for verifying wall thickness of pressure boundaries of casting and forgings for valve bodies, pump casings, pipe and pipe fittings, etc. When necessary, other procedures will be identified as special process procedures in the equipment specification or purchase order. RN 02-037 98-01

17.2.7.3 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. As determined necessary by SQ, based on item complexity, length of contract, etc., audits and surveillances of contractors are conducted during contract performance to assure that the contractor maintains an acceptable QA Program. The reports of these activities provide a continuing status check to SCE&G M&P of the contractor's QA capabilities and performance. The frequency of audits and surveillances 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 receipt inspections, audit records, and surveillance reports. The scheduling of surveillance is described below. 02-01 02-01

The SCE&G QA program requires, when specified by the PO/Contract, contractors 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. SCE&G PQ or SQ 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 PQ or SQ representative assigned to perform surveillance on that contractor then either performs physical surveillance, or waives surveillance. The list of notification points becomes part of the contractual requirements placed on the vendor. Contractors furnishing noncomplex and/or less critical items may not have inprocess notification points imposed on them. Site receipt inspection, testing, or other verification may be utilized in lieu of source inspections. 02-01 02-01

Further description of the SCE&G audit and surveillance program is provided in Sections 17.2.10 and 17.2.18.

17.2.7.4 Acceptance

The validity of certificates of conformance is confirmed by methods such as vendor audits, surveillance, use history, receiving inspection, and/or independent testing. As required by contract documents, a vendor of safety-related items may be required to obtain either a Certificate of Inspection or a Shipping Release. Certificates of Inspection may be issued at the vendor facility or at V. C. Summer Nuclear Station upon verification of physical attributes and documentation required in the contract documents. A Shipping Release records the acceptance of the vendor's documentation without a physical surveillance have indicated an acceptable program in support of the vendor's certificate of conformance and/or thorough receiving inspection is performed at the V. C. Summer Nuclear Station. Certificates of Inspection or Shipping Releases are prepared by SCE&G PQ or SQ or their agents, as described in approved procedures, to authorize shipment. Should circumstances arise which precludes the issuance of a Certificate of Inspection or Shipping Release prior to shipment of safety-related items from the vendor, a Certificate of Inspection may be issued upon the acceptance of items at V. C. Summer Nuclear Station. The Certificate of Inspection will not be issued until the 98-01 02-01 98-01

material meets the conditions of the procurement document completely or a change approved through the use of a purchase order revision, RFD disposition, nonconformance disposition or a DCR which satisfies the deviation has been processed. Processing of these documents require the approval of the responsible engineering and quality organization. Safety-related items cannot be accepted for use at V. C. Summer Nuclear Station without a properly completed Certificate of Inspection or Shipping Release when required by contract. RN 04-034 98-01

17.2.7.5 Documentation

The report submitted by the contractor identifies documentation to be submitted in satisfaction of the purchase order requirements. SCE&G PQ or SQ issues a list of minimum required documentation to the vendor or contractor. The identified documentation becomes a part of the contractual requirements for the vendor or contractor. 02-01

17.2.7.6 Receiving Inspection

Receiving inspection of the supplier furnished material, equipment, and services is performed to assure:

1. Material, components or equipment, and acceptance records are inspected and judged acceptable in accordance with predetermined inspection instructions prior to installation or use.

2. Inspection records or certificates of conformance attesting to the acceptance of material, components, and equipment are available at the nuclear power plant prior to placing or returning equipment to service.

3. Items accepted and released are identified as to their inspection status prior to forwarding them to a controlled storage area or releasing them for installation or further work.

17.2.8 IDENTIFICATION AND CONTROL OF MATERIALS, PARTS AND COMPONENTS

Items in the Virgil C. Summer Nuclear Station are identified on engineering approved documents. These identifications are used for control of material, parts and components during operations.

Each vendor of safety-related materials, parts, and components, including partially fabricated assemblies, is required to establish and maintain an identification system which will assure that identity is maintained on the item or records traceable to the item throughout fabrication, and, as defined in the associated specification, installation. This identification is capable of preventing the use of incorrect or defective items and of verifying that only correct and acceptable items have been used. Each item delivered to the Virgil C. Summer Nuclear Station is to be identified by its purchase order number and item number within the purchase order. Identification is accomplished in such a fashion as to not adversely affect form, fit, or function.

The existence and implementation of such a system is one of the areas checked during the evaluations, audits, and surveillances described in Sections 17.2.4 and 17.2.7. Surveillance is conducted to assure that materials, parts, and components produced for SCE&G are identified, and that this identification can be used to verify the correct application of materials, parts, and components for these products.

At receipt, the identification of items is verified and maintained by applying an identification tag. This tag provides identification of the item through installation. Control of installation of the item is provided by status indicators.

17.2.9 CONTROL OF SPECIAL PROCESSES

17.2.9.1 Vendor and Contractor Control

When required by contract documents, vendors, and contractors of major safety-related materials, parts, components and services for the Virgil C. Summer Nuclear Station are required to identify and submit special process procedures, as needed, for review and concurrence before use, as described in Section 17.2.7. Fabrication may not begin until a release to fabricate or work is issued to the vendor or contractor by SCE&G PQ or SQ as described in approved procedures. The evaluation of the vendor or contractor's QA Program and surveillance of the vendor's actions, as described in Section 17.2.7, assure that requirements exist and are implemented to qualify personnel, procedures, and/or equipment, as required by the imposed codes and standards, and that documentation of these qualifications is maintained and available. 02-01 98-01

17.2.9.2 Site Controls

Special process procedures of contractors and SCE&G organizations at the Virgil C. Summer Nuclear Station are reviewed and concurred with by the responsible user group. Use of special process procedures at the Virgil C. Summer Nuclear Station may not begin until the special process procedures have received the required reviews and concurrence as described in approved procedures. As an overview function, SCE&G QS performs audits/surveillances to assure that special processes are properly controlled and implemented. RN 02-037

17.2.10 INSPECTION

17.2.10.1 Vendor Inspection

As required by contract documents, a vendor of safety-related items may be required to submit an inspection point program identifying inspections to be performed by the vendor. SCE&G PQ or SQ must concur with inspection procedures and the establishment of notification points, as described in Sections 17.2.7 and 17.2.9. The review of the recommended inspections and review and concurrence with the inspection procedures include determination that the inspections are proper and adequate for the type of item and stage of manufacture and fabrication to determine that items do, or will satisfy, the requirements for a quality product and that direct inspection or indirect process monitoring, or both, are used as necessary to determine quality. 02-01

The QA Program evaluation described in Section 17.2.4 and the audits and surveillances of the vendor's QA Program by SCE&G PQ or SQ assure the existence and implementation of program elements requiring qualification or certification of inspection, the existence and presence at inspection, the existence and presence at inspection stations 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 a procedure or procedures equivalent to the original inspection procedure(s). Surveillance performed by SCE&G SQ verifies implementation of these 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. 02-01 02-01

17.2.10.2 On-site Inspection

The inspection of safety-related work at the Virgil C. Summer Nuclear Station is the responsibility of SCE&G Quality Control (QC). Assurance of relief from excessive cost and scheduler pressure when opposed to safety is provided by the functional reporting indicated in Section 17.2.1.2. QC communicates directly with the station staff in the planning, review, and conduct of inspection services. The Manager, Quality Systems is responsible for the inspection program except for receiving inspection. When necessary, the QC staff may be assisted by plant personnel, personnel from other organizations, and/or contractors. The inspection personnel will be appropriately trained and qualified by training programs responsive to applicable codes and standards and will be independent from the individuals performing or supervising the work. The inspection activities performed by the QS organization can be supplemented by a system of second verifications performed by the Maintenance organization. These verifications will be performed only on those items which have been identified and incorporated into a procedure(s) with the approval of QS. These verifications may be performed by any Maintenance personnel trained and qualified as second verifiers in the Maintenance activity being performed. Direct access to the MQS is provided to assure any quality concerns receive appropriate management attention and disposition. One exception to complete organizational independence is found in operational surveillance testing. Surveillance testing is performed by operational personnel in a testing capacity. In this function, the testing is "confirming" the continued functioning of systems as defined in ANSI N18.7. QC inspectors are not required to perform the inspection function on the testing. QA audits and surveillances are performed on the testing operations to assure independence. This QA overview of the testing function, is clearly an alternate to QC group involvement. QA assures sufficient independence to satisfy quality program objectives in all safety related areas. The inspection program and approved inspection procedures developed for use at the Virgil C. Summer Nuclear Station are reviewed and concurred with by SCE&G QC to the criteria given in section 17.2.10.1. Inspection procedures, instructions, and checklists provide for the:

98-01

98-01

99-01

00-01

98-01

RN 02-037

a. Identification of characteristics and activities to be inspected.

b. Identification of the individuals or groups responsible for performing the inspection operation.

c. Acceptance and rejection criteria.

d. A description of the method of inspection.

e. Recording evidence of completing and verifying a manufacturing, inspection, or test operation.

f. Recording the inspector or data recorder and the results of the inspection operation.

QS review of inspection procedures and plant modifications assures that modifications, repairs, and replacements are inspected and tested in accordance with the original design and inspection requirements or alternatives which have been processed as changes to the original design document. Procedures and work requests also identify mandatory inspection hold points for witness by QC and/or the ASME Code Authorized Inspector. Further, provisions for indirect control by monitoring processing methods, equipment, and personnel are specified if direct inspection is not possible.

SCE&G QA performs surveillance and audits to assure implementation of the inspection procedures and to assure the inspection program is functional and is requiring the appropriate check elements.

17.2.10.3 Inservice Inspection

SCE&G Nuclear Engineering, SCE&G Nuclear Operations, and SCE&G Nuclear Support Services were responsible for development of a preoperation baseline inspection program and the planning of inservice inspection to be conducted at the Virgil C. Summer Nuclear Station during plant shutdown. Baseline weld inspection data and the results were evaluated by SCE&G Nuclear Engineering and Nuclear Operations. The baseline data are retained in the plant file as a permanent plant record. 98-01

The services of an inspection contractor may be utilized for conduct of the weld inspection of ASME Code, Section III components. Management of the inspection contractor together with inspection of ASME components will be administered by QC.

The methods and procedures used during inservice inspection are reviewed by SCE&G QS and the conduct of inspection subjected to surveillance by SCE&G QA personnel to assure conformance with accepted procedures. SCE&G QA also audits to assure that the baseline inspection records and inservice inspection records are properly maintained and retrievable, as described in Sections 17.2.17 and 17.2.18.

17.2.11 TEST CONTROL

17.2.11.1 Vendor Testing

As required by contract documents; vendors of safety-related materials, parts, components and services for the Virgil C. Summer Nuclear Station, may be required to submit a schedule of major events including inspections and tests necessary to satisfy the PO/Contract. The tests identified on the schedule are those performed to verify conformance to documented requirements given in such documents as instruction, procedures, drawings, specifications, etc., including the testing requirements identified during design. The procedures for control of testing are submitted for review by SCE&G and are required to describe the testing to be performed, when the testing is to be performed, the instructions provided the person(s) 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. These procedures are reviewed and concurred with by SCE&G. Proper performance of tests and test evaluations to the accepted procedures may be verified by surveillance of vendor performance and/or documentation review by SCE&G PQ or SQ. 02-01

17.2.11.2 Testing Prior to Power Operation

Nuclear Plant Operations was responsible for the development, administration, and conduct of the plant testing program as well as the preparation of the test procedures used during preoperation testing, core loading, and initial startup test programs. Consultants were utilized as needed.

The acceptance and preoperational tests were conducted to demonstrate that the plant systems can perform their intended function, and began with system turnover and continued through core loading. Subsequent testing could not begin until the plant operating license was granted, and consisted of tests from initial core loading through initial criticality and ascension to power. These tests demonstrated that the plant follows its design parameters and could be operated at rated capacity without endangering the health or safety of the public.

The data from these tests were analyzed by the Startup Group, with assistance from SCE&G Nuclear Engineering, Gilbert, Westinghouse, or other consultants, as needed, to determine that the acceptance criteria were met. The test procedure, test data, and evaluation became part of the plant documentation as described in Section 17.2.17. The testing program and procedures are further described in Chapter 14.

SCE&G QA conducts audits and surveillance at the Virgil C. Summer Nuclear Station to assure the continued existence and proper implementation of the testing procedures.

17.2.11.3 Testing During Power Operation

Nuclear Plant Operations is responsible for developing a test program which demonstrates the continued acceptability and operability of the Virgil C. Summer Nuclear Station without endangering the health and safety of the public.

The tests will verify that plant nuclear, thermal, hydraulic, and other operating parameters remain within the acceptance limits determined during design and the initial test program. The test data is analyzed by the Engineering Services Group and/or qualified plant staff, with assistance from vendors or contractors as needed, to determine that the acceptance criteria are met. Test results become part of the plant records, and are maintained as described in Section 17.2.17.

17.2.12 CONTROL OF MEASURING AND TEST EQUIPMENT

17.2.12.1 Vendor and Contractor Controls

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 on site receipt inspection, test, or other methods. The vendor and contractor programs are evaluated by the methods of Section 17.2.4, and surveillance is performed to assure implementation of the accepted program as described in Section 17.2.7.

17.2.12.2 Site Control

The calibration system requires the identification of equipment to be calibrated, the method and frequency of calibration for each, a positive method of identification for each item, including means of determining the calibration status, the documentation to be maintained, the recall method for recalibration, and the review actions to be taken when equipment is found out of calibration, including effect on previously conducted tests and measurements since the last calibration and action to be taken when equipment is consistently out of calibration. Under the latter condition, an equipment check is made prior to further continuation of serviceability. Measuring and test instrument calibration is based on the required accuracy, purpose, degree of usage, stability characteristics, and other conditions affecting the measurements. Standards used for the calibration of measuring and test equipment shall have an accuracy at least 4 times greater than the required accuracy of the measurement and test equipment being calibrated and shall be traceable to nationally recognized standards. Measuring and test equipment (M&TE) used for measuring, gauging, testing, inspection, or control to determine compliance with design, specifications, or other technical requirements shall be calibrated. M&TE which is used both for calibration of in-plant equipment and measuring or test shall have an accuracy equal to or better than the equipment in which it is used.

In situations where it is impractical to comply with the above, a calibration standard of lesser accuracy is allowed providing the justification and basis are documented and authorized by the Manager, Quality Systems, and the responsible management of: Maintenance Services, Materials and Procurement, Operations, Health Physics, and Chemistry as appropriate.

SCE&G QS performs audits and surveillances of the responsible groups to assure the existence of these requirements and to assure implementation.

RN 02-037

17.2.13 HANDLING, STORAGE AND SHIPPING

17.2.13.1 Vendor and Contractor Controls

Vendors and contractors of safety-related materials, parts, components, and services for the Virgil C. Summer Nuclear Station are required by contract or the SCE&G QA Program to provide a program and procedures responsive to specification requirements for the protection of equipment during handling, storage, packaging, and shipping, including, as needed, the use of specific procedures for the control of special environments, including temperature and humidity, control of special handling equipment, and verification of conformance to controls. The program and procedures are reviewed and concurred with by PQ or SQ and surveillances are performed to assure the implementation of the accepted controls. 02-01 98-01

17.2.13.2 Site Controls

During operation of the Virgil C. Summer Nuclear Station, the control of handling and storage is the responsibility of all groups who handle and store material. 98-01

These groups are responsible for the preparation of cleaning, handling, and storage programs and procedures responsive to specification requirements which describe the methods and equipment used for normal handling of items, and those for protection of items having special handling and storage requirements. These programs must describe the measures used for the location and identification of items, and the maintenance of identification. Whenever special protective environments are required, the method of achieving and maintaining that environment must be described.

SCE&G QS performs audits and/or surveillances to assure the incorporation of the required elements and implementation of the requirements. RN 02-037

17.2.14 INSPECTION, TEST AND OPERATING STATUS

17.2.14.1 Vendor and Contractors Controls

Vendors and contractors of safety-related materials, parts and components are required by the SCE&G QA program to have, as needed, within their material identification 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 evaluation and selection of vendors described in Section 17.2.4 includes determining that these controls exist, when required, and the surveillance described in Section 17.2.7 assures that the controls are implemented.

17.2.14.2 Site Controls

SCE&G Receiving Inspection will be responsible for applying inspection status tags to items in the plant warehouse. The inspection status of items in the plant are maintained by the use of Operations equipment status controls, maintenance work requests and QC inspection reports. The items are classified and dispositioned in accordance with approved procedures. Methods of disposition of nonconforming items are described in Section 17.2.15. RN 04-034

The use of status identifiers and controls for operating systems and components is the responsibility of the Nuclear Operations Staff.

The programs are prepared and approved per Section 17.2.2.3. SCE&G QA performs audits and surveillance of the Virgil C. Summer Nuclear Station to assure the continued existence of status identifiers and control requirements and their implementation. RN 02-037 If surveillance and/or audit identifies any bypassing of required tests and inspections, QA controls including the normal station corrective action program, Corrective Action Requests, and stop work authority exist to assure correction. RN 04-034 Safety related work is required to be conducted to previously reviewed and approved procedures and bypassing without a formal procedural change is not permitted.

17.2.15 NONCONFORMING MATERIALS, PARTS OR COMPONENTS

17.2.15.1 Vendor and Contractor Controls

Vendors and contractors of safety-related materials, parts, or components must satisfy the SCE&G QA program which requires the vendor to establish documented measures, as needed, to control items when there is evidence of nonconformance. This measure includes the identification, documentation, segregation, disposition, and notification of all concerned parties of the nonconforming condition. The review of nonconformance and disposition authority must be defined. Dispositions may be accepted "as is", repair, reject, rework, or conditionally released. For product controlled at a supplier's facility under their QA program, approval must be obtained from SCE&G Engineering with concurrence by PQ or SQ whenever the disposition would result in an item which would not satisfy the contract documents. The request for such approval must be in writing and approvals obtained prior to continuing work. 02-01

SCE&G PQ or SQ evaluates the QA Program of prospective vendors for such requirements as described in Section 17.2.4, reviews and concurs with required inspection procedures as described in Sections 17.2.7 and 17.2.10, and performs audits and surveillance on vendors to assure the continued existence and implementation of the accepted procedures, as described in Section 17.2.7. 02-01

17.2.15.2 Site Controls

The nonconformance control program is described in approved station procedures. These procedures provide for the identification, documentation, segregation, review, disposition, and notification to affected organizations of nonconforming materials, parts, and components. The subject procedures shall provide the identification of the responsible organizations for independent review of nonconformances to include disposition and resolution. The subject procedures shall further describe the duties of the QC organization responsible for administratively controlling the Nonconformance Control Program as well as duties of the other organizations interfacing in the identification, description, disposition, disposition action, and disposition verification of nonconformances. RN 04-034

00-01

Nonconforming conditions shall be identified using the Station's corrective action program. Nonconforming hardware not yet installed in the plant is documented and physically identified and segregated to prevent inadvertent use or installation. Nonconformances on hardware installed in the plant, in service or out of service, shall be subject to status control measures commensurate with 10CFR50, Appendix B, Criterion XIV. For nonconformances relating to items in service, the duty shift supervisor will be apprised and will take the appropriate actions as related to plant safety and status control. RN 04-034

Nonconforming materials, parts, and components not yet issued for plant installation, are documented in accordance with Receiving Inspection procedures. These procedures are written to meet the nonconformance program requirements of this section. Subsequent to the disposition, the nonconforming items are reinspected by Receiving Inspection personnel in accordance with the Engineering Services approved acceptance criteria.

Reworked, repaired, and replacement items identified as nonconforming will be inspected by QC personnel in accordance with the Engineering Services approved acceptance criteria. The inspection verification of nonconforming items will be in accordance with the QC inspection program established for these activities. The surveillance testing program will be implemented to assure proper completion of Work Order activity prior to declaring equipment operable, if applicable. RN 04-034

The document associated with nonconformances will be completed and placed in the plant files.

The Manager, Plant Support Engineering, is responsible for reviewing nonconformances for detrimental hardware trends. RN 02-054

The Manager, Organizational Development and Performance, is responsible for performing a trend evaluation of QA program trends.

Operations, Maintenance, and Materials and Procurement groups are responsible for the control of nonconforming materials, parts, or components taken out of service through the Work Order program or under warehouse control. RN 03-031 RN 04-034

SCE&G QS reviews the approved plant maintenance and inspection procedures to determine the inclusion of these requirements and performs audits and surveillance at the Virgil C. Summer Nuclear Station to assure the continued existence and implementation of these requirements. 98-01

17.2.16 CORRECTIVE ACTION

17.2.16.1 Vendor and Contractor Controls

The SCE&G QA Program normally requires vendors and contractors of safety-related materials, parts, components, and services to have corrective action measures to assure that conditions adverse to quality are promptly identified, documented, and corrected. The only exception is as specified by Section 17.2.4.3. 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 corrective action is taken to preclude repetition of nonconforming conditions, the corrective action must be monitored to assure that the corrective actions are effective.

The measures must define the responsibilities for the identification and approval of required corrective action. 98-01

The cause of the nonconforming condition must be determined. When significant conditions adverse to quality are identified corrective action to preclude repetition shall be identified. The identified corrective action must be monitored to assure effective corrective action. 98-01

SCE&G PQ or SQ evaluation of the QA Programs of prospective bidders, described in Section 17.2.4, and audits and surveillance of vendors, described in Section 17.2.7, assure the existence and implementation of these requirements. 02-01 Engineering changes and Deviation Change Requests (DCR) are reviewed by PQ or SQ prior to implementation for consideration of possible corrective action for Vendor generated documents. 02-01

17.2.16.2 SCE&G Controls

The corrective action controls are described in approved procedures and establish the method of identifying and controlling nonconforming conditions or other conditions adverse to quality.

SCE&G QA audits of the nonconformance and C/A program will consider programmatic corrective actions predicated by condition evaluations and subsequent recommendations. Where additional C/A is needed, it will be pursued via audit findings. In addition, the reports generated from audits and surveillance are evaluated to determine if the nature of findings indicates need for corrective action. Whenever a condition is discovered which indicates a significant condition adverse to quality a Corrective Action Request (CAR) is issued. The CAR must be responded to by responsible SCE&G management in the area affected, and corrective action initiated to preclude repetition. RN 04-034

SCE&G QA follows the determination and implementation of corrective action initiated by CARs, audits, or surveillances. The methods used and documents generated in the determination, initiation, implementation, and follow-up of corrective action are described in implementing procedures. RN 05-027

17.2.17 QUALITY ASSURANCE RECORDS

17.2.17.1 Vendor and Contractor Records

Vendors of safety-related materials, parts, and components and contractors performing safety-related work are required by the SCE&G QA program to submit records necessary to furnish evidence of activities affecting quality. These records are set forth in procurement documents and will be forwarded to SCE&G for retention and storage at the Virgil C. Summer Nuclear Station in accordance with approved procedures. It is the intent that the minimum records necessary to document the quality of any safety related items will exist ultimately in the Permanent Records Storage Facility without the need for additional vendor input.

The following are examples of records which may be required to be forwarded to SCE&G:

1. NDE reports.
2. Material test reports.
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.

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 also a part of the vendor or contractor records. Records required by procurement documents 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 equivalent storage for the records until submitted to SCE&G.

When required by contract documents, the data packages forwarded to SCE&G by vendors will include, in addition to QA records specified in procurement documents, a Certificate of Inspection or Shipping Release provided by SCE&G PQ or SQ or its agent and an index of the required documentation. 02-01

The existence of these requirements is assured by evaluation of prospective bidders described in Section 17.2.4, and the continued existence and implementation of these requirements is verified by audits and surveillance, as described in Section 17.2.7.

17.2.17.2 SCE&G Controls

Document Control and Records, under the control of the General Manager, Organizational Effectiveness maintains the SCE&G permanent file for QA Records on the Virgil C. Summer Nuclear Station. Complete records are maintained covering aspects of quality control activity. Inspection reports, fabrication and test procedures, radiographs and other nondestructive examination test reports, and any other documentation as required by 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 file. The reports on the baseline and follow-up inservice inspections generated as described in section 17.2.10 are maintained in the permanent file, as are the results and reports on preoperational and startup testing, as described in section 17.2.11. Plant operating records, such as operating logs, are also placed in the permanent file as they are completed. RN 04-044 98-01

The retention period for plant records by the type of record is described in approved procedures and Section 6.0 of the plant Technical Specifications.

The definition of what constitutes a QA record, what the retention period is, and the requirements for the retention center are provided in ANSI N45.2.9 as excepted by the SCE&G position on Regulatory Guide 1.88 noted in Appendix 3A of this FSAR. The retention period for plant records by the type of record is described in approved procedures and Section 6.10 of the plant Technical Specifications. Each department generating quality assurance records is responsible for transmitting those records to the records management organization for archival purposes.

Records are indexed for proper placement and ready retrieval. Access to the permanent files is controlled by Records Management Supervision. The records management program is designed and implemented to assure that the quality assurance records are complete, readily retrievable when needed, and protected from damage or destruction during storage in accordance with approved procedures.

For Quality assurance records stored on electronic media (optical disk, magnetic tape, network array, etc.), V. C. Summer complies with the technical aspects of the Nuclear Information and Records Management Association, Inc. (NIRMA) Technical Guidelines; TG 11-1998, “Authentication of Records;” TG 15-1998, “Management of Electronic Records;” TG 16-1998, “Software Configuration Management and Quality Assurance;” and TG 21-1998, “Electronic Records Protection and Restoration.” Information Systems Technology (IST) selects the appropriate electronic storage media to store records. Regardless of the electronic media selected, the process must support producing legible, accurate, and complete records during the required retention period.

RN 04-044

File legibility verification is completed on quality assurance records stored on electronic media by either visually verifying the file legibility or by electronically verifying exact binary file transfer.

Quality assurance records stored on electronic media will be refreshed or copied on to new media and subsequently verified if the projected lifetime of that media does not exceed the retention period of the records stored on that media. Periodic media inspections to monitor image degradation are conducted and documented in accordance with the NIRMA guidelines or the media manufacturer’s recommendations.

SCE&G QA conducts audits, and/or surveillance to the SCE&G QA Plan and procedures to assure that QA records are retained and protected as required by the procedures. The QA records are audited by the SCE&G QA organization to verify that the required controls for generation, approval and identification for retrievability have been applied.

The plant records storage area is required to provide protection against destruction or deterioration caused by fire, water, humidity, temperature, insects, and rodents in accordance with approved procedures. Records that are not maintained in the permanent records storage facility will be duplicated and stored in a separate remote location. Electronic records maintained on-line for permanent storage will be protected by use of redundant and separate servers/electronic storage devices. 02-01 99-01

Records are required to be indexed for proper placement and ready retrieval. Access to the permanent files is controlled by the General Manager, Organizational Effectiveness. The definition of what constitutes a QA record, what the retention period is, and the requirements for the retention center are provided in ANSI N45.2.9 as excepted by the SCE&G position on Regulatory Guide 1.88 noted in Appendix 3A of this FSAR. RN 03-031

SCE&G QA conducts audits, and/or surveillance to the SCE&G QA Plan and procedures to assure that QA records are retained and protected as required by the procedures. The QA records are audited by the SCE&G QA organization to verify that the required controls for generation, approval and identification for retrievability have been applied.

17.2.18 AUDITS

The overall SCE&G audit program is composed of two sources of input surveillance 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. System attribute and type II surveillances are defined as programmatic in-depth observations of a safety-related activity, task, or quality system which is investigatory in nature and seeks to determine and explain the program related cause of observed inadequacies. The result is an evaluation of the functioning system(s) which determines the effectiveness of a subsystem or system. Surveillances isolate on one or several control mechanisms or program criteria to assess in detail, utilizing audit techniques, the functionality of that control. Extensive system surveillances provide a much sharper, more detailed conclusion of the implementation status and adequacy of any QA program provided that one, or 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, follow-up, and quality history. In the most positive case a combination of surveillances may confirm adequacy and implementation of a complex 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. The terms “Type II Surveillance” and audit have been used interchangeably in the SCE&G Program. In an effort to preclude potential confusion the term “Type II Surveillance” is no longer formally used in SCE&G’s Plans or Procedures.

17.2.18.1 Internal Audits

The SCE&G QA program requires vendors and contractors of safety-related materials, equipment, and services to conduct audits, as needed, to determine the effectiveness of their QA Programs. The internal audit programs must describe the following:

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.

The vendor's audit program is evaluated during the preaward phase of procurement, as described in Section 17.2.4, and implementation of the accepted audit program is verified during the audits and surveillance conducted after award of a purchase order, as described in Section 17.2.7. The audit program must satisfy the requirements given in Section 17.2.18.3.

Within SCE&G, SCE&G QA audits and performs surveillance on appropriate Nuclear Operations Department organizations and activities to assure compliance with the SCE&G Operational QA Plan and the procedures controlling safety-related work for each group. The frequency of audit/surveillances for each group is scheduled by SCE&G QA to be commensurate with the importance to safety of the work performed by the group and shall result in at least one audit of these groups every two years. An assessment of activities under the control of the Manager, QS is performed, by external sources. The purpose of this assessment is to verify compliance to elements of the programs executed under the MQS and to independently assess the effectiveness of the internal SCE&G audit program through a detailed assessment of one identified Nuclear Operations Division organization. This audit will be performed every two years. Audits shall be performed at the intervals designated for each audit area. Schedules shall be based on the month in which the audit starts. Two year audits may be extended not to exceed 25 percent of its interval. The maximum time between audits will not exceed 30 months. When an audit interval extension greater than one month is used, the next audit for that particular audit area will be scheduled from the original anniversary month rather from the month of the extended audit. 98-01 RN 06-035

Reports of these audits are forwarded to upper management and the appropriate management for resolution of deficient conditions and corrective action.

An escalation policy assures that upper management is cognizant of any problems associated with corrective action to deficient conditions. In addition, Nuclear Support Services membership on the NSRC assures first hand briefing of adverse quality problems and trends to the NSRC. 98-01

17.2.18.2 External Audits

Where required by contract documents, vendors of safety-related materials, parts, components and services are required by the SCE&G QA program to have a QA Program commensurate with the item or service to be provided, including vendor evaluation and control programs. Where such programs necessitate the use of external audits, the vendor's audit program is evaluated against the requirements described in Sections 17.2.18.1 and 17.2.18.3. SQ audits of vendors described in this section verify the existence of an acceptable program. 02-01

As described in Section 17.2.4, SCE&G SQ conducts preaward surveys of prospective bidders to evaluate their QA Programs against the requirements imposed by the procurement documents. These preaward surveys are conducted, and reports prepared, to the criteria described in Section 17.2.18.3. The reports of preaward surveys are utilized by SCE&G SQ to determine the acceptability of the bidder and to approve the selection of a vendor, as described in Section 17.2.4. 02-01 02-01

SCE&G SQ 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 surveillances are commensurate with the item or service to be provided. 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 as defined in Section 17.2.7.3 will be performed to satisfy the intent of and preclude the need for an audit, when properly evaluated and documented by a certified lead auditor. 02-01 98-01

17.2.18.3 Audit Requirements

SCE&G QA and SQ conducts audits/surveillances under the following requirements and requires vendors and contractors to SCE&G to have an audit program applying similar applicable requirements consistent with the complexity and importance of the materials, parts, components, and services being provided. 02-01

In all cases, audits/surveillances are performed by individuals who do not have direct responsibility for the area being audited. Audits/surveillances are conducted in accordance with established procedures by appropriate individuals with the necessary education, training, and experience. Certified Lead Auditors as a minimum shall 1) possess a high school education 2) complete a QA training course and demonstrate to the appropriate manager by dialogue and/or observation, understanding of the programmatic aspects of 10 CFR 50 Appendix B 3) pass an examination which shall evaluate his comprehension of auditing; which may be oral, written, practical, or any combination of the three, and 4) Prospective Lead Auditors shall demonstrate their ability to effectively implement the audit process and effectively lead an audit team. This process is described in written procedures which provide for evaluation and documentation of the results of this demonstration. A prospective Lead Auditor shall have participated in at least one nuclear quality assurance audit within the year preceding the individuals effective date of qualification. Upon successful demonstration of the ability to effectively implement the audit process and effectively lead audits, and having met the other provisions of Section 2.3 of ANSI/ASME N45.2.23-1978, the individual may be certified as being qualified to lead audits. 02-01 RN 05-003

The areas of design, procurement, shipping, storage, installation, manufacturing, construction, inspection, testing, operation, maintenance, and refueling are audited for conformance to previously established requirements which affect the installed quality and operational capability of the Virgil C. Summer Nuclear Station. Audits/surveillances include the review of completed and accepted operations, a review of documentation and records, and an evaluation of the adequacy and effectiveness of the QA Program and control measures applied to the area being audited.

Audits/surveillances must be conducted to established procedures. SCE&G QA and SQ audits/surveillances are conducted to procedures contained in the SCE&G QA and Engineering Services Procedures Manuals. These procedures describe the methods used to prepare, conduct, and report audits/surveillances. 02-01

Reports of audits/surveillances must identify any deficient conditions found by describing the condition found and the QA Program requirement which has been omitted or not completely satisfied and suggesting possible course(s) of corrective action. The formal audit report is forwarded to responsible management in the area(s) audited for evaluation, response, and where necessary, initiation of corrective action. 98-01

TABLE 17.2-1

SOUTH CAROLINA ELECTRIC & GAS COMPANY
OPERABILITY QUALITY ASSURANCE PLAN
CROSS REFERENCE

Operational Quality Assurance Plan and ANSI 18.7
vs.
10 CFR 50 Appendix B Criteria

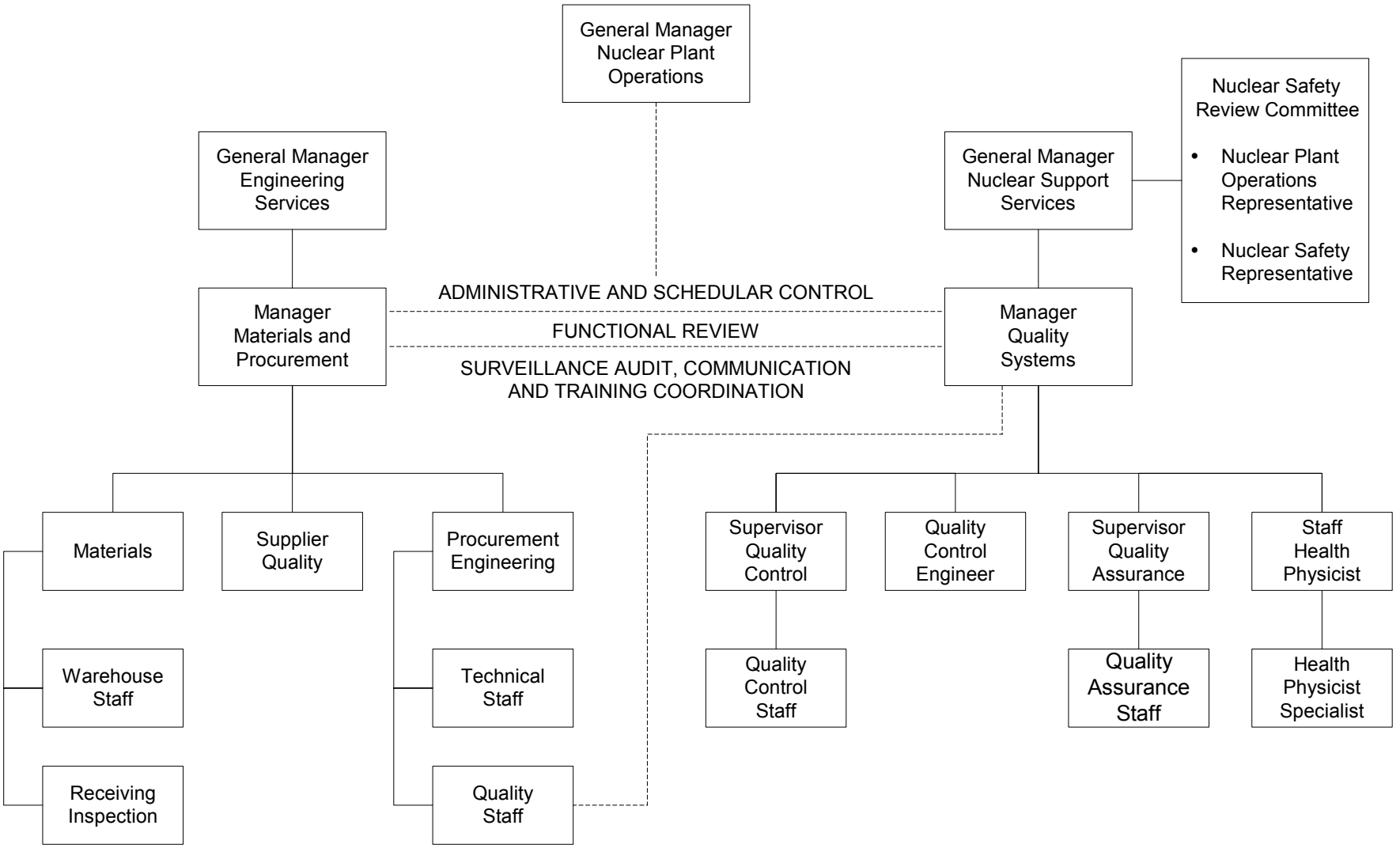
10 CFR 50 Appendix B Section		Operational QA Plan Section	ANSI 18.7 Section	
I	ORGANIZATION	Section 2.0, 3.0, 5.0	3.1, 3.2, 3.3, 3.4 1.0 thru Appendix A	
II	QUALITY ASSURANCE PROGRAM	Sections 1.0 thru 15.0	3.1, 3.2, 3.3, 3.4.2, 5.1, 5.3	
III	DESIGN CONTROL	Section 6.0	5.2.7.2	
IV	PROCUREMENT DOCUMENT CONTROL	Section 8.0	5.2, 13.1	
V	INSTRUCTIONS, PROCEDURES, DRAWINGS	Section 4.0 *	5.2.7, 5.3, 5.3.10	99-01
VI	DOCUMENT CONTROL	Section 5.0	5.2.15	
VII	CONTROL OF PURCHASED MATERIAL, EQUIPMENT, AND SERVICES	Section 7.0, 8.0, 9.0	5.2.13.2	RN 03-031
VIII	IDENTIFICATION AND CONTROL OF MATERIALS, PARTS, AND COMPONENTS	Section 9.0	5.2.13.3	

* Refer to plant security plan

TABLE 17.2-1 (Continued)

SOUTH CAROLINA ELECTRIC & GAS COMPANY
OPERABILITY QUALITY ASSURANCE PLAN
CROSS REFERENCE

10 CFR 50 Appendix B Section		Operational QA Plan Section	ANSI 18.7 Section	
IX	CONTROL OF SPECIAL PROCESSES	Sections 7.0, 8.0	5.2.12, 5.2.18	
X	INSPECTION	Section 9.0, 11.0, 13.0	5.2.17	RN 03-031
XI	TEST CONTROL	Sections 4.0, 7.0, 11.0, 13.0	5.2.19	
XII	CONTROL OF MEASURING AND TEST EQUIPMENT	Section 10.0	5.2.16	
XIII	HANDLING, STORAGE, AND SHIPPING	Section 9.0	5.2.13.4	
XIV	INSPECTION, TEST AND OPERATING STATUS	Sections 7.0, 8.0, 11.0	5.2.6, 5.2.14	
XV	NONCONFORMING MATERIALS, PARTS, OR COMPONENTS	Section 9.0, 10.0, 12.0	5.2.14	RN 03-031
XVI	CORRECTIVE ACTION	Section 7.0, 12.0	5.2.11	
XVII	QUALITY ASSURANCE RECORDS	Section 14.0	5.2.12	
XVIII	AUDITS	Section 15.0	4.5	



RN 03-013
June 2003

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

Quality Group
Organization and Interfaces

Figure 17.2-1