TABLE OF CONTENTS

Section	Title	Page
13.0	CONDUCT OF OPERATIONS	13.1-1
13.1	ORGANIZATIONAL STRUCTURE OF SOUTH CAROLINA ELECTRIC AND GAS COMPANY	13.1-1
13.1.1	CORPORATE ORGANIZATION	13.1-1
13.1.1.1	Corporate Functions, Responsibilities and Authorities	13.1-1
13.1.1.2	In-House Pre-Commercial Organization	13.1-2
13.1.1.3	Interrelationships with Contractors	13.1-7
13.1.1.4	South Carolina Electric & Gas Company Corporate Technical Staff	13.1-10
13.1.2	OPERATING ORGANIZATION	13.1-10
13.1.2.1	Plant Organization	13.1-11
13.1.2.2	Personnel Functions, Responsibilities, and Authorities	13.1-11
13.1.2.3	Shift Crew Composition	13.1-21
13.1.3	Qualification Requirements of Nuclear Plant Personnel	13.1-21
13.1.3.1	Minimum Qualification Requirements	13.1-21
13.1.3.2	Qualification of Plant Personnel	13.1-26
13.2	TRAINING PROGRAM	13.2-1
13.2.1	INPO ACCREDITED TRAINING PROGRAMS	13.2-1
13.2.2	TRAINING PROGRAM FOR SPECIALISTS AND NONLICENSED PERSONNEL	13.2-1
13.2.2.1	General	13.2-1
13.2.2.2	PWR Station Nuclear Engineering	13.2-2
13.2.2.3	Additional Training	13.2-2
13.2.3	GENERAL EMPLOYEE TRAINING	13.2-2
13.2.3.1	Station Orientation Training	13.2-2
13.2.3.2	Temporary Personnel Training	13.2-3
13.2.4	TRAINING PROGRAM ADMINISTRATION	13.2-3
13.2.5	RECORDS	13.2-3
13.3	EMERGENCY PLANNING	13.3-1
13.4	REVIEW AND AUDIT	13.4-1
13.4.1	REVIEW AND AUDIT - CONSTRUCTION	13.4-1
13.4.2	REVIEW AND AUDIT - OPERATIONS	13.4-1
13.4.2.1	Onsite Review	13.4-1
13.4.2.2	Independent Review	13.4-3
13.4.2.3	Independent Audit Program	13.4-3
13.4.3	REFERENCES	13.4-3

RN 10-006

TABLE OF CONTENTS (Continued)

Section	Title	Page
13.5	PLANT PROCEDURES	13.5-1
13.5.1	ADMINISTRATIVE PROCEDURES	13.5-3
13.5.1.1	Plant Organization and Responsibility Procedures	13.5-3
13.5.1.2	Development, Review, Approval and Control of Safety-Related Plant Procedures	13.5-4
13.5.1.3	Conduct of Plant Operations Procedures	13.5-4
13.5.1.4	Control of Plant Documents Procedures	13.5-6
13.5.1.5	Corrective Action Reporting Procedures	13.5-6
13.5.1.6	Equipment Control Procedures	13.5-6
13.5.1.7	Design Modification Control Procedures	13.5-6
13.5.1.8	Procurement and Materials Control Procedures	13.5-6
13.5.1.9	Control and Calibration of Test Equipment and Instrumentation Procedures	13.5-6
13.5.1.10	Control of Special Processes During Operations Procedures	13.5-7
13.5.1.11	Non-Conformance Control/Deficiency Reporting Procedures	13.5-7
13.5.1.12	Test Control Procedures	13.5-7
13.5.1.13	Feedback of Operating Experience	13.5-7
13.5.1.14	ECCS Outages	13.5-7
13.5.2	CONTROL ROOM OPERATING PROCEDURES	13.5-8
13.5.2.1	General Operating Procedures	13.5-8
13.5.2.2	Emergency Operating Procedures	13.5-8
13.5.2.3	System Operating Procedures	13.5-8
13.5.2.4	Annunciator Response Procedures	13.5-9
13.5.2.5	Fuel Handling Procedures	13.5-9
13.5.2.6	Special Procedures	13.5-9
13.5.3	MAINTENANCE AND MODIFICATION PROCEDURES	13.5-10
13.5.4	EMERGENCY PLAN PROCEDURES	13.5-10
13.5.5	CHEMICAL-RADIOCHEMICAL CONTROL PROCEDURES	13.5-10
13.5.6	PLANT RADIATION PROTECTION PROCEDURES	13.5-11
13.5.7	PLANT SECURITY PROCEDURES	13.5-11
13.5.8	SURVEILLANCE TEST PROCEDURES	13.5-11
13.5.9	FIRE PROTECTION PROCEDURES	13.5-11
13.6	PLANT RECORDS	13.6-1
13.6.1	PLANT HISTORY	13.6-1
13.6.2	OPERATING RECORDS	13.6-1
13.6.3	EVENT RECORDS	13.6-2
13.7	INDUSTRIAL SECURITY	13.7-1
APPENDIX 13A	SOUTH CAROLINA ELECTRIC AND GAS COMPANY VIRGIL C. SUMMER NUCLEAR STATION RADIATION EMERGENCY PLAN	13A-1

LIST OF TABLES

Table	Title	Page
13.1-1	Deleted Amendment 98-01	Deleted
13.5-1	Administrative Procedure Categories	13.5-12
13.5-2	Control Room Operating Procedure Categories	13.5-13
13.5-3	Maintenance and Modification Procedure Categories	13.5-14
13.5-4	Emergency Plan Procedure Categories	13.5-15
13.5-5	Chemical-Radiochemical Control Procedure Categories	13.5-16
13.5-6	Plant Radiation Protection Procedure Categories	13.5-17
13.5-7	Plant Security Procedure Categories	13.5-18
13.5-8	Surveillance Test Procedure Categories	13.5-19

LIST OF FIGURES

Figure	Title	
13.1-1	South Carolina Electric & Gas Company Organization Chart	
13.1-2	South Carolina Electric & Gas Company Precommercial Organization Chart	
13.1-3	South Carolina Electric & Gas Company Corporate Technical Staff Chart	
13.1-4	South Carolina Electric & Gas Company VCSNS Nuclear Organization Chart	RN 10-006 18-016
13.5-1	Control Room Areas Designated as at the Controls	

LIST OF EFFECTIVE PAGES (LEP)

The following list delineates pages to Chapter 13 of the Virgil C. Summer Nuclear Station Final Safety Analysis Report which are current through May 2018. 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	13-i	Reset	May 2018
	13-ii	Reset	May 2018
	13-iii	Reset	May 2018
	13-iv	Reset	May 2018
	13-v	Reset	May 2018
	13-vi	Reset	May 2018
Page	13.1-1	RN99-103	January 2000
	13.1-2	00-01	December 2000
	13.1-3	RN13-013	February 2014
	13.1-4	00-01	December 2000
	13.1-5	00-01	December 2000
	13.1-6	00-01	December 2000
	13.1-7	00-01	December 2000
	13.1-8	00-01	December 2000
	13.1-9	00-01	December 2000
	13.1-10	00-01	December 2000
	13.1-11	RN13-018	November 2015
		RN16-009	September 2016
		RN18-016	May 2018
	13.1-12	RN13-018	November 2015
	13.1-13	RN15-011	July 2015
	13.1-14	RN10-006	November 2011
		RN16-009	September 2016
	13.1-15	RN13-013	February 2014
		RN16-009	September 2016
		RN16-026	January 2017
	13.1-16	RN13-013	February 2014
		RN16-009	September 2016
		RN16-026	January 2017
	13.1-17	RN10-006	November 2011
		RN16-026	January 2017
	13.1-18	RN15-012	August 2015
		RN16-009	September 2016
		RN18-016	May 2018
	13.1-19	RN13-013	February 2014
		RN16-009	September 2016
	13.1-20	RN13-013	February 2014
		RN16-009	September 2016
		RN18-016	May 2018
	13.1-21	RN15-011	July 2015
		RN16-009	September 2016
		RN18-016	May 2018
	13.1-22	RN99-150	January 2000
	13.1-23	RN15-011	July 2015
	13.1-24	RN10-027	December 2010
	13.1-25	RN10-022	November 2011
	13.1-26	00-01	December 2000
Fig.	13.1-1	02-01	May 2002
	13.1-2	4	August 1988
	13.1-3	02-01	May 2002
	13.1-4	RN13-013	February 2014
		RN16-009	September 2016
		RN16-026	January 2017
		RN18-016	May 2018
Page	13.2-1	RN15-011	July 2015
	13.2-2	RN00-014	June 2000
Page	13.2-3	RN10-006	November 2011
		RN18-016	May 2018
Page	13.3-1	97-01	August 1997
Page	13.4-1	RN11-040	May 2012
		RN17-025	May 2018
	13.4-2	RN11-040	May 2012
		RN18-016	May 2018
	13.4-3	RN13-018	November 2015
		RN18-016	May 2018
Page	13.5-1	00-01	December 2000
	13.5-2	00-01	December 2000
	13.5-3	RN11-040	May 2012
		RN18-016	May 2018
	13.5-4	RN15-011	July 2015
	13.5-5	RN15-011	July 2015
	13.5-6	RN11-040	May 2012
	13.5-7	00-01	December 2000
	13.5-8	00-01	December 2000
	13.5-9	02-01	May 2002
	13.5-10	00-01	December 2000
	13.5-11	RN03-024	April 2004
		RN18-019	May 2018
	13.5-12	99-01	June 1999
	13.5-13	97-01	August 1997

Page/Fig.No.		Amend. No.	Date	Page/Fig.No.	Amend. No.	Date
	13.5-14	97-01	August 1997			
	13.5-15	97-01	August 1997			
	13.5-16	97-01	August 1997			
	13.5-17	97-01	August 1997			
	13.5-18	97-01	August 1997			
	13.5-19	RN03-024	April 2004			
Fig.	13.5-1	00-01	December 2000			
Page	13.6-1	RN11-040 RN18-016	May 2012 May 2018			
	13.6-2	02-01	May 2002			
Page	13.7-1	97-01	August 1997			
Page	13A-1	97-01	August 1997			
	13A-2	97-01	August 1997			

13.0 CONDUCT OF OPERATIONS

13.1 ORGANIZATIONAL STRUCTURE OF SOUTH CAROLINA ELECTRIC AND GAS COMPANY

NOTE 13.1.1
Section 13.1.1 is being retained for historical purposes only.

RN 99-103

13.1.1 CORPORATE ORGANIZATION

This section describes the structure and qualifications of the South Carolina Electric and Gas Company (SCE&G) corporate organization and the corporate organizations of the principal contractors: Gilbert/Commonwealth (Gilbert), Westinghouse Electric Corporation (Westinghouse), and Daniel International Corporation (Daniel).

13.1.1.1 Corporate Functions, Responsibilities and Authorities

SCE&G owns and operates an integrated electric generation, transmission, and distribution system which serves approximately 304,000 customers in a 12,000 square mile service area. This area, stretching from the central region to the coastal plains, includes Columbia, the State capitol, and Charleston, South Carolina's principal seaport. SCE&G's transmission system is part of the interconnected grid extending over a large part of the central and eastern portion of the nation.

SCE&G's net generating capacity as of August, 1983, was in excess of 3,950,000 kW. The South Carolina Public Service Authority (SCPSA) by joint ownership of the Virgil C. Summer Nuclear Station, owns one-third interest (300 MW) in the facility.

SCE&G, acting as its own general contractor, has constructed generating facilities which provide most of their present generating capacity. For the construction of the Virgil C. Summer Nuclear Station, SCE&G has engaged qualified contractors to construct the facility. SCE&G acted as construction manager.

SCE&G is a partner with Carolina Power and Light Company, Duke Power Company, and Virginia Electric and Power Company in Carolinas Virginia Nuclear Power Associates, Inc. (CVNPA). CVNPA was formed in 1956 to build and operate a 17,000 kWe nuclear steam generating plant at Parr, S. C., for research, operating, and engineering experience. The Carolinas Virginia Tube Reactor (CVTR), was constructed and operated under license granted by the Atomic Energy Commission. The CVTR was decommissioned in 1967 after completion of a successful operating and research program. SCE&G actively participated in the CVTR project at the planning, management, training, research, technical, and operational levels.

SCE&G has maintained active participation in the fast breeder programs of both Westinghouse and Atomics International. SCE&G also participated in the Savannah

River Nuclear Study Group which examined the feasibility of developing power from a production reactor.

SCE&G was the sole applicant for the construction permit and operating license for the Virgil C. Summer Nuclear Station. As Applicant, SCE&G was responsible for the design, construction, quality assurance, and operation of this station. Figures 13.1-1 and 13.1-2 together show the SCE&G corporate organizational structure from the Board of Directors to the managerial level at the plant site. Figure 13.1-2 includes the organizational interfaces with the outside consultants and contractors; Gilbert, Westinghouse, and Daniel. Figure 13.1-3, exclusive of outside constraints, shows the SCE&G post commercial organizational operation.

Gilbert was retained by SCE&G as architect engineer for the entire project, including plant layouts and system arrangements, and design of balance of plant equipment. Engineering efforts by Gilbert were coordinated with construction by the SCE&G Nuclear Engineering Department.

SCE&G has contracted with Westinghouse for the design and manufacture of the complete nuclear steam supply system (NSSS). In addition, Westinghouse provided technical consultation in areas such as construction, initial fuel loading, testing, and initial startup. Westinghouse was also involved in the training of SCE&G operating personnel.

Daniel was under contract by SCE&G to act as general constructor for the Virgil C. Summer Nuclear Station construction activities.

13.1.1.2 In-House Pre-Commercial Organization

This section, which is historical in nature, describes the pre-commercial SCE&G corporate management, including technical support staffing and in-house organizational relationships, established for design, procurement, construction, and quality assurance functions. The responsibilities and authorities of in-house personnel are included. In addition, specific responsibilities and activities are included in order to show the accomplishments and plans for work in certain areas.

13.1.1.2.1 Corporate Management

The SCE&G corporate organization was responsible for handling all matters pertaining to the Virgil C. Summer Nuclear Station, including design, procurement, construction, quality assurance, testing, training, and operation, is shown in Figure 13.1-2. The departments primarily involved with plant activities and their relationships are described below.

The Vice-President and Group Executive, Engineering and Construction, was responsible for the construction of power facilities. The Construction Department was separated into the Production Engineering Department and the Construction and Quality Control Department each headed by a Group Manager. The Group Manager,

Production Engineering and the Group Manager Construction and Quality Control reported directly to the Senior Vice-President, and Group Executive, Engineering and Construction.

The Vice President, Nuclear Operations, was responsible for the quality assurance, engineering, licensing, training, and operation of SCE&G nuclear power generating facility.

The General Manager, Nuclear Plant Operations, was responsible for station operations including start-up and test, power ascension, commercial power operation, nuclear security, and emergency planning. He was assisted in accomplishing his responsibilities by the Manager of Nuclear Protection Services, the Emergency Planning Coordinator, and the Manager, Virgil C. Summer Nuclear Station. RN 13-013

The Group Manager, Nuclear Engineering and Licensing, had the responsibility for plant and equipment design; plant licensing; and corporate health physics and environmental programs, geologic and hydrologic studies relating to plant sitting, design, construction and support to plant operations. This department was divided into four functional areas; Nuclear Engineering, Nuclear Licensing, the Independent Safety Engineering Group, and Corporate Health Physics and Environmental Programs. The Group Manager, Nuclear Engineering and Licensing, reported directly to the Vice-President, Nuclear Operations.

The Group Manager, Nuclear Services, was responsible for the areas of Nuclear Fuel Management, incore technical support fuel cycle requirements, and quality assurance relating to design, construction and operation, and nuclear quality control relating to the operation and modification of the Virgil C. Summer Nuclear Station. Details of the quality assurance and nuclear quality control programs are found in Chapter 17.

The Group Manager, Nuclear Education and Training, was responsible for the development, implementation, and evaluation of operating and technical training programs for the Nuclear Operations Department in coordination with or upon recommendation of the General Manager, Nuclear Plant Operations; the Group Manager, Nuclear Engineering and Licensing; or the Group Manager, Nuclear Services. The Group Manager, Nuclear Education and Training, reported directly to the Vice President, Nuclear Operations. RN 13-013

The General Manager, Purchasing, had the company-wide responsibility for procurement of equipment and materials. This included procurement of safety related items during design, construction, and operations of SCE&G power facilities. Purchase requisitions for the Virgil C. Summer Nuclear Station were initiated by personnel of the plant staff, nuclear engineering, or purchasing. Additional information pertaining to procurement is found in Chapter 17.

13.1.1.2.2 Specific Responsibilities and Activities

Specific responsibilities and activities in which SCE&G was engaged included:

1. Design and Construction Activities (Project Phase)

   The SCE&G Nuclear Engineering function within the Nuclear Engineering and Licensing Department had the responsibility for the design and engineering of the Virgil C. Summer Nuclear Station during the design and construction phase of the project. The Nuclear Engineering Group was responsible for coordinating and approving plant design and engineering, and geological, hydrological and seismological studies related to the plant design and environmental effects.

   Westinghouse was responsible to SCE&G for the design, engineering, procurement, and fabrication, including quality assurance, of the NSSS.

   Gilbert had the responsibility for the overall design and engineering of the balance of the plant systems (nuclear and non-nuclear not within the NSSS scope of supply) and the coordination of all plant design and engineering activities. Gilbert design documents were submitted to the SCE&G Nuclear Engineering Department for review and approval. Westinghouse engineering drawings, specifications, and related design and engineering documents were submitted to Gilbert and SCE&G for review, comment and interface information.

   The final decision for procurement of materials and equipment, except those under the Westinghouse NSSS scope of supply, was made by the SCE&G purchasing committee. The vendor proposals were received by Gilbert and SCE&G and were evaluated for compliance by engineering, quality assurance, and purchasing for acceptable responses to the specification requirements in accordance with approved Gilbert and SCE&G evaluation and purchasing procedures. The SCE&G quality assurance group had to concur with the purchasing committee's decision of the selected vendor for safety-related purchases.

   Site layout with respect to environmental effects and development of Safety Analysis Reports was done by Gilbert through coordination of the efforts of Westinghouse, Dames and Moore, and SCE&G.

   Security during construction was the direct responsibility of the SCE&G Construction Department. Gilbert provided planning for the inclusion of security requirements in the design of the Virgil C. Summer Nuclear Station for the operations phase. The latter security planning and design documents were subject to the review and approval of the SCE&G Nuclear Engineering Department, but were reviewed by all affected SCE&G organizations.

   Construction management was the responsibility of the SCE&G Construction Department under the direction of the Nuclear Site Manager who reported to the

Group Manager, Construction and Control. Daniel was the constructor. Construction activities were directed by the Daniel Project Manager who reported to the SCE&G Nuclear Site Manager. Project Managers for other site contractors, performing safety-related construction activities, reported to the SCE&G Nuclear Site Manager administratively and to the Daniel Project Manager for scheduling and coordination of work activities.

Quality control activities were the direct responsibility of the SCE&G Quality Control Manager who reported to the SCE&G Group Manager, Construction and Quality Control. Site quality control activities were performed by, or under the direction of the SCE&G Quality Control Manager, except for those contractors which had quality control responsibility. SCE&G had quality control responsibility for the Daniel scope of construction except for the ASME Boiler and Pressure Vessel Code related activities.

The SCE&G quality assurance section had the primary responsibility for surveillance and audit of site construction activities; however, Daniel had quality assurance responsibility for the scope of work under its ASME Boiler and Pressure Vessel Code Certificates of Authorization. Several other contractors also performed surveillance and audit of their work onsite. The SCE&G quality assurance group performed surveillance and audit of all site activities including those for which contractors had quality assurance within their scope of activities. Further detail can be found in Section 17.1.

2. Preoperational Activities

The preoperational activities at the Virgil C. Summer Nuclear Station which were being accomplished included the following:

a. Development of human engineering design objectives and design phase review of proposed control room layouts.

   A coordinated effort had been placed on the design of the control room to best meet the needs of the plant operator during normal operation and emergency situations.

   A practical review of the physical dimensions of the control board to suit the operator and the types and arrangement of controls, instrumentation, displays and alarms required for safe operation and shutdown was performed by the plant staff. Consideration was given to the fact that certain systems normally require more attention from the operator and the controls for these systems were grouped accordingly.

Computers were used to provide supplementary information to the operator and are designed to be an effective tool in the operation of the plant. The design included adequate instrumentation to provide the operator with sufficient information for proper and safe system operation, irrespective of the availability of the computer system. The computer system obtained data by scanning analog and digital sensors. It logged data on typewriters, sequentially logged trip and post trip data, and alarmed various off-normal and abnormal conditions. Monitoring programs were also included for surveillance of reactor control and protection system operations, and for nuclear process calculations.

The computer readout and plant operator's console are located in the control room. The control room was designed to ensure habitability under anticipated operational transients (see Section 9.4 for a discussion of control room ventilation systems).

b. Development and implementation of staff recruiting and training programs

SCE&G had developed a "Plan for Staffing the Virgil C. Summer Nuclear Station," designed for staff selection, training, and recruiting. This plan referenced ANSI N18.1-1971, "Selection and Training of Nuclear Power Plant Personnel," as the basis for determining the minimum experience and education requirements for plant personnel. The recommendations of the NRC in WASH-1130, "Utility Staffing and Training for Nuclear Power Plants," were also used in developing this plan. Details pertaining to experience and education requirements are found in Section 13.1.3 and training details are found in Section 13.2 although both are now based on the requirements of ANS 3.1-1981.

c. Development of plans for initial testing

The plans for the preoperational and startup testing of the Virgil C. Summer Nuclear Station were developed by the plant staff. Outside consulting services were used for guidance in establishing these plans. The Manager, Virgil C. Summer Station had the overall responsibility for the development and implementation of this program. Additional details regarding plans for preoperational and startup testing are found in Chapter 14.

d. Development of plant maintenance programs

The plant maintenance program was designed to implement good practices in preventative and corrective maintenance. Such practices assured that the plant would function reliably during its lifetime. This program was designed to control maintenance of equipment and associated controls in an orderly fashion by use of approved procedures.

3. Technical Support for Operations

This section describes the technical services and backup support for operations in the following areas:

a. Nuclear, mechanical, structural, electrical, thermal-hydraulic, plant chemistry, health physics, metallurgy and materials, and instrumentation and controls.

The Manager, Virgil C. Summer Nuclear Station had available to him the plant Technical Staff and the offsite Nuclear Engineering Group to support engineering activities of the station. The plant could contact offsite suppliers and consultants to secure information or guidance as required. If offsite engineering was needed to provide support services, the Manager, Nuclear Engineering, determined whether the required work would be performed by the SCE&G nuclear engineering staff, or contracted to a qualified outside organization. A coordinator in the nuclear engineering group was to follow progress and coordinate work.

b. Fueling and refueling operations support

The Manager, Virgil C. Summer Nuclear Station had the option of selecting the qualified personnel for directing fueling and refueling operations.

These personnel could come from the plant staff, other company personnel (especially from nearby SCE&G power facilities), and qualified outside contractors.

c. Maintenance support

The Manager Virgil C. Summer Nuclear Station had the option to utilize the plant maintenance staff, other company personnel (especially from nearby SCE&G power facilities, company wide maintenance personnel, and construction support), or outside contractors for special support in maintaining the plant.

13.1.1.3 Interrelationships with Contractors

SCE&G Nuclear Engineering Department was responsible for the overall coordination and final approval of plant design and engineering activities during the design and construction phases of the project. During the operating phase, the Nuclear Engineering Department in conjunction with the onsite technical support group was to be responsible for providing technical support services to the Station. The interface between these two Departments was further described in Chapter 17. The SCE&G Nuclear Engineering Department's technical staff and the onsite technical support group were described in Sections 13.1.1.4 and 13.1.2.2, respectively.

Westinghouse design documents which would have an effect on that portion of the plant (BOP) designed by either Gilbert or SCE&G were forwarded to Gilbert or SCE&G for their respective review and comment. Likewise, SCE&G and Gilbert design documents which had an effect on the Westinghouse or other suppliers' scopes of supply were forwarded to these other organizations for their review and comment as appropriate. Specified Gilbert design documents were reviewed and approved by SCE&G Nuclear Engineering. Final acceptance by the SCE&G Nuclear Engineering Department of design concepts, documents, and equipment suppliers were based on recommendations from the responsible Gilbert engineers along with recommendations from within SCE&G Construction, Purchasing, Quality Assurance and power supply organizations, as appropriate.

Interrelationships and interfaces among various organizations during preoperational and startup testing were described in Section 14.2.2. These relationships for the plant operational phase were described in Chapter 14.

The responsibility for ensuring that equipment suppliers and contractors conform to the approved engineering specifications was the responsibility of Gilbert and/or SCE&G even though equipment was procured by SCE&G Purchasing Department.

Conformance with the approved specifications was verified through implementation of the quality assurance program, and was described in Chapter 17.

13.1.1.3.1 Gilbert Associates, Inc.

The professional qualifications and the organizational structure of Gilbert Associates were presented in Section 1.4.2 and in Chapter 17. During the design and construction phases of the project, the Gilbert Project Manager had the responsibility of coordinating the plant design activities of Gilbert under the overall supervision and direction of the SCE&G Manager, Nuclear Engineering. Upon completion of the plant, Gilbert was to continue to perform engineering services as needed. During the operational phase the same basic organization which was used during design and construction was to continue with qualifications and structure. (The current organization is shown in Section 1.4.2 and Chapter 17.)

The Gilbert Technical Support Group, working in direct support of the Virgil C. Summer Nuclear Station, would be smaller in size than that required to design the plant. The project manager and principal engineers in this continuing engineering services group were to be physically located in a project island configuration which was designed to enhance a more effective internal interface with the Gilbert organization. The individuals assigned to the continuing services group would, for the most part, be the same personnel who were involved in the original design of the Summer Station. Changes of the project manager or principal engineers assigned to this group had to receive approval of the SCE&G Manager, Nuclear Engineering.

The Gilbert project island was to keep and maintain the following records and documents:

1. Project correspondence

2. Project design documents, e.g., layouts, system diagrams, system design descriptions

3. As-built drawings (Gilbert and vendor)

4. Purchase orders

5. Updated FSAR and ER

6. Equipment, valve, instrument, and electrical feeder lists

7. Design calculations

8. Other documents deemed necessary for proper technical support.

A direct telephone line was installed between the Gilbert project office and SCE&G engineering offices. Telecopiers were also available in each location. Home telephone numbers of the principal Gilbert personnel assigned to the project office were available to the SCE&G Nuclear Engineering Department on a continuous and updated basis.

In addition to the personnel assigned to the Gilbert Technical Support Group, Gilbert management was committed to provide its corporate resources as needed.

The Project Manager and principal engineers assigned to the Gilbert continuing services group visited the plant site at least annually for refamiliarization and update on the engineering status and condition of the plant.

13.1.1.3.2 Westinghouse Electric Corporation

The qualifications and structure of Westinghouse were presented in Section 1.4.3 and in Chapter 17. The Westinghouse Project Manager, Pressurized Water Reactors Division, coordinated the design and manufacturing information supplied by Westinghouse with the SCE&G Manager, Nuclear Engineering during the design and construction phase. Upon completion of construction, a Westinghouse Project Manager from the Nuclear Service Division, was assigned to the Virgil C. Summer Nuclear Station and was to report to the SCE&G Site Manager, as shown in Figure 13.1-2.

13.1.1.3.3 Daniel International Corporation

The qualifications and structure of Daniel are presented in Section 1.4.4 and Chapter 17. The Daniel Project Manager reported to the SCE&G Site Manager as shown on Figure 13.1-2. This arrangement gave SCE&G the managerial control of all construction activity at the plant site.

13.1.1.3.4 Interrelationships

The present working interrelationships among the contractor organizations mentioned above are described as follows:

SCE&G Engineering Services is responsible for coordinating and approving plant engineering and design.

Westinghouse design documents that have an effect on that part of the plant design performed by Gilbert and SCE&G are forwarded to Gilbert and SCE&G for review and comment. SCE&G and Gilbert design documents which have an effect on the Westinghouse or other suppliers scope of supply are, likewise, sent to Westinghouse and other suppliers for their review and comment. All Gilbert design documents must be reviewed and approved by SCE&G.

Final acceptance by SCE&G Engineering Services of design concepts, documents, and equipment suppliers was based on recommendations from the responsible designers and consultation with SCE&G organizations as appropriate.

The interrelationships and interfaces among various organizations during preoperational and startup testing are described in Section 14.2.2.

The responsibility for ensuring that equipment suppliers and contractors conform to approved specifications is the responsibility of SCE&G. Conformance is verified through implementation of the quality assurance program described in Chapter 17.

13.1.1.4 South Carolina Electric & Gas Company Corporate Technical Staff

The SCE&G corporate technical staff supporting the Virgil C. Summer Nuclear Station was composed of experienced engineers in the Technical Services and Nuclear Regulatory and Developmental Support Services organizations as shown on Figure 13.1-3. This organizational structure functioned until early 1988 wherein the present Nuclear Operations Division was re-organized with all supporting staff located at the Virgil C. Summer Nuclear Station as shown on Figure 13.1-4.

13.1.2 OPERATING ORGANIZATION

A description of the plant operating organization as shown on Figure 13.1-4 is presented in this section for the Virgil C. Summer Nuclear Station.

13.1.2.1 Plant Organization

The operation and maintenance of the Virgil C. Summer Nuclear Station, which is a part of the SCE&G system, is the direct responsibility of the Senior Vice President and Chief Nuclear Officer. Reporting to the Senior Vice President and Chief Nuclear Officer is the Vice President, Nuclear Operations. Reporting to the Vice President, Nuclear Operations are the General Manager, Nuclear Plant Operations, the General Manager, Nuclear Support Services, the General Manager, Engineering Services, the Manager, Financial Services, the General Manager, Organizational / Development Effectiveness, the Manager, Nuclear Oversight, and the Director, Nuclear Training. RN 01-100 03-024 10-006 16-009 17-001 18-016

Administrative, technical, operations, maintenance, health physics, quality, and chemistry personnel make up the plant operating staff. Appropriate numbers of personnel may be added or deleted as necessary to balance the work load. RN 16-009

13.1.2.2 Personnel Functions, Responsibilities, and Authorities

Virgil C. Summer Nuclear Station personnel have a combination of educational experience and skill commensurate with their level of responsibility. These qualities provide assurance that decisions and actions during normal and abnormal conditions will be such that the plant is operated in a safe and efficient manner in the interest of the health and safety of the public.

13.1.2.2.1 Vice President, Nuclear Operations

RN 18-016

The Vice President, Nuclear Operations is responsible for the overall safe and efficient operations of VCSNS and for the implementation of quality assurance requirements in the areas specified in the VCSNS Quality Assurance Program Description. RN 16-009

13.1.2.2.1.1 General Manager, Nuclear Plant Operations

The overall operating responsibility for the Virgil C. Summer Nuclear Station rests with the General Manager, Nuclear Plant Operations. The General Manager, Nuclear Plant Operations is responsible for overall efficient and reliable operation and maintenance of the Station in accordance with the Facility Operating License, Technical Specifications, Company Policies and Procedures, and Management Directives. The General Manager, Nuclear Plant Operations is responsible for the Dry Cask storage of spent nuclear fuel in accordance with the HI-STORM FW MPC Storage System Certificate of Compliance. The General Manager, Nuclear Plant Operations has overall responsibility for plant operations, maintenance, chemistry, health physics and safety services, and the startup and test program as described in Chapter 14. Some of his duties include: meeting with Operations and Maintenance personnel for information and review purposes; working with the Manager, Chemistry Services and Manager, Health Physics and Safety Services to ensure the required chemical and water quality control analysis, radiation surveys, and general health physics programs are being properly maintained and implemented to meet the requirements of SCE&G and the regulatory authorities; working with the Manager, Operations to ensure that proper preventive and corrective

RN 13-018

RN 03-024 10-022 13-018

RN 98-01

maintenance and modifications on equipment is performed; working with the Manager, Maintenance Services to ensure programs are established and implemented in the Electrical, Instrument and Controls, Mechanical / Civil, and Metrology Maintenance areas. RN 03-024 13-013

1. Operations Department

The Manager, Operations, is responsible for the day to day operation of the plant in a safe and efficient manner in compliance with the operating license. He is responsible for review and implementation of normal and emergency training and retraining programs. He has the assistance of the Operations Supervisor. In the absence of the Manager, Operations, the Operations Supervisor will assume his responsibilities. RN 99-150 00-006

The Shift Manager, who reports to the Manager, Operations via the Operations Supervisor is in direct charge of the plant, including startup, power operations, and shutdown. He will initiate immediate action in the event of an upset situation to avoid exceeding the Technical Specifications limitations, to avert possible injury or undue radiation exposure to personnel, or to prevent damage to plant equipment. The Shift Manager has the responsibility of supervising the actions of the station operators (Control Room Supervisor, Senior Reactor Operator, Reactor Operator, and Auxiliary Operators) to assure safe and prudent operation of the facility. RN 99-150 15-011 RN 15-011

He initiates immediate corrective action in any upset situation until assistance, if required, arrives. Other responsibilities include; ensuring plant operating procedures are kept current, and when deemed necessary, initiating changes to these procedures; ensuring that his shift is properly manned and other groups are called in to work when necessary; coordinating all maintenance and testing being performed during his shift; and ensuring that the training of personnel assigned to his shift as required by the overall training and retraining programs is conducted.

The Control Room Supervisor, who is supervised by the Shift Manager, controls and directs the operation of the plant according to approved detailed procedures. In off-normal situations, when there is insufficient time to obtain advice from his supervisor, he will initiate immediate corrective action until assistance, if required, arrives. RN 15-011

Normally, 2 Reactor Operators will be assigned to the control board. Additional Licensed Operators may be used to assist during times of startup, testing, training or as activity dictates. The Control Room Supervisor directs the work of the Reactor Operators. RN 03-024

The Auxiliary Operator, who works under the direction of the Shift Manager, inspects and services plant equipment. RN 15-011

Shift Engineers report to the Operations Supervisor. The role of the Shift Engineer is to serve in an advisory capacity to the Shift Manager in order to provide professionally qualified technical support on shift. Dedicated to plant safety, the Shift Engineer is to support the diagnosis of off-normal events and to advise the Shift Manager on actions to terminate or mitigate the consequences of such events. The Shift Engineer will respond to the Shift Manager in the Control Room within ten (10) minutes of being notified of an off-normal reactor plant condition. Routine duties and assignments of the Shift Engineer include matters involving engineering evaluation of day-to-day plant operations from a safety point of view and coordination of plant testing. Further clarification of the shift engineer program including the long term program has been submitted to the NRC under separate letter dated January 2, 1981.

RN 99-150 15-011

RN 15-011

The Operations Support Supervisor, who reports to the Manager, Operations ensures that the plant fire protection and ASME Code pump and valve programs are performed in accordance with plant procedures and that test unit personnel are qualified.

RN 98-152 04-012

The Fire Protection Coordinator reports to the Manager, Operations and is responsible for administration, coordination and oversight of the Fire Protection Program.

RN 99-150 09-019

2. Maintenance Services Department

The Manager, Maintenance Services is responsible for establishing and implementing the programs for maintenance activities to ensure the continued safe, efficient, and reliable operation of the V. C. Summer Station. He is responsible to ensure the Station is maintained in compliance with company policies as they relate to Maintenance Services.

98-01

Reporting to the Manager, Maintenance Services are the Electrical Maintenance, I&C Maintenance, Maintenance, Mechanical Maintenance, and Metrology Supervisors. Additionally, Facilities also reports to him for administrative purposes.

RN 03-024

The Electrical Maintenance Supervisor ensures that electrical maintenance is performed in accordance with approved plant procedures, with qualified individuals, and in a safe, efficient manner.

98-01

The I&C Maintenance Supervisor ensures that instrument maintenance is performed in accordance with approved plant procedures, with qualified individuals, and in a safe, efficient manner.

The Maintenance Supervisor ensures that Maintenance Department procedures, instructions, and programs are maintained current and in accordance with regulatory and manufacturer requirements per approved plant procedure development programs.

The Mechanical Maintenance Supervisor ensures that mechanical and civil maintenance is performed in accordance with approved plant procedures, with qualified individuals, and in a safe, efficient manner. RN 98-01

The Metrology Supervisor ensures that calibration activities are worked in accordance with plant procedures and that the Calibration Failure Report is maintained in accordance with site procedures and standards. In addition, he audits the calibration of various equipment to ensure proper techniques and procedures are being used.

3. Deleted by RN 01-100. RN 01-100

4. Deleted by RN 10-006 10-006

5. Chemistry Services

The Manager, Chemistry Services is responsible for directing and coordinating in-plant chemistry and water treatment programs.

The Manager, Chemistry Services, has the responsibility of supervising the Chemistry Supervisors and the Chemistry Specialists. Through this staff, the Manager, Chemistry Services is charged with implementing the chemistry programs, controlling non-rad releases, maintaining the quality of fluids in various plant systems within the prescribed limits, operating water treatment facilities, ensuring that written procedures within his scope of supervision reflect the criteria of performance standards established by regulatory agencies, and ensuring that these procedures are followed. He is responsible for ensuring that training and retraining of Chemistry personnel are performed as scheduled by the Nuclear Training Department. The Chemistry Specialists, under the direction of the Chemistry Supervisors, perform tasks incident to the categories of work implemented by the Manager, Chemistry Services. 98-01

6. Health Physics and Safety Services

The Manager, Health Physics and Safety Services, is responsible for directing and coordinating station health physics and radwaste programs. In addition, the Manager, Health Physics and Safety Services establishes occupational safety and health policy as well as provides technical support to plant staff concerning occupational health and safety issues. RN 99-129 10-022 16-009

The Manager, Health Physics and Safety Services, is responsible for directing and coordinating health physics, count room and radwaste processing, environmental monitoring, and dosimetry activities. He plans, coordinates and/or directs supportive station activities with regard to the Radiation Protection, Radiological Effluent Control, Environmental Surveillance, Dosimetry, Radwaste Processing RN 99-129 10-022

and Disposal, and Analytical programs. Through evaluations, he advises management on program status issues related to these programs and technical guidance for issue resolution. He has direct access to the General Manager, Nuclear Plant Operations for matters concerning any phase relative to radiological protection and occupational safety. RN 03-024

The Manager, Health Physics and Safety Services, has the responsibility of supervising the activities of the Health Physics Supervisors and the Health Physics Specialists as well as the subcontractor support. Through this staff, the Manager, Health Physics and Safety Services is charged with controlling the exposure of plant personnel and the public to radiation, preventing the spread of radioactive contamination, ensuring that written procedures reflect the criteria for establishing performance standards, and ensuring that these procedures are followed. He is responsible for ensuring that training and retraining of health physics personnel are performed as well as providing health physics services, radiological engineering expertise, and periodic health physics reviews for all plant personnel. He is responsible for the timely submission of reports pertaining to health physics, radioactive waste releases to the environment, and other areas as required. RN 10-022

Health Physics Specialists perform tasks incident to the categories of work supervised by the Health Physics Supervisors under direction of the Manager, Health Physics and Safety Services. 00-01 RN 10-022

13.1.2.2.1.2 General Manager, Nuclear Support Services RNs 98-152 10-006 13-013 16-009

The General Manager, Nuclear Support Services, is overall responsible for Nuclear Licensing; Outage Management; and Planning and Scheduling.

1. Nuclear Licensing Department

The Manager, Nuclear Licensing (NL), is responsible for the development and implementation of the SCE&G nuclear licensing policy while ensuring that applicable safety and environmental regulatory standards are met. Additionally, the Manager, NL, is responsible for reviewing general safety questions, safety issues, and safety goals; and evaluating the potential impact of generic regulatory issues. Working together with all SCE&G organizations, NL coordinates the generation, amendment, and distribution of various licensing documents, such as the FSAR. As the principal interface with the Nuclear Regulatory Commission and other regulatory agencies, NL ensures that the respective directives, requests, and information documents are distributed to the proper organizations and that necessary responses are developed and submitted within the prescribed time frame. RN 03-024 RN 16-026 RN 10-006 RN 16-026

2. Outage Management RN 13-013

Outage Manager is responsible for planning, scheduling, and executing refueling outages within the established outage schedule and budget. The Outage organization develops refueling scope based on long range objectives that support RN 10-006

safe and reliable plant operation. In addition to refueling the reactor, outage scope includes major modifications, maintenance, preventative maintenance and required inspections. RN 10-006

3. Planning and Scheduling

The Manager, Planning & Scheduling is responsible for the scheduling of maintenance, modification, test and inspection activities within the constraints imposed by operational, regulatory, and system load requirements. The organization applies a work management process used to identify, select, plan, schedule, and execute work in a manner that helps ensure high levels of safe and reliable plant operation. The organization assures that adequate work is planned and scheduled for the entire work force to maintain maximum utilization of resources, while keeping station management and supervisors informed of work in progress and pending plant condition changes required supporting the work.

A. Workweek RN 18-016

Workweek Management is responsible for and serves as primary organizational interface with outside organizations for management, engineering, planning and implementation of capital projects. The organization provides coordination and interface for resolving conflicts and delays for execution of activities as necessary for project implementation.

4. Manager, Business and Financial Services RNs 03-024 10-006 13-013 16-009 18-016

The Manager, Business and Financial Services, is responsible for project prioritization, business development including budget and business plan development and tracking, and coordination with external industry groups.

13.1.2.2.1.3 General Manager, Engineering Services RN 16-009

General Manager, Engineering Services, is responsible for Design Engineering, Materials and Procurement, and Plant Support Engineering. Reporting to the General Manager, Engineering Services are the Managers, Design Engineering, Materials and Procurement, and Plant Support Engineering, and Nuclear Fuel and Analysis. RN 98-152 RN 16-026 98-01 18-016

1. Design Engineering Department

The Manager, Design Engineering, through his staff of engineers, is responsible for maintaining the design basis and providing design engineering support for the V. C. Summer Nuclear Station. Design Engineering provides a single point of contact for the development and implementation of design modifications and performance of other design activities. 98-01 RN 10-006 RN 16-026

2. Materials and Procurement Department

The Manager, Materials and Procurement, is responsible for providing technical and quality input necessary for procuring and controlling the quality hardware and services required for maintaining the V. C. Summer Nuclear Station in operation within its design basis.

3. Plant Support Engineering Department

The Manager, Plant Support Engineering, is responsible for maintaining a technical overview of systems design, operation, maintenance, and performance; for monitoring the performance of plant components and initiation of changes to improve the thermal efficiency of the V. C. Summer Nuclear Station; and for the development and implementation of special projects affecting plant components and systems. Also Plant Support Engineering has primary responsibility for the "Maintenance Rule Program" per 10CFR50.65. 98-01 RN 01-107

4. Nuclear Fuel and Analysis Department

The Manager, Nuclear Fuel and Analysis, is responsible for evaluating and managing core design changes, ensuring reactor engineering tests are performed in accordance with plant procedures and manuals and that current industry techniques are utilized to monitor reactor operations, and maintenance of accident safety analysis. The Probabilistic Risk Assessment group is responsible for the development and maintenance of PRA models used to support risk informed applications and for providing risk insights to: processes which control risk informed applications, proposed changes to the plant and licensing basis, maintenance activities, and off normal plant events or conditions. RN 16-026

SCE&G Engineering Services personnel are graduate engineers from an accredited engineering curriculum, graduates in engineering related fields, or have the equivalence in related schooling or experience. Several of the engineers possess graduate degrees. 00-01

SCE&G has always emphasized professionalism and many engineers currently employed within the Engineering Services Group are registered professional engineers. Individual engineers have many years experience in their field of expertise and some have attended appropriate operations training or taken college courses in the fundamentals of heat transfer, thermodynamics, fluid flow, and dynamics which are related to transient analysis. There are engineers in the group who have held NRC Senior Operator Licenses. Other engineers within SCE&G, as well as outside consultants may be called upon to supplement the Engineering Services Group as required. 00-01

13.1.2.2.1.4 Manager, Financial Services

The Manager, Financial Services, is responsible for payroll time and attendance management, fatigue rule management, purchase requisition processing, long-range capital and operating budgets, and project support functions, and site wide financial analytical support and budget adherence.

RNs 03-024 10-006 13-013 16-009

13.1.2.2.1.5 General Manager, Organizational/Development Effectiveness

RNs 10-006 16-009 17-001 18-016

The General Manager, Organizational/Development Effectiveness, is overall responsible for Organizational Development and Performance (OD&P), which includes human performance, operating experience, root cause, corrective action, performance improvement, management observation, self-assessment, and benchmarking programs and tools; Document Control and Records, which includes mail services, reproduction, drawing and document control, and records; Security and the IST Manager.

RN 03-024 17-007

RN 13-013 17-007

Some of the incumbents duties include directing the Manager, Organizational Development and Performance, determining and analyzing Human Performance (HU) needs and evaluating the effectiveness of human performance error reduction techniques for V. C. Summer Nuclear Station personnel; ensuring effective utilization of lessons learned from industry operating experiences; identifying corrective actions to prevent recurrence of station events through the corrective action program and by conducting thorough effective root causes through the root cause analysis program; trending station conditions and events; promoting continuous improvement and desired behaviors throughout Nuclear Strategic Business Unit (NSBU) through objective self-assessment's and benchmarking; and ensuring management is observing plant activities and providing coaching to promote the desired behaviors. The incumbent directs the activities of the Document Control and Records Supervisor to ensure programs are implemented and maintained in accordance with regulatory requirements and station programs; the activities of the IST Manager to ensure station hardware and software needs are met; the Manager, Nuclear Protection Services to ensure that Nuclear Security is properly maintained and programs implemented to meet the requirements of SCE&G and the regulatory authorities; and the Manager, Emergency Planning to ensure that programs are implemented and maintained to meet the requirements of SCE&G and the regulatory authorities.

RN 98-152 03-024

RN 13-013

RNs 16-009 07-023 15-012

1.Organizational Development and Performance Department

The Manager, Organizational Development and Performance, is responsible for directing and coordinating the station organizational effectiveness programs and tools, to include human performance, operating experience, root cause, corrective action, performance improvement, management observation, self-assessment, and benchmarking to effectively aid in the development of a strong learning organization and to promote continuous improvement. RN 17-007

The Manager, Organizational Development and Performance, has the responsibility of supervising the Corrective Action Supervisor, and Human Performance Supervisor. Through this staff, the Manager, Organizational Development and Performance, is responsible for the implementation of the OD&P organizational effectiveness programs and ensuring written procedures accurately reflect the criteria for establishing performance standards and are adhered to. The incumbent is responsible for ensuring that training and retraining of the OD&P personnel is performed and providing OD&P expertise and service to the station. This incumbent establishes and maintains rapport with plant personnel, encouraging the reporting of problems and events that can adversely affect plant performance at the V. C. Summer Nuclear Station. RN 17-007 RN 01-100 03-024

The Manager, Organizational Development and Performance, is responsible for performing OD&P improvement initiatives, and assisting in the implementation of human error reduction techniques. The incumbent develops and participates in activities to identify human error challenges and opportunities for improvement, communicates to the station results to be achieved and the part they play in obtaining them, facilitates group learning sessions with supervisors and managers to identify barriers, develops goals and measures for monitoring improvement plan results and provides results to management in periodic reports, tracks initiatives and assists in the development of measures for less than desirable results and ensures strong interfaces and exchanges of information exists with others involved in improvement activities to ensure effective integration of improvement efforts. RN 17-007

2. Document Control and Records Supervisor is responsible for supervising and coordinating the daily activities of the Document Control and Records personnel, which include reproduction, mail services, drawing control and records management. The incumbent is responsible for the distribution of controlled documents ensuring that the most current revision of documents is readily available to station personnel. The incumbent is responsible for the receipt, acceptance, permanent storage and retrieval of station records. The incumbent is responsible for maintaining station documents, drawings and records in accordance with applicable standards and procedures. RN 13-013 RN 03-024

3. IST Manager is responsible for ensuring station computer operation and records applications are installed and maintained in accordance with approved procedures and working with the applicable departments to ensure regulatory compliance. Additionally, the IST Manager is responsible for installation, maintenance, and upgrade of site wide computer hardware and software, applications, and networking in accordance with SCE&G and station requirements. RN 03-024 RN 03-024

4. Nuclear Protection Services Department

The Manager, Nuclear Protection Services, is responsible for management control activities of Nuclear Security and the access control and fitness for duty program. Reporting to the Manager, Nuclear Protection Services, is the Supervisor, Operations Security, and the Supervisor, Access Control. RN 98-152 07-023

The Manager, Nuclear Protection Services, is responsible for security force operations, training and qualification programs, and maintenance and testing activities for security equipment. RN 98-152

The Supervisor, Access Control / Fitness for Duty, responsibilities are to supervise, direct, and manage the personnel screening, access authorization, fitness for duty, and investigative activities of the nuclear station security organization in accordance with regulatory requirements. RN 03-024 16-009

5. Emergency Planning

The Manager, Emergency Planning, is responsible for the effective planning, coordination, and management of the station emergency preparedness program. RN 10-006 16-009

13.1.2.2.1.6 Manager, Nuclear Oversight RN 18-016

The Manager, Nuclear Oversight is responsible for audit, surveillance, and inspection of Nuclear Operations activities to ensure that all safety-related activities are performed in accordance with a quality assurance program which meets the criteria of 10 CFR 50, Appendix B as implemented through NQA-1 1994. Quality Assurance and Quality Control services may be contracted as needed. Further detail can be found in the Virgil C. Summer Nuclear Station 1's Quality Assurance Program Description. RN 16-009

13.1.2.2.1.7 <u>Director, Nuclear Training</u>

The Director, Nuclear Training, reports to the Vice President, Nuclear Operations and has the overall responsibility for the accredited and non-accredited training programs at VCSNS (with the exception of Security Training). This position is responsible for the management of all nuclear learning programs for VCSNS. RN 17-001 18-016

1. Manager, Nuclear Training

   The Manager, Nuclear Training is responsible for the operations-related training programs. This includes the operation, certification, and coordination of the maintenance and modification of the Simulator. This also includes training programs for manager/technical staff personnel, shift engineers/technical advisors, and licensed and non-licensed operators. The Manager, Nuclear Training, is also responsible for the craft and technical training programs. This includes training in the areas of maintenance, health physics, chemistry, and engineering.

RN 18-016

RN 10-006

RNs 16-009 18-016

13.1.2.3 Shift Crew Composition

The Virgil C. Summer Nuclear Station is operated from one central control room. The Shift Manager is directly responsible for the safe and efficient operation of the plant. For the operation of one unit, each shift is normally manned by one Shift Manager (Senior Reactor Operator's License), one Control Room Supervisor (Senior Reactor Operator's License), one Nuclear Reactor Operator (Senior Reactor Operator or Reactor Operator's License), and Reactor Operators and Auxiliary Operators (no license required, but desirable). At least one of the Reactor Operators and Auxiliary Operators will have a Reactor Operator's License. There shall be a total of at least two licensed Senior Reactor Operators and two licensed Reactor Operators per shift.

RN 15-011

RN 16-009

In addition to the "operations" shift crew as stated above, there shall be 1 shift engineer and at least 1 Health Physics Specialist onsite at all times.

13.1.3 QUALIFICATION REQUIREMENTS OF NUCLEAR PLANT PERSONNEL

13.1.3.1 Minimum Qualification Requirements

The following qualification requirements, used as a general guideline for personnel assignments, meet the minimum requirements set forth in Regulatory Guide 1.8, "Qualification and Training of Personnel for Nuclear Power Plants," as addressed in Appendix 3A. Personnel qualifications were met by the fuel loading date or at a time of appointment to an active position.

13.1.3.1.1 General Manager, Nuclear Plant Operations

1. A total of ten years of power plant experience, of which a minimum of three years is nuclear power plant experience. A maximum of four years of the remaining seven years may be fulfilled by academic training on a one for one time basis.

2. Experience and training normally required for examination by the NRC for a Senior Reactor Operator's License whether or not the examination is taken.

3. Baccalaureate or higher degree in engineering or a scientific field associated with power production is desirable.

It is desirable that both the General Manager, Nuclear Plant Operations and General Manager, Nuclear Support Services be eligible for the NRC Senior Reactor Operator's License examination.

13.1.3.1.2 General Manager, Nuclear Support Services | 98-01

1. A total of eight years experience in responsible positions of which one year must be nuclear power plant experience. A maximum of four years of the remaining seven years of experience may be fulfilled by satisfactory completion of academic training.

2. Senior Reactor Operator's License is desirable.

3. A baccalaureate or higher degree in engineering or a scientific field associated with power production is desirable.

13.1.3.1.3 Manager, Operations

1. A total of eight years of responsible power plant experience, of which a minimum of three years must be nuclear power plant experience. Although not required, it is desirable that at least six months of this experience be as an operator in a conventional or nuclear power plant. A maximum of two years of the power plant experience may be fulfilled by satisfactory completion of academic or related technical training on a one for one time basis.

2. Senior Reactor Operator's License is desirable.

3. High school education or equivalent. A degree in engineering, preferably mechanical engineering, is desirable.

13.1.3.1.4 Operations Supervisor | RN 99-150

1. A minimum of eight years of responsible power plant experience of which a minimum of three years shall be nuclear power plant experience. A maximum of two years of the remaining five years of power plant experience may be fulfilled by satisfactory completion of academic or related technical training on a one for one time basis.

2. Senior Reactor Operator's license.

3. High school education or equivalent.

   Note: This position meets the requirements for the "Manager Operations" position as described in ANSI 18.1-1971.

13.1.3.1.5 Shift Managers

RN 15-011

1. Four years power plant experience, of which two years shall be nuclear power plant experience. During the two years, the incumbent shall have participated in reactor operator activities at an operating nuclear power plant, i.e., six weeks operation above 20% power; and startup from subcritical to 20% power; shutdown from above 20% power to cold (less than 212°F) and subcritical, and startup preparations following a refueling outage.

2. Hold a senior operator license, plus training as required by Section 13.2.

3. High school diploma or the equivalent.

4. The competency of each applicant to operate the plant safely and competently shall be certified by corporate management prior to proposing the candidate for licensing by the NRC. This certification shall include consideration of successful completion of training, demonstrated abilities, satisfactory health, dependability, stability, and trustworthiness. In making this determination, the responsible manager shall review or cause to be reviewed not only the training record of the applicant, but also less subjective documents such as supervisory evaluations, results of medical examinations and tests, security checks, and sick leave records for patterns indicative of ill health, drug addiction, or alcoholism.

13.1.3.1.6 Control Room Supervisor

1. Education and experience requirements shall meet the requirements of the applicable training program accredited by the National Nuclear Accrediting Board.

2. Senior operator license, plus training as required by Section 13.2.

13.1.3.1.7 Senior Reactor Operator

RN 08-024

1. Education and experience requirements shall meet the requirements of the applicable training program accredited by the National Nuclear Accrediting Board.

2. Senior reactor operator license, plus training as required by Section 13.2.

13.1.3.1.8 Reactor Operator

1. Education and experience requirements shall meet the requirements of the applicable training program accredited by the National Nuclear Accrediting Board.

2. Reactor operator license.

13.1.3.1.9 Deleted

13.1.3.1.10 Auxiliary Operators

1. A minimum of one year experience in operations of a power plant is desirable.

2. High school education or equivalent.

13.1.3.1.11 Deleted

13.1.3.1.12 Shift Engineer/Shift Technical Advisor

1. One year of nuclear power plant experience, six months of which shall be onsite.

2. Training as required by Section 13.2.

3. Candidates should have bachelor's degrees in engineering or physical science or sufficient courses to provide a background for understanding the design and operation of nuclear power plants. These courses should include mathematics (calculus through ordinary differential equations), chemistry, physics, thermodynamics, heat transfer, fluid mechanics, electrical theory, basic electronics, and strength of materials. RN 10-027

13.1.3.1.13 Manager, Maintenance Services

1. A total of seven years of responsible power plant experience or applicable industrial experience, of which one year must be nuclear power plant experience. A maximum of two years of the remaining six years of power plant or industrial experience may be fulfilled by satisfactory completion of academic or related technical training on a one for one time basis.

2. Familiarity with nondestructive testing, electrical codes, pressure vessel codes, piping codes and welding codes.

3. High school education or equivalent. A degree in mechanical or electrical engineering is desirable.

13.1.3.1.14 Electrical Maintenance Supervisor RN 98-152

1. Four years of maintenance experience in a power plant or applicable industrial experience.

2. High school education or equivalent.

13.1.3.1.15 Plant Electrician

1. Three years of electrical maintenance experience in a power plant, or applicable industrial experience.

13.1.3.1.16 Mechanical Maintenance Supervisor

RN 98-152

1. Four years of maintenance experience in a power plant or applicable industrial experience.

2. High school education or equivalent.

13.1.3.1.17 Plant Mechanic

1. Three years of mechanical maintenance experience in a power plant or applicable industrial experience.

13.1.3.1.18 Instrument and Controls Maintenance Supervisor

RN 98-152

1. Five years of experience in instrumentation and control, of which six months is in nuclear instrumentation and control at a nuclear power plant. A minimum of two years of this five years experience shall be related technical training. A maximum of four years of this four and one half years experience may be fulfilled by related technical or academic training.

13.1.3.1.19 Instrument Mechanics

1. Three years of instrument maintenance experience or applicable industrial experience.

13.1.3.1.20 Manager, Nuclear Protection Services

1. The Manager, Nuclear Protection Services, should have six years of administrative experience. Four years of this experience may be fulfilled by a bachelor's degree. Experience in security and emergency planning in the nuclear industry is desirable.

13.1.3.1.21 Manager, Health Physics and Safety Services

RN 99-129 10-022

1. Six years experience in applied radiation protection. At least three years of this experience shall be in applied radiation protection work in a nuclear facility dealing with radiological problems similar to those encountered in nuclear power plants, preferably in a nuclear power plant. During the three years, the incumbent shall have participated in the radiation protection section of an operating nuclear power plant during: routine refueling outage (one to two months); and two months operation above 20% power.

2. Training as required by Section 13.2.

3. Bachelor degree in a science or engineering subject, including formal training in radiation protection.

13.1.3.1.22 Manager, Chemistry Services

1. Five years of chemistry experience of which a minimum of one year shall be in radiochemistry at a nuclear power plant. A minimum of two years of this five years experience shall be related technical training. A maximum of four years of this five years experience may be fulfilled by related technical or academic training.

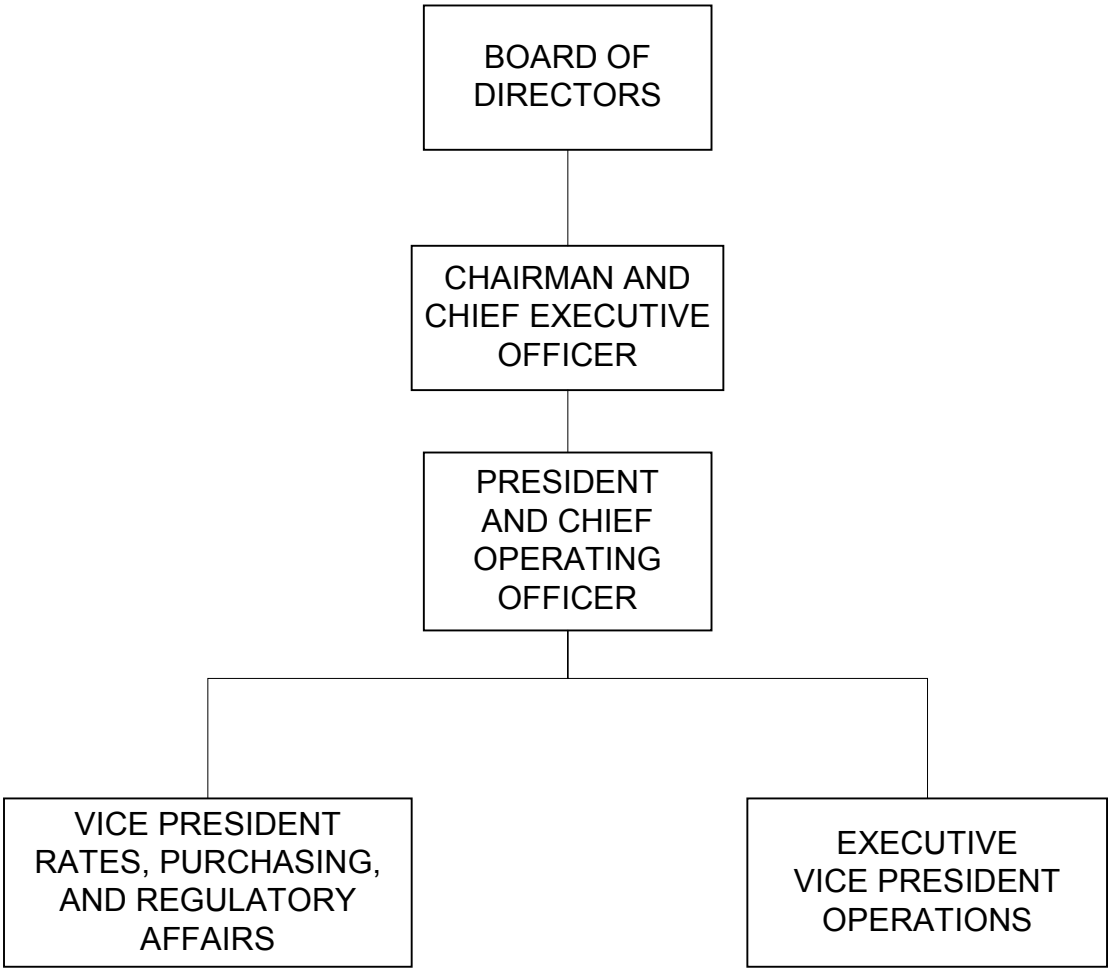
2. High school education or equivalent. A degree in chemistry or chemical engineering is desirable.

13.1.3.2 Qualification of Plant Personnel

The staffing of personnel for the Virgil C. Summer Nuclear Station is in compliance with Regulatory 1.8 as addressed in Appendix 3A. 98-01

This figure is being retained for historical purposes only.

South Carolina Electric & Gas
Company Organization Chart
General Management

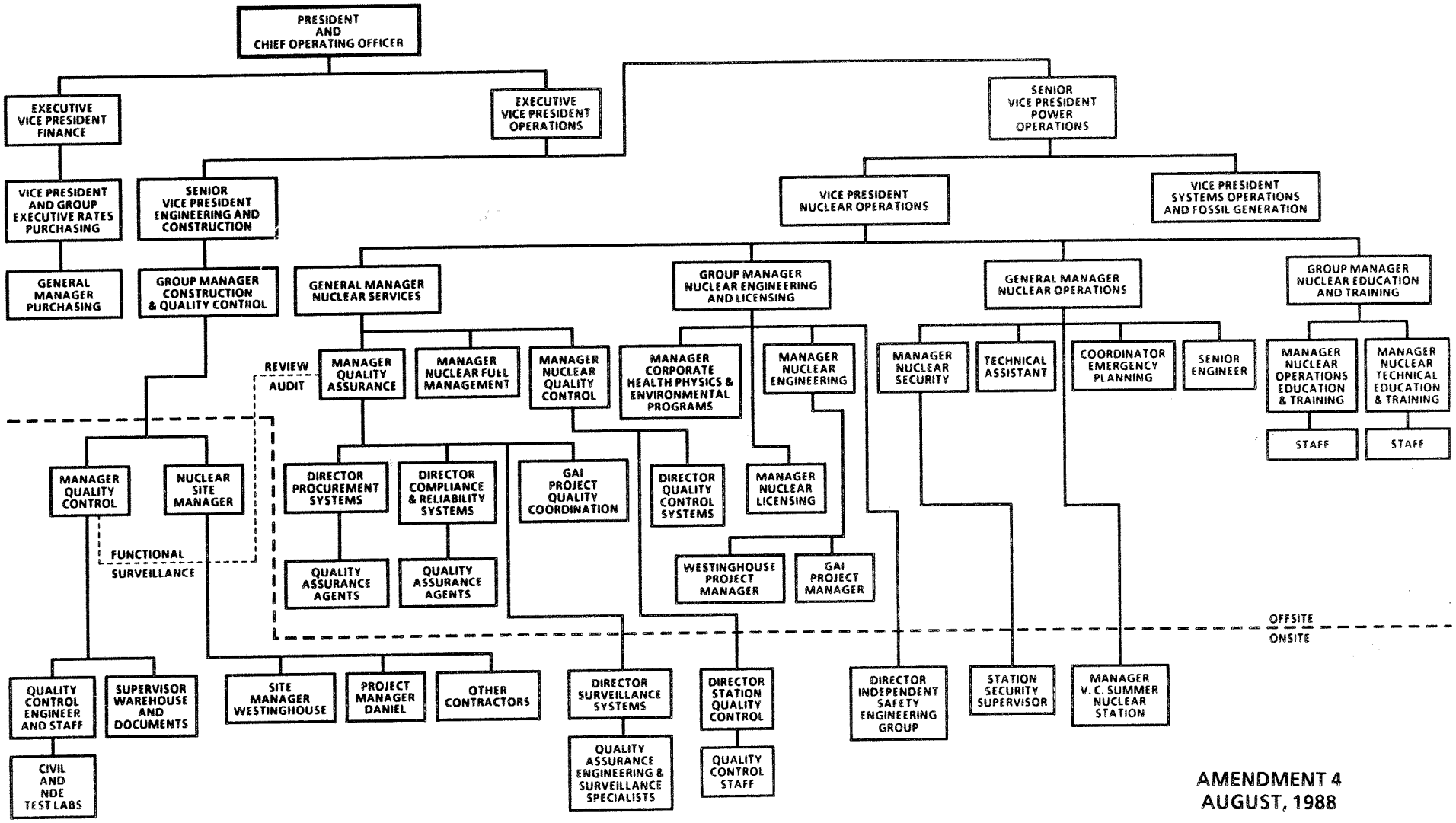


AMENDMENT 02-01
MAY 2002

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

South Carolina Electric & Gas Company
Organization Chart

Figure 13.1-1



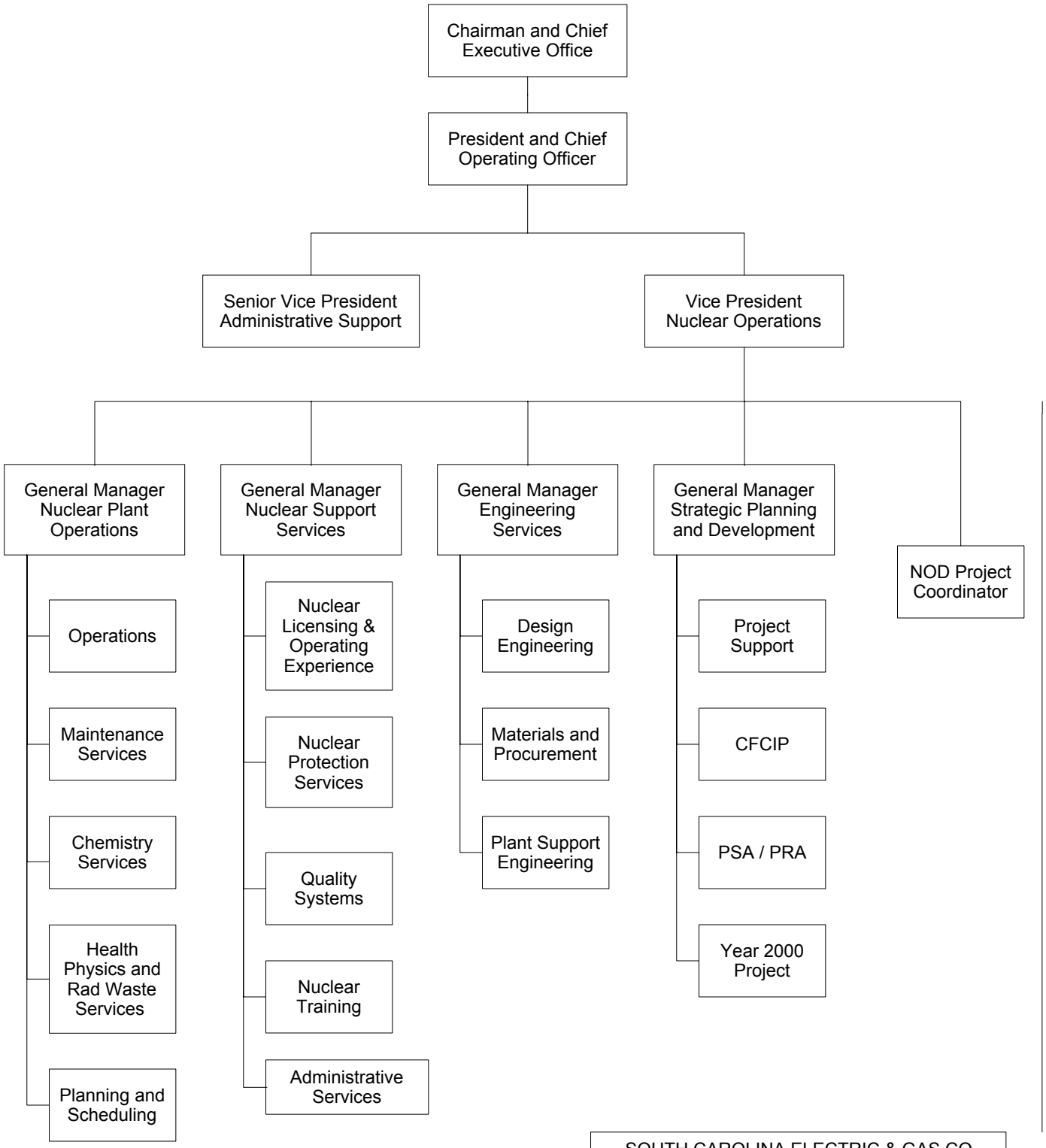
AMENDMENT 4
AUGUST, 1988

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

South Carolina Electric & Gas Company
Precommercial Organization Chart

Figure 13.1-2

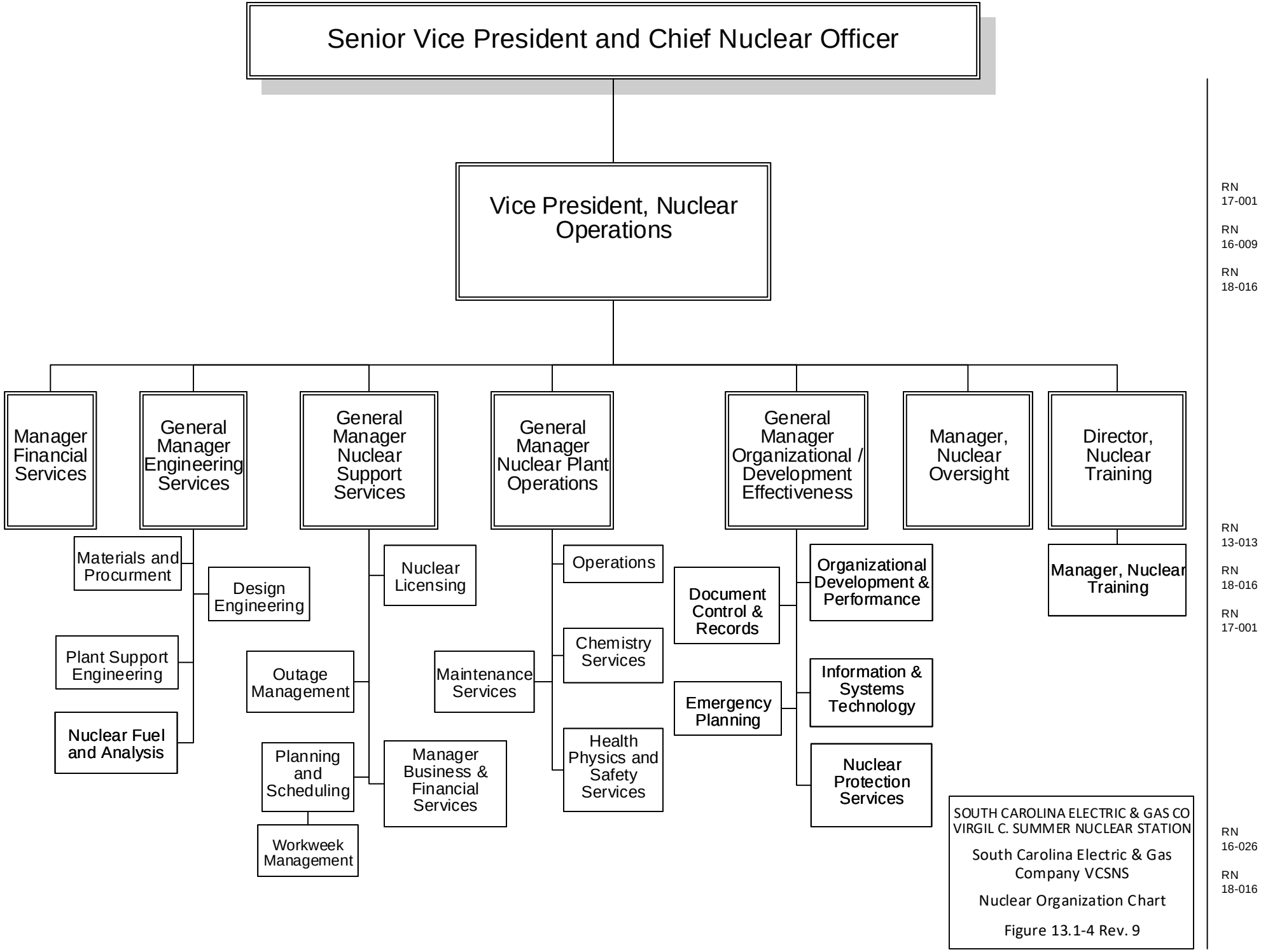
This figure is being retained for historical purposes only.



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

South Carolina Electric & Gas Company
Corporate Technical Staff Chart

Figure 13.1-3


Senior Vice President and Chief Nuclear Officer
Vice President, Nuclear Operations
Manager Financial Services
General Manager Engineering Services
General Manager Nuclear Support Services
General Manager Nuclear Plant Operations
General Manager Organizational / Development Effectiveness
Manager, Nuclear Oversight
Director, Nuclear Training
Materials and Procurment
Design Engineering
Plant Support Engineering
Nuclear Fuel and Analysis
Nuclear Licensing
Outage Management
Planning and Scheduling
Workweek Management
Manager Business & Financial Services
Operations
Maintenance Services
Chemistry Services
Health Physics and Safety Services
Document Control & Records
Emergency Planning
Organizational Development & Performance
Information & Systems Technology
Nuclear Protection Services
Manager, Nuclear Training
RN 17-001
RN 16-009
RN 18-016
RN 13-013
RN 18-016
RN 17-001
RN 16-026
RN 18-016
SOUTH CAROLINA ELECTRIC & GAS CO
VIRGIL C. SUMMER NUCLEAR STATION
South Carolina Electric & Gas Company VCSNS
Nuclear Organization Chart
Figure 13.1-4 Rev. 9

13.2 TRAINING PROGRAM

13.2.1 INPO ACCREDITED TRAINING PROGRAMS

Virgil C. Summer Nuclear Station training programs are INPO accredited. They have been developed using the INPO Principles of Training System Development guidance and are supported by a plant-specific Job and Task Analysis. The programs that are INPO accredited consist of:

1. Non-Licensed Operator Training Program
2. Reactor Operator Training Program
3. Senior Reactor Operator Training Program
4. Licensed Operator Requalification Training Program
5. Shift Technical Advisor Training Program

RN 14-014

6. Shift Manager

RN 15-011

7. Chemistry Specialist Personnel Training Program
8. Health Physics Technician Personnel Training Program
9. Mechanical Maintenance Personnel and Supervisor Training Program
10. Electrical Maintenance Personnel Training Program
11. Instrument and Control Personnel Training Program
12. Engineering Support Personnel

RN 14-014

NOTE 13.2.2
Section 13.2.2 is being retained for historical purposes only (per RN 00-064).

RN 00-064

13.2.2 TRAINING PROGRAM FOR SPECIALISTS AND NONLICENSED PERSONNEL

13.2.2.1 General

Specialized training programs for Virgil C. Summer Nuclear Station personnel are described below. Several technical staff personnel were involved in Senior Reactor Operator's training who were not required to hold a license; however, this training was

beneficial in the safe and efficient performance of their assigned duties. SCE&G took advantage of the following specialized training programs offered by Westinghouse.

13.2.2.2 PWR Station Nuclear Engineering

This is a 13 week program conducted by Westinghouse in the Pittsburgh area. Instructors in this program are Westinghouse engineering personnel knowledgeable in the areas in which they instruct. The classes will contain lecture series and problem solving sessions. A topical outline of the program includes responsibilities and duties of the station nuclear engineer, responsibilities and relationships to federal and state regulatory agencies, plant licensing and reference documentation, basic PWR design considerations, plant testing program, reactor physics testing, plant instrumentation and control, plant computer reactivity considerations, system reliability checks, station fuel management, and emergency situations.

13.2.2.3 Additional Training

1. Mitigating Core Damage Training was taught to the Plant Manager, the Assistant Plant Manager, I&C, Health Physics, and Chemistry personnel also participated in applicable portions of this training program.

2. Any additional training deemed necessary to meet the intent and training requirements of ANSI 18.1, 1971 was handled in conjunction with vendors or through local universities and/or other technical schools to ensure trained personnel operate the Virgil C. Summer Nuclear Station.

13.2.3 GENERAL EMPLOYEE TRAINING

13.2.3.1 Station Orientation Training

All personnel granted unescorted access onto the Virgil C. Summer Nuclear Station will be required to attend applicable portions of the station orientation training program. The subjects covered in this training program are listed below and are required on a biennial basis. Portions of the program may be waived based on exemption exams and/or waivers as justified and approved by applicable supervisory personnel. RN 17-009 RN 00-014

Station Familiarization

Station Radiation Emergency Plan and Related Procedures

Industrial Safety

Station Security

Quality Assurance

Basic and Station Specific Health Physics - Principles and Practices

13.2.3.2 Temporary Personnel Training

Personnel without unescorted access will be classified as visitor personnel and shall be escorted while within the boundaries of the protected area. Visitor personnel will be trained in emergency plan procedures as appropriate to ensure the safe execution of their duties.

13.2.4 TRAINING PROGRAM ADMINISTRATION

Overall responsibility for training of personnel within the Virgil C. Summer Nuclear Station rests with the Senior Vice President and Chief Nuclear Officer through the Vice President, Nuclear Operations and the Director, Nuclear Training. Training is implemented under the direction of the Manager, Nuclear Training.

RNs
10-006
17-001
18-016

13.2.5 RECORDS

Records of plant personnel qualification and training are maintained in a computerized data base system with sufficient hard copy records to support the validity of the data base such as class attendance and exam results.

Summary records of plant personnel qualifications and training may be maintained for each member of the plant staff in a qualification and training folder. This folder will contain a resume of the person's qualifications and general records of training programs and courses completed. Those staff members holding an NRC Nuclear Operator's License will be enrolled in a requalification program that is required to maintain their License. For this type of training, the records maintained will be much more extensive and detailed. These records will contain such items as copies of written examinations administered and the answers given by the licensee, retraining examinations, lecture attendance, trainee's evaluations, and results of retraining in areas in which personnel have exhibited deficiencies. This will assure that records are maintained to comply with 10 CFR 55.59(c)(5).

After initial criticality, the training program effectiveness of each employee shall be evaluated by the individual scores on tests given on the lecture material presented to each employee.

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13.3 EMERGENCY PLANNING

The Virgil C. Summer Nuclear Station Radiation Emergency Plan (REP) contains the precautionary planning, delegation of authority and responsibility, and plans of action to protect the public, plant personnel, and equipment in case of an emergency. As specified in 10CRF50, Appendix E, this plan is for use at the local level for the control of emergencies such as fire, personal injury, tornadoes and high winds, and incidents that could result in the release of significant amounts of radioactivity. The actual Virgil C. Summer Nuclear Station REP is provided in Appendix 13A.

13.4 REVIEW AND AUDIT

A program of inplant and independent reviews and audits has been developed by South Carolina Electric and Gas Company (SCE&G) to provide a system to ensure that plant startup and operation are consistent with company policies, approved procedures, and license provisions. The review and audit program also assures that abnormal occurrences are promptly investigated and corrected in a manner which reduces the probability of recurrence of such events, and detects trends which may not be apparent to a day to day observer. Guidance provided by ANSI N18.7, "Administrative Controls and Quality Assurance for the Operating Phase of Nuclear Power Plants," [1] has been used in establishing the SCE&G review and audit program for the Virgil C. Summer Nuclear Station.

NOTE 13.4.1 Section 13.4.1 is being retained for historical purposes only.

RN 11-040

13.4.1 REVIEW AND AUDIT - CONSTRUCTION

Review and audit during the design and construction phase of the Virgil C. Summer Nuclear Station are a part of the SCE&G quality assurance program. The review function is performed primarily by the exchange of information between SCE&G, the principal contractors, and other contractors and suppliers. Audits are conducted internally and externally in accordance with the approved quality assurance plan to ensure that design and construction are in accordance with the requirements of 10CFR50, Appendix B (see Chapter 17).

13.4.2 REVIEW AND AUDIT - OPERATIONS

13.4.2.1 Onsite Review

The onsite review system at the Virgil C. Summer Nuclear Station is basically a part of the individual job responsibilities of the plant supervisors. It is their responsibility to conduct a continuous review of the plant activities under their direction. For example, plant supervisor responsibilities include a verification that safety-related activities are performed in accordance with approved procedures and a review of documentation and records to verify that technical and quality requirements are maintained.

RN 17-025

To ensure that items which do not fall under the direct supervision of any one supervisor are reviewed in a thorough and prompt manner, a more systematic approach is used. The General Manager, Nuclear Plant Operations has the responsibility and the authority for the coordination and completion of special reviews and audits. Reviews and audits of this nature include review of procedures, changes, tests, and experiments. The General Manager, Nuclear Plant Operations will also verify that abnormal occurrences and unusual events are promptly investigated and corrected in a manner which reduces the probability of recurrence of such events. Administrative procedures to standardize these reviews and audits are included in the plant operating procedures. For example,

the development of safety-related procedures is covered by procedures which describe the system by which safety-related procedures are written, reviewed, and approved for implementation.

The requirements for preparation, format, and content of safety-related procedures, status of development, incorporation of comments, and the approval in preliminary or in final form, are covered by procedures.

Subjects to be covered by an onsite systematic review include:

1. Review of safety-related procedures.

2. Review of proposed tests and experiments to be conducted after initial fuel loading that affect nuclear safety.

3. Review of proposed changes, to Technical Specifications, emergency plan, security plan, and licenses.

4. Review of proposed design changes, field changes, and modifications to plant safety-related systems, structures, or components.

5. Review investigations of violations of Technical Specifications, license requirements, applicable codes, and regulations.

6. Review of abnormal occurrences, unusual events, and emergency plan activations.

7. Preparation of reports covering evaluation and recommendations to prevent recurrence.

8. Review of significant operating abnormalities or deviations from the normal or expected performance of plant equipment.

9. Review of any indications of a deficiency in design, operation, or testing of safety-related systems, structures, or components.

10. Performance of special reviews and rendering of reports thereon as requested by the General Manager, Nuclear Plant Operations. 98-150

11. Review the acceptance of safety-related material that has been identified in nonconformance reports and that has been accepted "as is."

In addition to the Review cycle as stated above, the Plant Safety Review Committee will function and have Review Responsibilities as described in Part V, Section 2 of the VC Summer Quality Assurance Program Description. RNs 11-004 18-016

For each review:

1. Determine whether or not the item reviewed may require a license amendment as defined in 10CFR50.59 or a Certificate of Compliance (CoC) amendment as defined in 10CFR72.48. In such a case, these items will be referred to the Plant Safety Review Committee. In addition, if dry cask system CoC or license requirements are involved, determine if the matter should be forwarded to the CoC holder. This 50.59 and/or 72.48 evaluation may be subject to review and approval by the Nuclear Safety Review Committee. (Applicable to items 2, 3, 4, and 5 above.) 01-117 RN 13-018

   The records of the Nuclear Safety Review Committee are maintained at the plant site.

2. Recommend approval or disapproval of the matter reviewed if it is determined that no possible license or CoC amendment, violation, or requirement is involved. (Applicable to items 2, 3, and 4 above.) RN 13-018 and 01-117

3. Ensure that the adequacy of investigative and corrective action is such that the probability of recurrence is significantly reduced. (Applicable to items 5 and 6 above.)

13.4.2.2 Independent Review

An independent review of the activities of the Virgil C. Summer Nuclear Station will be conducted by an independent review body. This review body will be in the form of a committee called the Nuclear Safety Review Committee (NSRC) which will function and have Review Responsibilities as described in Part V, Section 2 of the VC Summer Quality Assurance Program Description. No more than a minority of the members of the NSRC shall have line responsibility for the operation of the plant. RNs 11-040 18-016

13.4.2.3 Independent Audit Program

Independent audits of activities involving the safe operation of the Virgil C. Summer Nuclear Station will be conducted by the SCE&G Quality Systems Department as described in Part II, Section 18 of the Virgil C. Summer Nuclear Station Unit 1's Quality Assurance Program Description. Audits will also be conducted under the auspices of the Nuclear Safety Review Committee (NSRC) as further defined in Part V, Section 2 of the Virgil C. Summer Nuclear Station Unit 1's Quality Assurance Program Description. RN 11-040

13.4.3 REFERENCES

1. ANSI N18.7, "Administrative Controls and Quality Assurance for the Operating Phase of Nuclear Power Plants," February, 1976.

13.5 PLANT PROCEDURES

Actions concerning structures, systems, and components of the Virgil C. Summer Nuclear Station that are safety-related are conducted in accordance with approved written procedures. Safety-related structures, systems, and components are those that prevent or mitigate the consequences of postulated accidents that could cause undue risk to the health and safety of the public and such structures, systems, or components that are essential for the safe shutdown of the plant.

These procedures are written in sufficient detail that a qualified individual can perform the required function without direct supervision. Some procedural steps such as immediate action steps for emergency procedures are required to be committed to memory. Routine actions are performed in accordance with approved written procedures. Plant procedures will cover the following categories:

1. Administrative Procedures

2. Control Room Operating Procedures

3. Maintenance and Modification Procedures

4. Emergency Plan Procedures

5. Chemical-Radiochemical Control Procedures

6. Plant Radiation Protection Procedures

7. Plant Security Procedures

8. Surveillance Test Procedures

9. Fire Protection Procedures

Procedures contain the following significant aspects wherever they apply to the intent of each particular procedure.

1. Title

   A concise descriptive statement describing the activity covered in the procedure.

2. Purpose

   A concise descriptive statement describing the purpose and scope of the procedure.

3. References

Material which contains information related to the procedure, such as other plant procedures, instructions, drawings, technical manuals, reports, the FSAR, or other applicable documents.

4. Glossary

Abbreviations and definitions used in the procedure.

5. Prerequisites

Independent actions or procedures which shall be completed and plant conditions which shall exist prior to use of the procedures.

6. Precautions

Actions which if not taken or events which if not avoided when performing the procedure could result in hazardous personnel conditions or damage to plant equipment. Precautions also appear in the main body of the procedure where applicable.

7. Check Off Lists

Lists included in complex procedures requiring the person either performing or supervising the activity being performed to signify by his initials when important procedural steps have been completed.

8. Limitations

Statements specifying limits on the parameters being controlled such as limiting safety settings and limiting conditions for operation as specified in Technical Specifications.

9. Main Body

Statements specifying detailed steps for performing the procedure, presented in a degree of detail necessary for performing the required functions should be identified.

10. Symptoms

Emergency procedure symptoms shall be included to aid in the identification of the emergency. They should include significant alarms, operating conditions, and, where possible, probable magnitudes of parameter changes.

11. Automatic Actions

    The automatic actions that occur as a result of an emergency should be identified.

12. Immediate Operator Actions

    For emergencies, steps should be specified for operation of controls or confirmation of automatic actions that are required to stop the degradation of conditions and to mitigate their consequences.

13. Probable Cause

    The probable cause for alarms should be specified.

14. Acceptance Criteria

    The qualitative or quantitative criteria against which an evaluation of acceptability may be made.

15. Attachments

    Additional information that may be attached to a procedure for clarification or ease of understanding.

The Virgil C. Summer Nuclear Station Unit 1 conforms to NQA-1-1994 through VC Summer Quality Assurance Program Description. Operating procedures were prepared using ANSI N18.7, Revision 1, February 19, 1976 as a guide. The General Manager, Nuclear Plant Operations or his designated alternate has final approval before procedures are implemented. RNs 11-040 18-016

13.5.1 ADMINISTRATIVE PROCEDURES

The administrative procedures as described in the administrative manual, provide a clear understanding of operating philosophy and management policies to ensure safe operation of the plant within the limits set by the operating license and Technical Specifications. They provide that plant activities are conducted in a manner that will protect the general public, plant personnel, and equipment. A list of administrative procedure categories is provided in Table 13.5-1. A description of these procedure categories is as follows:

13.5.1.1 Plant Organization and Responsibility Procedures

These procedures describe the plant organization and give the responsibility of the individuals by position and authority to operate the plant in a safe and efficient manner.

13.5.1.2 Development, Review, Approval, and Control of Safety-Related Plant Procedures

These procedures describe the method by which plant procedures are written, the control process for review and approval, and the system utilized to revise the procedures where needed. Administrative procedures, security plan implementing procedures, and emergency plan implementing procedures receive final approval by the General Manager, Nuclear Plant Operations or his designated alternate. They are reviewed under the direction of a supervisor from a group other than the originating group before final approval by the General Manager, Nuclear Plant Operations. 02-01

13.5.1.3 Conduct of Plant Operations Procedures

These procedures describe the rules and instructions issued by the General Manager, Nuclear Plant Operations pertaining to personnel conduct and control. These rules and instructions provide a clear understanding of operating philosophy and management policies. They delineate the authority and responsibility of the Reactor Operators and Senior Reactor Operators for the safe operation of the reactor as required by 10CFR50.54 (i), (j), (k), (l), and (m). They establish the rules for procedure use and the designation of the persons responsible to authorize a temporary change to an approved procedure. Additional procedures establish standard operating orders which deal with such matters as job turnover and relief, designation of the confines of the Control Room including a diagram of the Control Room that indicates the area designated as at the controls (Figure 13.5-1), transmittal of operating data, limitations on access to equipment, and other such matters. Provisions are made for periodic review and updating of standing orders. Instructions which have short time applicability such as housekeeping, publications and their distribution, and personnel actions are issued as special orders. 99-01

As required by NUREG 0578, Section 2.2.1.c, procedures define the procedural steps for relief of shift personnel. Checklists are provided for the oncoming and offgoing Control Room Supervisor and the oncoming Shift Manager to complete and sign. These checklists provide assurance that actual plant parameters are within allowable limits and that required systems are available and are in proper alignment for the prevention and mitigation of operational transients. Systems and components that are in a degraded mode of operation permitted by Technical Specifications shall be listed and time in degraded mode are compared with Technical Specification action statements. Auxiliary Operator checklists include any equipment under maintenance or test that could degrade a system or initiate an operational transient and shall include criteria for acceptable status. The Operations Supervisor will make unannounced audits of shift relief to evaluate the effectiveness of shift relief and turnover. RN 15-011 RN 00-006

Also as required by NUREG 0578, Section 2.2.2.a, procedures establish the authority and responsibility of the person in charge of the Control Room to limit access.

As required by NUREG 0737, item I.A.1.3, administrative procedures establish actual work time limitations for plant shift personnel who maintain or operate any structures, systems, or components important to safety.

13.5.1.3.1 Shift Manager's Responsibility RN 15-011

As required by NUREG 0578, Section 2.2.1.a, upper level management shall issue a directive that establishes the management responsibility for the Shift Manager under all plant conditions. It shall contain clear delineation of management chain of authority as to who can, and when the Shift Manager is relieved of the responsibility for direct control of the plant. RN 15-011

An administrative procedure is provided that gives the authority and responsibilities of the Shift Manager, Control Room Supervisor, Control Room Operator, and other shift personnel. RN 15-011

Both on the job training and classes emphasize responsibility for safe operation and management functions as given in the administrative procedure.

A review of administrative duties of the Shift Manager has been conducted by senior plant and corporate management. Additional administrative personnel have been added to the operating group that relieve the Shift Manager of routine duties that distract from the management responsibility for assuring the safe operation of the plant. RN 15-011

NOTE 13.5.1.3.2
Section 13.5.1.3.2 is being retained for historical purposes only.

00-01

13.5.1.3.2 Westinghouse Review of Procedures

As required by NUREG 0737, item I.C.7, Westinghouse (NSSS Supplier) reviews station emergency operating procedures, power ascension procedures, and low power physics tests. Additional information on this subject has been submitted to the NRC under separate cover letter dated December 2, 1980.

13.5.1.3.3 NRC Review of Procedures

As required by NUREG 0737, item I.C.8, selected station emergency operating procedures have been demonstrated for the NRC on the Westinghouse Zion Simulator. Also, a walkthrough on the Virgil C. Summer Nuclear Station Control Board was performed as required. NRC comments on these procedures have been resolved.

13.5.1.3.4 Reporting Safety and Relief Valve Failures

Any failure of a pressurizer PORV or safety valve to close will be reported to the NRC promptly. Challenges to these valves will be documented in the annual report.

13.5.1.4 Control of Plant Documents Procedures

These procedures describe the preparation and retention of plant records. Retention periods are established to assure the ability to reconstruct significant events and satisfy statutory requirements.

13.5.1.5 Corrective Action Reporting Procedures

These procedures assure that conditions adverse to plant safety such as equipment and material malfunction, abnormal occurrences, and nonconformances are promptly identified and corrected. They ensure that the cause of the conditions is determined and reported to the appropriate level of management for corrective action.

13.5.1.6 Equipment Control Procedures

These procedures describe the control measures and actions such as locking, tagging, notification, removal of tags, and identification of equipment. They provide for control of equipment to maintain reactor and personnel safety and to avoid unauthorized operation of equipment. As required by NUREG 0737, items I.C.6 and II.K.1 (sub items 5 and 10), administrative procedures provide instructions for verifying correct performance of operating activities. This item has been specifically addressed under separate cover letter to the NRC dated December 11, 1980.

13.5.1.7 Design Modification Control Procedures

These procedures ensure that plant modifications satisfy, at a minimum, the same design requirements as the original equipment. Regulatory Guide 1.64 was used as a guide for the preparation of these procedures. RN 11-040

13.5.1.8 Procurement and Materials Control Procedures

These procedures provide for the control of purchased material, equipment, and services. They provide for proper identification, quality level requirements, control, handling, storage, and shipping of materials, parts, and components. These procedures also provide for the proper documentation to ensure quality of safety-related systems, equipment, and structures after maintenance or repair.

13.5.1.9 Control and Calibration of Test Equipment and Instrumentation Procedures

These procedures ensure that testing and measuring devices are of the proper range and type and are controlled, calibrated, adjusted, and maintained at specified intervals or prior to use to assure the necessary accuracy of calibrated devices. Records are made and equipment suitably marked to indicate calibration status.

13.5.1.10 Control of Special Processes During Operations Procedures

These procedures assure that special processes are accomplished under controlled conditions in accordance with applicable codes, standards, specifications, criteria, and other special requirements using qualified personnel and procedures.

13.5.1.11 Non-Conformance Control/Deficiency Reporting Procedures

These procedures provide for control of items, services, or activities which do not conform to requirements. These procedures include instructions for identification, documentation, segregation, notification of affected organizations, and method of disposition of such items, services, or activities.

13.5.1.12 Test Control Procedures

These procedures assure that testing required to demonstrate that an item will perform satisfactorily in service is accomplished properly. Test procedures incorporate or reference the requirements and acceptance limits contained in applicable design documents. These test procedures may include preoperational tests, initial operational phase tests, surveillance tests, and tests during design, fabrication, and construction activities associated with plant maintenance and modification.

13.5.1.13 Feedback of Operating Experience

In accordance with NUREG 0737, item I.C.5, a program will be established for evaluating operating plant experience and providing the results of the evaluations, as necessary, to pertinent plant personnel. The services of “Industry Groups" such as INPO will be utilized to the extent possible in the performance of this function.

13.5.1.14 ECCS Outages

In accordance with NUREG-0737, Item II.K.3.17, a program has been established using existing plant procedures for data collection including ECCS outage times, duration and cause of the outage, components involved in the outage, and corrective action taken. A plant procedure for removal and restoration of station equipment provides measures for data collection. The ECCS data taken by this procedure will be reviewed by appropriate plant personnel to determine if improvements to availability of ECCS is needed.

13.5.2 CONTROL ROOM OPERATING PROCEDURES

Control Room operating procedures are those procedures that are performed by the licensed Control Room Operator or under his direction and control. They are a preplanned method for the conduct of operations to minimize reliance on memory. These procedures include anticipated operating conditions, the normal method of control, means for and limits on operation of the plant, or plant systems that affect the safety of the plant and the public. These procedures address the areas discussed in Sections 13.5.2.1 through 13.5.2.6. As stated in NUREG-0660, item I.C. the applicant will incorporate changes into station operating procedures resulting from "Owners Group participation" as deemed necessary. A list of these procedure categories can be found in Table 13.5-2.

13.5.2.1 General Operating Procedures

General Operating Procedures (GOP) provide for the integrated operation of the plant. These procedures provide the sequence of plant operations to take the plant from a given initial condition to a final expected condition. Associated system operating procedures are referenced as applicable. Necessary precautions are inserted at critical points.

13.5.2.2 Emergency Operating Procedures

Emergency Operating Procedures (EOP) are written so that a trained operator and crew will be able to identify an emergency from the symptoms available to them and take immediate action on the expected course of events to place the plant in a known safe condition and to mitigate the consequence of a serious condition should it occur. Since emergencies may not follow anticipated patterns these procedures provide sufficient flexibility to accommodate variations. Those sections of the procedure that require immediate response action from the operating crew are committed to memory. Considerable judgment on the part of competent personnel is exercised before departure from these procedures.

13.5.2.3 System Operating Procedures

System Operating Procedures (SOP) provide instructions for energizing, starting up, shutting down, changing modes of operation, and other instructions for operations of systems related to the safety of the plant.

These procedures are concerned with systems only and include valve and switch lineups, control operations, and instrumentation within the system boundaries. They are subdivided into normal operations, infrequent operations, and off normal conditions in the main body.

13.5.2.4 Annunciator Response Procedures

Annunciator Response Procedures (ARP) are written to instruct the operator on the proper action to be taken in response to annunciators on the Main Control Board. They contain annunciator identification, inputs into the annunciator, and logical operator responses to be taken to ensure proper corrective action. The ARPs are identified by panel number. An illustration in the beginning of the ARP depicts the annunciator panel. In the case of computer alarms each alarm's unique identifier is listed. 02-01

When use of the ARP is required, the operator selects the proper tab by an alarm panel number.

13.5.2.5 Fuel Handling Procedures

Fuel Handling Procedures (FHP) are written to specify actions and philosophy for core alterations and partial or complete refueling operations. They include requirements for continuous monitoring of neutron flux throughout core loading and audible annunciation of abnormal flux increases. The duties of personnel assigned to refueling, such as periodic data taking, response actions to alarms during refueling, and criteria for stopping the refueling are specified. Also, instructions for proper sequence of events, verification, and frequency of sampling to ensure shutdown margin, communications between the control room and the fuel loading station, documentation of final fuel component serial numbers and location, containment integrity requirements, and rules for periods when refueling is interrupted are included. System operating procedures are referenced as required.

13.5.2.6 Special Procedures

Special procedures are written and issued to direct operations during testing, refueling, maintenance, and modifications. These procedures provide guidance in unusual situations not covered by existing procedures. They ensure orderly and uniform operations for short periods when the plant, a system, or a component is not performing in a normal manner and an existing procedure does not apply. Special procedures designate the period of time during which they may be used and are subject to the same review and approval process as other operating procedures.

13.5.3 MAINTENANCE AND MODIFICATION PROCEDURES

Maintenance and modification procedures define the policies and practices by which structures, systems, and components are kept in a condition of good repair so that they are capable of reliably performing their intended functions. This includes those activities performed by maintenance or contractor personnel to maintain, repair, or modify safety-related equipment. Additional related activities covered are those by operating personnel to ensure that a planned maintenance activity can be safely accomplished, that proper plant operating conditions exist, to authorize the release of equipment to be maintained using equipment control procedures, and to assure that the equipment has been returned to normal operating status at the completion of maintenance work, as well as verification of functional acceptability. Procedures are written to assure measurement accuracies are adequate to keep safety parameters and controls within safety and operational limits. This instrumentation includes interlocks, alarm devices, sensors, readout instruments, transmitters, signal conditioners, laboratory equipment, key recorders, and protective logic circuits. Calibration, testing, and checking of instrumentation channels are performed at the frequency specified in Technical Specifications. A list of the areas covered by maintenance procedures is given in Table 13.5-3.

13.5.4 EMERGENCY PLAN PROCEDURES

These procedures are written in sufficient detail that a qualified individual can perform the required actions without supervision. They provide a step by step order and logical sequence in a concise manner but are flexible enough to give latitude to the user for the exercise of judgment in implementing specific actions or parts of the procedure. These instructions specify the individual or organization having authority and responsibility for performing critical tasks. The actions to be performed by support agencies and the coordination with other elements of the emergency organization are also specified. Guidelines for initiating recovery after the emergency alert is over to restore the plant to the pre-emergency conditions are given. A list of the procedure categories is given in Table 13.5-4.

13.5.5 CHEMICAL-RADIOCHEMICAL CONTROL PROCEDURES

These procedures provide instructions for maintaining reactor coolant, condensate, and feedwater within prescribed quality limits and include the nature and frequency of sampling and analysis. They also include laboratory instructions and instructions for calibration of laboratory equipment. Limitations on concentrations of agents that could cause corrosive attack, foul heat transfer surfaces, or become sources of radiation hazards due to activation are given. A list of the procedure categories is given in Table 13.5-5.

13.5.6 PLANT RADIATION PROTECTION PROCEDURES

These procedures cover plant personnel, other SCE&G personnel temporarily assigned, contractor and vendor personnel, and visitor protection to maintain occupational dose rate to as low as reasonably achievable. They provide coverage for all normal operations and anticipated operational occurrences. This includes refueling, purging, fuel handling and storage, also radioactive material handling, processing, use, and storage. Other areas covered are maintenance, routine operational surveillance, inservice inspection, and calibration. A list of the areas covered by the radiation protection procedure categories is included in Table 13.5-6.

13.5.7 PLANT SECURITY PROCEDURES

These procedures are written to supplement physical barriers and features designed to control access to the plant and as appropriate to sensitive areas and equipment within the plant. Information concerning design features and administrative provisions is protected and distribution is limited. Plans for physical protection of the Virgil C. Summer Nuclear Station are described in a separate part of the application for license, withheld from public disclosure pursuant to 10CFR2, Paragraph 2.790 (d) (refer to Section 13.7). A list of the areas covered by these procedures is included in Table 13.5-7.

13.5.8 SURVEILLANCE TEST PROCEDURES

These tests and inspections are performed in accordance with the Technical Specifications to ensure that the required reliability of safety systems is maintained. These surveillance test procedures contain a description of the test objectives, the acceptance criteria used to evaluate the test results, and the prerequisites for performing the test. They include any special conditions to be used to simulate normal or abnormal operating conditions, limiting conditions, the test procedure, and any special test equipment or calibrations required to conduct the test. A master surveillance schedule, reflecting the status of surveillance testing is also maintained. Additional control procedures ensure timely conduct of surveillance testing, appropriate documentation, reporting, and evaluation of test results. Significant deficiencies identified by the tests are reported to management. The deficiencies will be evaluated and the condition corrected in a timely manner. A list of surveillance test procedure categories is included in Table 13.5-8.

13.5.9 FIRE PROTECTION PROCEDURES

These associated procedures provide the necessary planning and instructions to ensure adequate fire protection for the Virgil C. Summer Nuclear Station. Included, but not limited to, are the provisions made in the Fire Protection (FP) DBD and SAP-131. The responsibilities for preparation of schedules and procedures required by the Operations, Maintenance, and Technical Groups are stated in this report and are detailed in administrative procedures.

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RN 03-024

TABLE 13.5-1

ADMINISTRATIVE PROCEDURE CATEGORIES

Plant Organization and Responsibility Procedures

Development, Review, Approval and Control of Safety-Related Plant Procedures

Conduct of Plant Operations Procedures

Control of Plant Documents Procedures

Corrective Action Reporting Procedures

Equipment Control Procedures

Design Modification Control Procedures

Procurement and Materials Control Procedures

Control and Calibration of Test Equipment and Instrumentation Procedures

Control of Special Processes During Operations Procedures

Non-Conformance Control / Deficiency Reporting Procedures

Test Control Procedures

TABLE 13.5-2

CONTROL ROOM OPERATING PROCEDURE CATEGORIES

General Operating Procedures

Emergency Operating Procedures

System Operating Procedures

Annunciator Response Procedures

Fuel Handling Procedures

Special Procedures

TABLE 13.5-3

MAINTENANCE AND MODIFICATION PROCEDURE CATEGORIES

Mechanical Maintenance Procedures

Electrical Maintenance Procedures

Instrument and Control Maintenance Procedures

Instrument Calibration Test Procedures

Refueling Maintenance Procedures

Material Control Procedures

Safety-Related Structures, Systems or Components Modification Procedures

TABLE 13.5-4

EMERGENCY PLAN PROCEDURE CATEGORIES

Activation and Implementation of Emergency Plan

On-Site and Off-Site Radiological Surveying

Communication and Notification

Radiation Exposure Assessment and Protective Action Recommendations

On-Site Evacuation and Personnel Accountability

Handling of Injured Personnel

Natural Emergencies

Fire Emergencies

Post-Recovery and Re-Entry

Emergency Training and Drills

Emergency Personnel Exposure Control

Emergency Facilities Activation and Organizational Responsibilities

TABLE 13.5-5

CHEMICAL-RADIOCHEMICAL CONTROL PROCEDURE CATEGORIES

Chemistry Analytical Procedures

Chemistry Reagent Preparation Procedures

Radiochemistry Analytical Procedures

Radiochemistry Carrier Preparation Procedures

Laboratory Instrumentation Operating and Calibration Procedures

Chemistry and Radiochemistry Records, Reports and Log Procedures

Procedures for Steam Generator Chemistry Control During Dry or Wet Layup

Chemistry Sampling Techniques

Radiochemistry Counting Techniques

TABLE 13.5-6

PLANT RADIATION PROTECTION PROCEDURE CATEGORIES

Radiological Surveys and Monitoring Procedures

Radiation Work Permit Procedures

Use and Testing of Protective Equipment and Clothing Procedures

Personnel Decontamination Procedures

Health Physics Quality Control and Instrumentation Calibration Procedures

Procedures for the Movement of Radioactive Materials Within the Plant

Contaminated Tools and Equipment Storage Procedures

Radioactive Waste Management Procedures

Control of Radioactive Calibration Source Procedure

Radiological Environmental Monitoring Procedures

Personnel Dosimetry and Radiation Exposure Control (Internal and External) Procedures

Records and Reporting Procedures

Special Nuclear Materials Accountability Procedures

Control of Personnel Conduct in Radiation and High Radiation Areas

Area and Equipment Decontamination Procedures

TABLE 13.5-7

PLANT SECURITY PROCEDURE CATEGORIES

Means for Control of Plant Access Procedures

Control of Personnel Procedures

Access Control During Emergencies Procedure

Equipment Monitoring Procedures

Potential Security Threats Handling Procedures

Notification, Reports and Records

TABLE 13.5-8

SURVEILLANCE TEST PROCEDURE CATEGORIES

Operations Group Surveillance Procedures

Maintenance Group Surveillance Procedures

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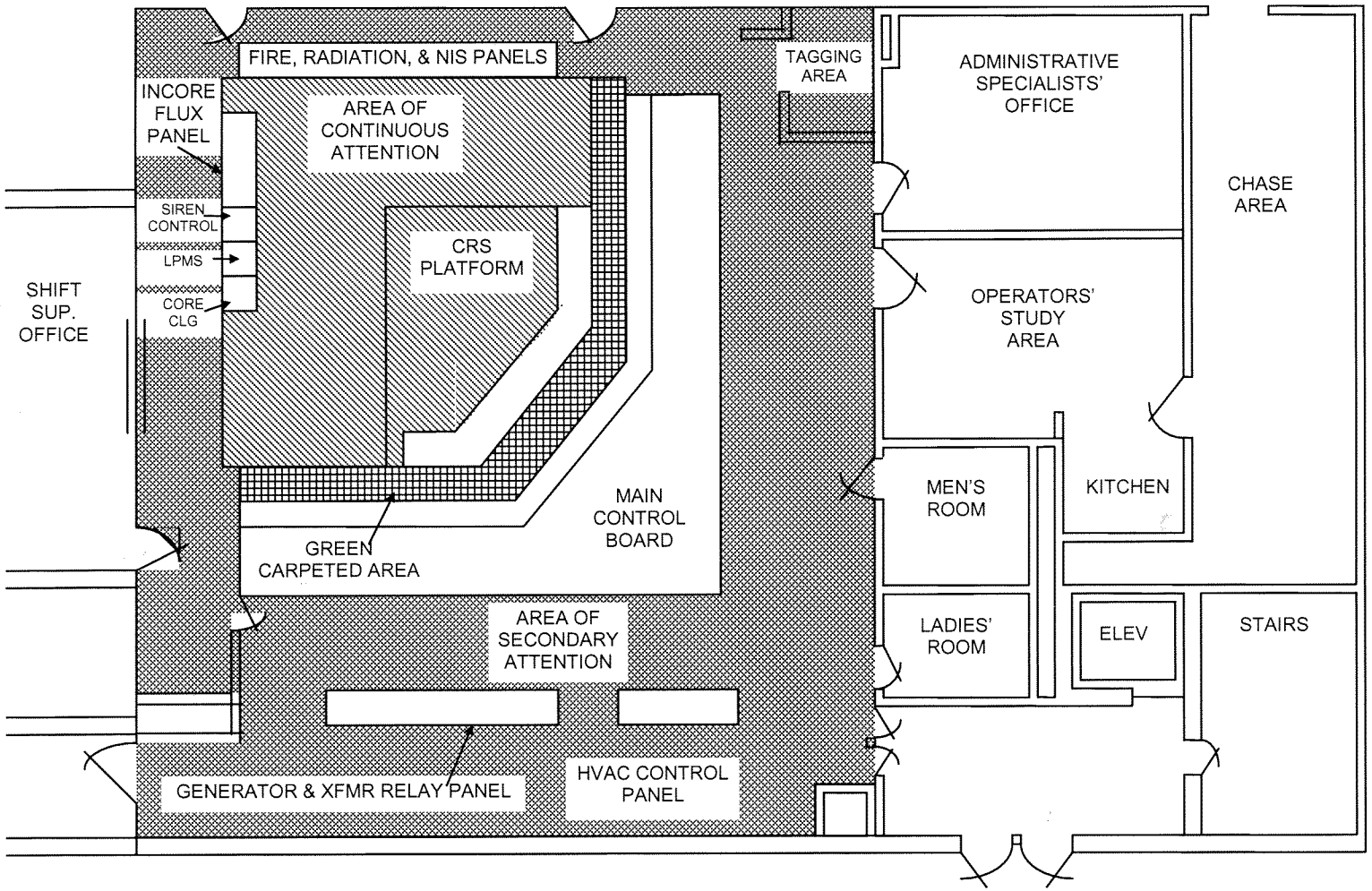
CONTROL ROOM AREAS DESIGNATED AS AT THE CONTROLS



Ref. Dwg. E-005-001 ASSOCIATED WITH
FSAR Figures 1.2-15, 12.1-19, and 12a.4-7

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

Figure 13.5-1

Control Room Area Designated
As At The Controls

13.6 PLANT RECORDS

Records documenting the quality of the design, construction, testing, operation, maintenance, and modification of the Virgil C. Summer Nuclear Station will be maintained to meet the requirements of Basic Requirement 17 and Supplement 17S-1 of ASME NQA-1-1994 and Regulatory Guide 1.28, Revision 3 (See Appendix 3A). The records maintained comply with the requirements of Criterion XVII of Appendix B of 10CFR50 and Basic Requirement 17 and Supplement 17S-1 of ASME NQA-1-1994 and Regulatory Guide 1.28, Revision 3 (See Appendix 3A). RN 11-040

Records are normally stored and maintained in the permanent records storage facility which provides facilities to preserve the records in a manner to preclude deterioration. 98-01 Records that are not maintained in the permanent record storage facility will be duplicated and stored in a separate remote location. 02-01 Electronic records will be maintained as described in Part II, Section 17.2 of the VC Summer Quality Assurance Program Description. RNs 11-040 18-016

Records will not normally be removed from the permanent records storage facility as specified in implementing procedures. However, under unusual circumstances, the Document Control and Records Supervisor, designee or the General Manager, Organization Effectiveness may authorize temporary removal of records from the permanent records storage facility. The SCE&G Quality Assurance organization is responsible for auditing these quality records as described in Part II, Section 18 of the Virgil C. Summer Nuclear Station Unit 1's Quality Assurance Program Description. 98-01 RN 03-024 RN 11-040

13.6.1 PLANT HISTORY

Upon completion of the plant design, construction, and construction testing, the engineering and construction departments transferred or disclosed the location of all quality documentation to the plant staff and operations quality services group. The engineering and construction departments will state that the record types necessary to document quality have been identified and that the list is complete and accurate. Records not maintained at the plant site are kept at the material supplier's due to code and standard requirements or at Parsons Power, LTD. (formerly Gilbert Associates, Inc.) offices, the architect-engineer for the Virgil C. Summer Nuclear Station. RN 03-024

This documentation, together with the records generated during the testing program, operation, maintenance, inspection, modification, and events of the Virgil C. Summer Nuclear Station, as described in Sections 13.6.2 and 13.6.3, serve as a recorded history of plant activities.

13.6.2 OPERATING RECORDS

Preoperational and startup test records generated during the testing program are kept at the plant site along with appropriate operating records. These operating records include chemistry records; manuals and procedures; operating, maintenance, and

testing records; special nuclear materials records; records and reports required by regulatory agencies; and administrative records.

Operations records and logs that are kept at the plant are considered as nonpermanent and are maintained for a predetermined time as shown on the SCE&G records accumulation and retention chart, unless a longer period is required by applicable regulations. The following are examples of these type records: 98-01

1. Startup problems and resolutions.

2. Records of normal plant operation, including power levels and period of operation at each level.

3. Records of principal safety-related maintenance activities, including inspection, repair, substitution, or replacement of principal items of equipment.

4. Records of abnormal occurrences and unusual events.

5. Records of shipment of radioactive material. 98-01

Operations records that are considered to be of a significant value in demonstrating safe operation capability, in maintaining, replacing, or repairing an item, in determining the cause of an accident or malfunction of an item, or in providing baseline data for inservice inspection are maintained for the life of the plant. The following are examples of these type records:

1. Applicable plant procedures and drawings.

2. Records of inservice inspections.

3. Records of radiation exposure of plant personnel and others, who enter radiation control areas.

4. Records of new and spent fuel inventory and assembly histories.

5. Records and drawing changes made to the plant as described in the FSAR. 98-01

6. Reactor water chemistry data.

13.6.3 EVENT RECORDS

Records of occurrences such as radioactive releases and environmental surveys are maintained at the plant site. These records are considered to be of a significant value in demonstrating the safe operation capability of the plant and are therefore kept for the life of the plant. The following are examples of these type records:

1. Records of plant radiation and contamination surveys.

2. Gaseous and liquid release data.

13.7 INDUSTRIAL SECURITY

The security plans for the Virgil C. Summer Nuclear Station are submitted under separate cover pursuant to paragraph 2.790 (d), 10CFR Part 2, "Rules of Practice."

APPENDIX 13A

SOUTH CAROLINA ELECTRIC AND GAS COMPANY

VIRGIL C. SUMMER NUCLEAR STATION

RADIATION EMERGENCY PLAN

EMERGENCY PLANNING

The Radiation Emergency Plan to support a full power operating license, which addresses the requirements of NUREG-0654, was submitted under separate cover to the NRC on June 4, 1980. Revisions to the Radiation Emergency Plan are submitted to the NRC in accordance with the requirements of 10CFR50.54(q).