6.0 ADMINISTRATIVE CONTROLS

6.1 RESPONSIBILITY

6.1.1 The ~~Manager, Virgil C. Summer Nuclear Station~~ Director, Nuclear Plant Operations shall be responsible for overall unit operation and shall delegate in writing the succession to this responsibility during his absence. The title Director, Nuclear Plant Operations is synonymous to the titles Manager, Virgil C Summer Nuclear Station, Station Manager or Plant Manager.

6.1.2 The Shift Supervisor shall be responsible for unit operations. A management directive to this effect, signed by the Vice President, Nuclear Operations, shall be reissued to all station personnel on an annual basis.

6.2 ORGANIZATION

OFFSITE

6.2.1 The offsite organization for unit management and technical support shall be as shown on Figure 6.2-1.

UNIT STAFF

6.2.2 The unit organization shall be as shown on Figure 6.2-2 and:

a. Each on-duty shift shall be composed of at least the minimum shift crew composition shown in Table 6.2-1.

b. At least one licensed Reactor Operator shall be in the control room when fuel is in the reactor. In addition, while the unit is in MODE 1, 2, 3 or 4, at least one Licensed Senior Reactor Operator shall be in the Control Room.

c. A health physics technician[#] shall be on site when fuel is in the reactor.

d. All CORE ALTERATIONS shall be observed and directly supervised by either a licensed Senior Reactor Operator or Senior Reactor Operator Limited to Fuel Handling who has no other concurrent responsibilities during this operation.

e. A site Fire Brigade of at least 5 members shall be maintained onsite at all times.[#] The Fire Brigade shall not include the Shift Supervisor and the other 2 members of the minimum shift crew necessary for safe shutdown of the unit and any personnel required for other essential functions during a fire emergency.

[#]The health physics technician and Fire Brigade composition may be less than the minimum requirements for a period of time not to exceed 2 hours in order to accommodate unexpected absence provided immediate action is taken to fill the required positions.

f. Administrative procedures shall be developed and implemented to limit the working hours of unit staff who perform safety-related functions; e.g., senior reactor operators, reactor operators, health physicists, auxiliary operators, and key maintenance personnel.

Adequate shift coverage shall be maintained without routine heavy use of overtime. However, in the event that unforeseen problems require substantial amounts of overtime to be used, or during extended periods of shutdown for refueling, major maintenance or major plant modifications, on a temporary basis, the following guidelines shall be followed:

a. An individual should not be permitted to work more than 16 hours straight, excluding shift turnover time.

b. An individual should not be permitted to work more than 16 hours in any 24-hour period, nor more than 24 hours in any 48-hour period, nor more than 72 hours in any seven day period, all excluding shift turnover time.

c. A break of at least eight hours should be allowed between work periods, including shift turnover time.

d. Except during extended shutdown periods, the use of overtime should be considered on an individual basis and not for the entire staff on a shift.

Any deviation from the above guidelines shall be authorized by the ~~Manager, Virgil C. Summer Nuclear Station~~ Director, Nuclear Plant Operations or his deputy, or higher levels of management, in accordance with established procedures and with documentation of the basis for granting the deviation. Controls shall be included in the procedures such that individual overtime shall be reviewed monthly by the ~~Manager, Virgil C. Summer Nuclear Station~~ Director, Nuclear Plant Operations or his designee to assure that excessive hours have not been assigned. Routine deviation from the above guidelines is not authorized.

TABLE 6.2-1

MINIMUM SHIFT CREW COMPOSITION

SUMMER UNIT 1

POSITION	NUMBER OF INDIVIDUALS REQUIRED TO FILL POSITION	
	MODES 1, 2, 3, & 4	MODES 5 & 6
SS	1	1
CRF	1	None
RO	2	1
AO	2	1
STA	1	None

SS - Shift Supervisor with a Senior Reactor Operators License on Unit 1
CRF - Control Room ~~Foreman~~ Supervisor with a Senior Reactor Operators License on Unit 1
RO - Individual with a Reactor Operators License on Unit 1
AO - Auxiliary Operator
STA - Shift Technical Advisor

Except for the Shift Supervisor, the Shift Crew Composition may be one less than the minimum requirements of Table 6.2-1 for a period of time not to exceed 2 hours in order to accommodate unexpected absence of on-duty shift crew members provided immediate action is taken to restore the Shift Crew Composition to within the minimum requirements of Table 6.2-1. This provision does not permit any shift crew position to be unmanned upon shift change due to an oncoming shift crewman being late or absent.

During any absence of the Control Room ~~Foreman~~ Supervisor from the Control Room while the unit is in MODE 1, 2, 3 or 4, an individual (other than the Shift Technical Advisor) with a valid SRO license shall be designated to assume the Control Room command function. During any absence of the Shift Supervisor from the Control Room while the unit is in MODE 5 or 6, an individual with a valid RO or SRO license shall be designated to assume the Control Room command function.

6.2.3 INDEPENDENT SAFETY ENGINEERING GROUP (ISEG)

FUNCTION

6.2.3.1 The ISEG shall function to examine plant operating characteristics, NRC issuances, industry advisories, Licensee Event Reports and other sources of plant design and operating experience information, including plants of similar design, which may indicate areas for improving plant safety.

COMPOSITION

6.2.3.2 The ISEG shall be composed of a multi-disciplined dedicated onsite group with a minimum assigned complement of five engineers or appropriate specialists.

RESPONSIBILITIES

6.2.3.3 The ISEG shall be responsible for maintaining surveillance of plant activities to provide independent verification* that these activities are performed correctly and that human errors are reduced as much as practical.

AUTHORITY

6.2.3.4 The ISEG shall make detailed recommendations for procedure revisions, equipment modifications, maintenance activities, operations activities or other means of improving plant safety to the Group Manager, ~~Nuclear Engineering and Licensing~~ Technical Services.

6.2.4 SHIFT TECHNICAL ADVISOR

The Shift Technical Advisor shall provide technical support to the Shift Supervisor in the areas of thermal hydraulics, reactor engineering and plant analysis with regard to the safe operation of the unit.

6.3 UNIT STAFF QUALIFICATIONS

6.3.1 Each member of the unit staff shall meet or exceed the minimum qualifications of ANSI N18.1-1971 for comparable positions and the supplemental requirements specified in Sections A and C of Enclosure 1 of the March 28, 1980 letter to all licensees, except for the ~~Director~~ Assistant Manager, Health Physics who shall meet or exceed the qualifications of Regulatory Guide 1.8, September 1975, the Shift Technical Advisor who shall meet or exceed the qualifications referred to in Section 2.2.1.b of Enclosure I of the October 30, 1979 NRC letter to all operating nuclear power plants, and the members of the Independent Safety Engineering Group, each of whom shall have a Bachelor of Science degree or registered Professional Engineer and at least two years experience in their field. At least one year experience shall be in the nuclear field.

6.4 TRAINING

6.4.1 A retraining and replacement training program for the unit staff shall be maintained and shall meet or exceed the requirements and recommendations of Section ~~5~~.5 of ANSI N18.1-1971 and Appendix "A" of 10 CFR Part 55 and the supplemental requirements specified in Sections A and C of Enclosure 1 of the March 28, 1980 NRC letter to all licensees, and shall include familiarization with identified relevant industry operational experience.

*Not responsible for sign-off function.

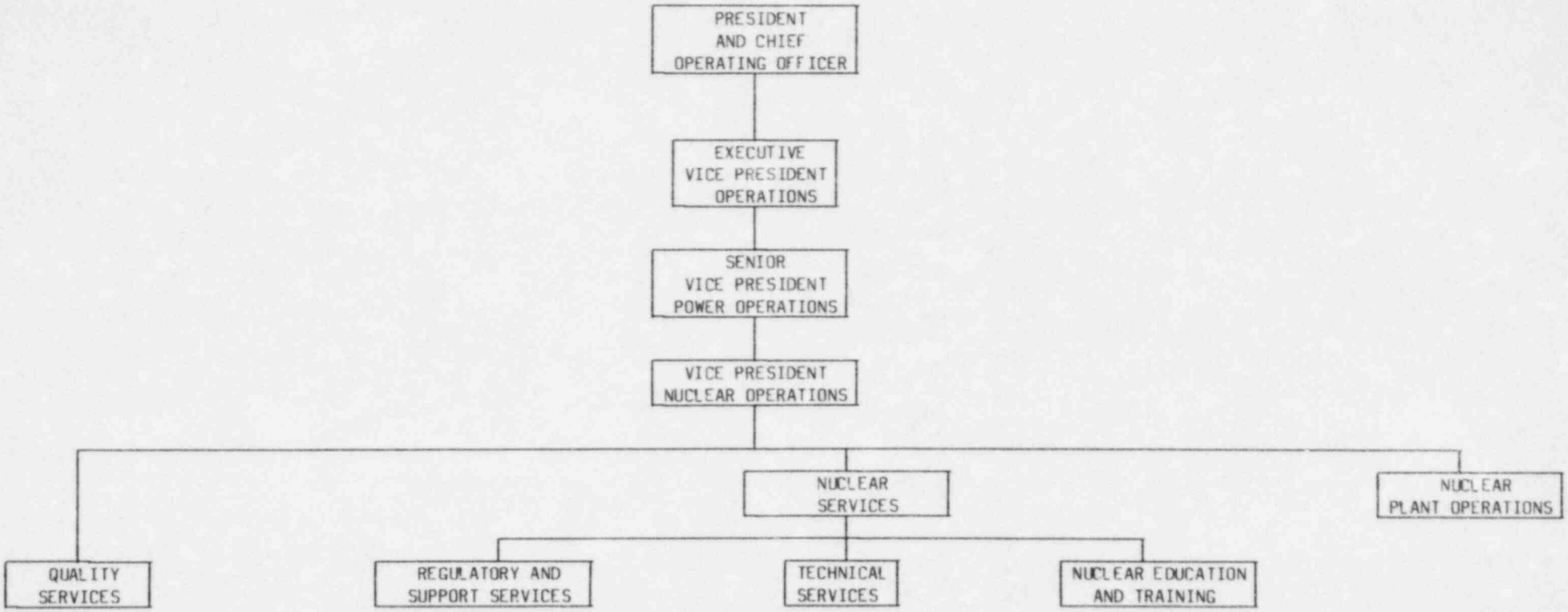

FIGURE 6.2.1
SOUTH CAROLINA ELECTRIC AND GAS COMPANY
VIRGIL C. SUMMER NUCLEAR STATION
OFFSITE ORGANIZATION

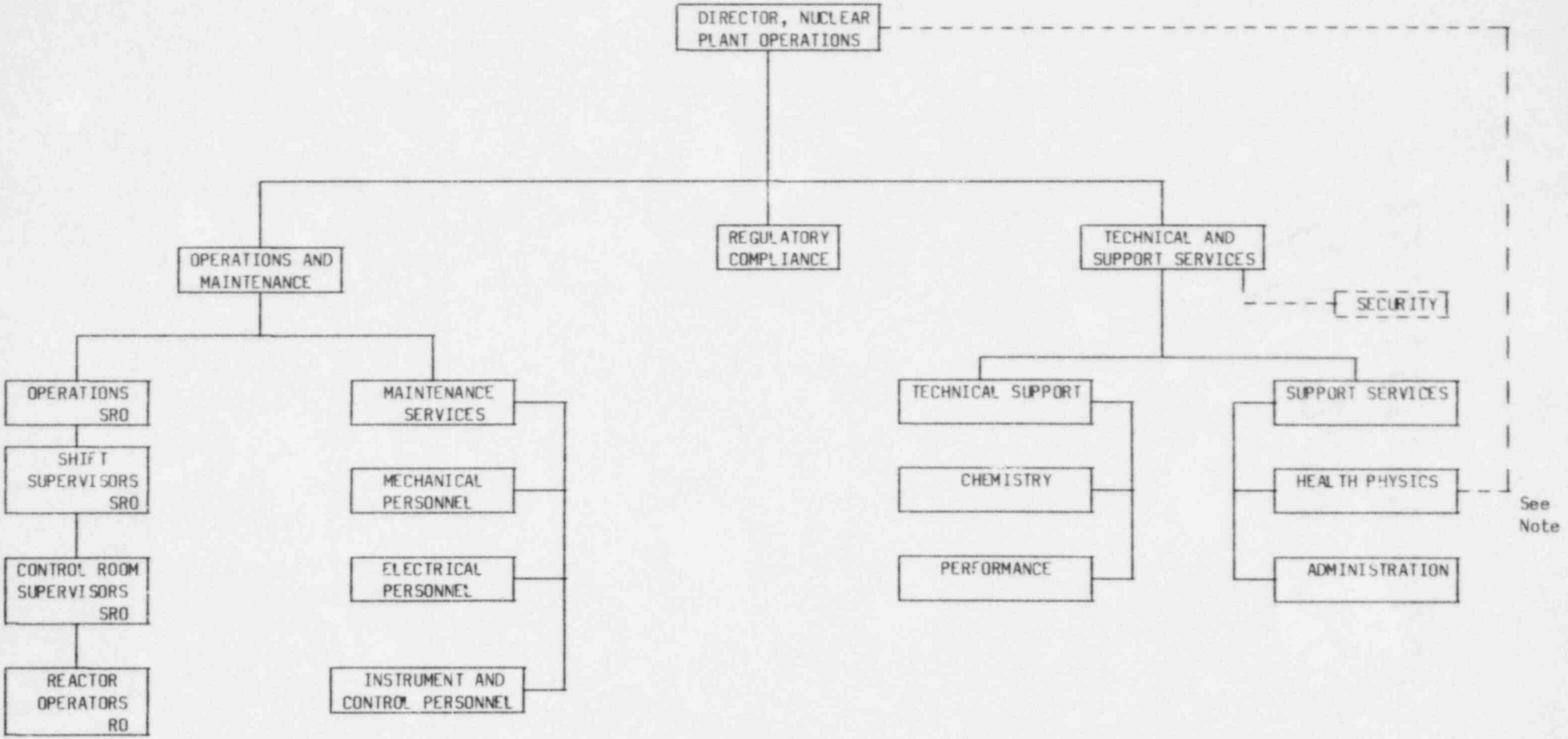

FIGURE 6.2-2
VIRGIL C. SUMMER NUCLEAR STATION
FUNCTIONAL ORGANIZATION

SRO - Senior Reactor Operator License
RO - Reactor Operator License

NOTE: Health Physics supervision has direct access to the Director, Nuclear Plant Operations in matters concerning any phase of radiological protection.

NOTE: The title Director, Nuclear Plant Operations is synonymous with the title Manager, Virgil C. Summer Nuclear Station, Station Manager or Plant Manager.

6.5 REVIEW AND AUDIT

6.5.1 PLANT SAFETY REVIEW COMMITTEE (PSRC)

FUNCTION

6.5.1.1 The PSRC shall function to advise the ~~Manager, Virgil C. Summer Nuclear Station~~ Director, Nuclear Plant Operations on all matters related to nuclear safety.

COMPOSITION

6.5.1.2 The Plant Safety Review Committee shall be composed of the:

Chairman:	~~Manager or Deputy Manager, Virgil C. Summer Nuclear Station~~ Director, Nuclear Plant Operations or Deputy Manager, Operations and Maintenance
Member:	~~Assistant~~ Manager Operations
Member:	~~Assistant~~ Manager Technical Support
Member:	~~Assistant~~ Manager Maintenance Services
Member:	~~Assistant~~ Manager, Technical and Support Services Group
Member:	~~Director of~~ Health Physics or a Health Physics Supervisor Associate Manager

ALTERNATES

6.5.1.3 All alternate members shall be appointed in writing by the PSRC Chairman to serve on a temporary basis; however, no more than two alternates including the Chairman's alternate, if applicable, shall participate as voting members in PSRC activities at any one time.

MEETING FREQUENCY

6.5.1.4 The PSRC shall meet at least once per calendar month and as convened by the PSRC Chairman or his designated alternate.

QUORUM

6.5.1.5 The minimum quorum of the PSRC necessary for the performance of the PSRC responsibility and authority provisions of these Technical Specifications shall consist of the Chairman or his designated alternate and three members including alternates.

RESPONSIBILITIES

6.5.1.6 The Plant Safety Review Committee shall review:

a. Station administrative procedures and changes thereto,

b. The safety evaluations for 1) procedures, 2) changes to procedures, equipment or systems, and 3) tests or experiments completed under the provision of Section 50.59, 10 CFR, to verify that such actions did not constitute an unreviewed safety question and all programs required by Specification 6.8 and changes thereto.

c. Proposed procedures and changes to procedures, equipment or systems which may involve an unreviewed safety question as defined in Section 50.59, 10 CFR.

d. Proposed tests or experiments which may involve an unreviewed safety question as defined in Section 50.59, 10 CFR.

e. Proposed changes to Technical Specifications or the Operating License.

f. Reports of violations of codes, regulations, orders, Technical Specifications, or Operating License requirements having nuclear safety significance or reports of abnormal degradation of systems designed to contain radioactive material.

g. Reports of significant operating abnormalities or deviations from normal and expected performance of plant equipment that affect nuclear safety.

h. All written reports concerning events requiring 24 hour notification to the Commission.

i. All recognized indications of an unanticipated deficiency in some aspect of design or operation of safety related structures, systems, or components.

j. The plant Security Plan and changes thereto.

k. The Emergency Plan and changes thereto.

l. Items which may constitute a potential nuclear safety hazard as identified during review of facility operations.

m. Investigations or analyses of special subjects as requested by the Chairman of the Nuclear Safety Review Committee.

n. The unexpected offsite release of radioactive material and the report as described in 6.9.1.13(e).

o. Changes to the PROCESS CONTROL PROGRAM and the OFFSITE DOSE CALCULATION MANUAL.

AUTHORITY

6.5.1.7 The Plant Safety Review Committee shall:

a. Recommend in writing to the ~~Manager Virgil C. Summer Nuclear Station~~ Director, Nuclear Plant Operations approval or disapproval of items considered under 6.5.1.6a, c, d, e, j, and k above.

b. Render determinations in writing to the ~~Manager Virgil C. Summer Nuclear Station~~ Director, Nuclear Plant Operations with regard to whether or not each item considered under 6.5.1.6a, c, and d above constitutes an unreviewed safety question.

c. Make recommendations in writing to the ~~Station Manager~~ Director, Nuclear Plant Operations that actions reviewed under 6.5.1.6(b) above did not constitute an unreviewed safety question.

d. Provide written notification within 24 hours to the ~~General Manager~~ Vice President, Nuclear Operations and the Nuclear Safety Review Committee of disagreement between the PSRC and the ~~Manager, Virgil C. Summer Nuclear Station~~ Director, Nuclear Plant Operations however, the ~~Manager, Virgil C. Summer Nuclear Station~~ Director, Nuclear Plant Operations shall have responsibility for resolution of such disagreements pursuant to 6.1.1 above.

RECORDS

6.5.1.8 The Plant Safety Review Committee shall maintain written minutes of each PSRC meeting that, at a minimum, document the results of all PSRC activities performed under the responsibility and authority provisions of these technical specifications. Copies shall be provided to the ~~General Manager~~ Vice President, Nuclear Operations and the Chairman of the Nuclear Safety Review Committee.

6.5.2 NUCLEAR SAFETY REVIEW COMMITTEE (NSRC)

FUNCTION

6.5.2.1 The Nuclear Safety Review Committee shall function to provide independent review and audit of designated activities in the areas of:

a. nuclear power plant operations

b. nuclear engineering

c. chemistry and radiochemistry

d. metallurgy

e. instrumentation and control

f. radiological safety

g. mechanical and electrical engineering

h. quality assurance practices

COMPOSITION

6.5.2.2 NSRC shall consist of a Chairman and four or more other members appointed by the ~~Senior~~ Vice President, Nuclear ~~Power~~ Operations. No more than a minority of the members of the NSRC shall have line responsibility for the operation of the unit.

The NSRC members shall hold a Bachelor's degree in an engineering or physical science field or equivalent experience and a minimum of five years of technical experience of which a minimum of three years shall be in one or more of the disciplines of 6.5.2.1a through h. In the aggregate, the membership of the committee shall provide specific practical experience in the majority of the disciplines of 6.5.2.1a through h.

ALTERNATES

6.5.2.3 All alternate members shall be appointed in writing by the ~~Senior~~ Vice President, Nuclear ~~Power~~ Operations; however, no more than two alternates shall participate as voting members in NSRC activities at any one time.

CONSULTANTS

6.5.2.4 Consultants shall be utilized as determined by the NSRC Chairman to provide expert advice to the NSRC.

AUDITS

6.5.2.8 The NSRC shall have cognizance of the audits listed below. Audits may be performed by using established SCE&G groups such as the ISEG and QA or by outside groups as determined by the NSRC. Audit reports or summaries will be the basis for NSRC action:

a. The conformance of unit operation to provisions contained within the Technical Specifications and applicable license conditions at least once per 12 months.

b. The performance, training and qualifications of the entire unit staff at least once per 12 months.

c. The results of actions taken to correct deficiencies occurring in unit equipment, structures, systems or method of operation that affect nuclear safety at least once per 6 months.

d. The performance of activities required by the Operational Quality Assurance Program to meet the criteria of Appendix "B", 10 CFR 50, at least once per 24 months.

e. The Emergency Plan and implementing procedures at least once per 12 months.

f. The Security Plan and implementing procedures at least once per 12 months.

g. Any other area of unit operation considered appropriate by the NSRC or the ~~Senior~~ Vice President, ~~Power~~ Nuclear Operations.

h. The Fire Protection Program and implementing procedures at least once per 24 months.

i. An independent fire protection and loss prevention inspection and audit shall be performed annually utilizing either qualified offsite licensee personnel or a qualified outside firm.

j. An inspection and audit of the fire protection and loss prevention program shall be performed by an outside qualified fire consultant at intervals no greater than 3 years.

k. The radiological environmental monitoring program and the results thereof, including the performance of activities required by the quality assurance program per R.G. 4.15 Rev. 1, February 1979, at least once per 12 months.

l. The OFFSITE DOSE CALCULATION MANUAL and implementing procedures at least once per 24 months.

m. The PROCESS CONTROL PROGRAM and implementing procedures for solidification of radioactive wastes at least once per 24 months.

AUTHORITY

6.5.2.9 The NSRC shall report to and advise the ~~Senior~~ Vice President, ~~Power~~ Nuclear Operations on those areas of responsibility specified in Sections 6.5.2.7 and 6.5.2.8.

RECORDS

6.5.2.10 Records of NSRC activities shall be prepared, approved and distributed as indicated below:

a. Minutes of each NSRC meeting shall be prepared, approved and forwarded to the ~~Senior~~ Vice President, Nuclear ~~Power~~ Operations within 14 days following each meeting.

b. Reports of reviews encompassed by Section 6.5.2.7 above, shall be prepared, approved and forwarded to the ~~Senior~~ Vice President, ~~Power~~ Nuclear Operations within 14 days following completion of the review.

c. Audit summary reports encompassed by Section 6.5.2.8 above, shall be forwarded to the NSRC and to the ~~Senior~~ Vice President, Nuclear ~~Power~~ Operations. Full audits shall be forwarded to the management positions responsible for the areas audited within 30 days after completion of the audit by the auditing organization.

6.5.3 TECHNICAL REVIEW AND CONTROL

ACTIVITIES

6.5.3.1 Activities which affect nuclear safety shall be conducted as follows:

a. Procedures required by Technical Specification 6.8 and other procedures which affect plant nuclear safety, and changes thereto, shall be prepared, reviewed and approved. Each such procedure or procedure change shall be reviewed by an individual/group other than the individual/ group which prepared the procedure or procedure change, but who may be from the same organization as the individual/ group which prepared the procedure or procedure change. Procedures other than Administrative Procedures will be approved as delineated in writing by the ~~Station Manager~~ Director, Nuclear Plant Operations. Director, Nuclear Plant Operations The ~~Station Manager~~ will approve administrative procedures, security implementing procedures and emergency plan implementing procedures. Temporary approval to procedures which clearly do not change the intent of the approved procedures can be made by two members of the plant management staff, at least one of whom holds a Senior Reactor Operator's License. For changes to procedures which may involve a change in intent of the approved procedures, the person authorized above to approve the procedure shall approve the change.

b. Proposed changes or modifications to plant nuclear safety-related structures, systems and components shall be reviewd as designated by the ~~Station Manager~~ Director, Nuclear Plant Operations. Each such modification shall be designed as authorized by Nuclear Engineering and shall be reviewed by an individual/group other than the individual/group which designed the modification, but who may be from the same organization as the individual/group which designed the modifications. Implementation of modifications to plant nuclear safety-related structures, systems and components shall be concurred in by the ~~Station Manager~~ Director, Nuclear Plant Operations.

c. Proposed tests and experiments which affect plant nuclear safety and are not addressed in the Final Safety Analysis Report shall be reviewed by an individual/group other than the individual/group which prepared the proposed test or experiment.

d. Occurrences reportable pursuant to the Technical Specification 6.9 and violations of Technical Specifications shall be investigated and a report prepared which evaluates the occurrence and which provides recommendations to prevent recurrence. Such report shall be approved by the ~~Station Manager~~ Director, Nuclear Plant Operations and forwarded to the Chairman of the Nuclear Safety Review Committee.

e. Individuals responsible for reviews performed in accordance with 6.5.3.1.a, 6.5.3.1.b, 6.5.3.1.c and 6.5.3.1.d shall be members of the plant staff that meet or exceed the qualification requirements of Section 4.4 of ANSI 18.1, 1971, as previously designated by the ~~Station Manager~~ Director, Nuclear Plant Operations. Each such review shall include a determination of whether or not additional, cross-disciplinary, review is necessary. If deemed necessary, such review shall be performed by the review personnel of the appropriate discipline.

f. Each review will include a determination of whether or not an unreviewed safety question is involved.

RECORDS

6.5.3.2 Records of the above activities shall be provided to the ~~Station Manager~~ Director, Nuclear Plant Operations, PSRC and/or NSRC as necessary for required reviews.

6.6 REPORTABLE OCCURRENCE ACTION

6.6.1 The following actions shall be taken for REPORTABLE OCCURRENCES:

a. The Commission shall be notified and/or a report submitted pursuant to the requirements of Specification 6.9.

b. Each REPORTABLE OCCURRENCE requiring 24 hour notification to the Commission shall be reviewed by the PSRC and submitted to the NSRC and the ~~General Manager~~ Vice President Nuclear Operations.

6.7 SAFETY LIMIT VIOLATION

6.7.1 The following actions shall be taken in the event a Safety Limit is violated:

a. The NRC Operations Center shall be notified by telephone as soon as possible and in all cases within one hour. The ~~General Manager~~ Vice President, Nuclear Operations and the NSRC shall be notified within 24 hours.

b. A Safety Limit Violation Report shall be prepared. The report shall be reviewed by the PSRC. This report shall describe (1) applicable circumstances preceding the violation, (2) effects of the violation upon facility components, systems or structures, and (3) corrective action taken to prevent recurrence.

c. The Safety Limit Violation Report shall be submitted to the Commission, the NSRC and the ~~General Manager~~ Vice President, Nuclear Operations within 14 days of the violation.

ATTACHMENT 2

RESUMES

NAME:	Dan A. Nauman
POSITION:	Director, Nuclear Services
FORMAL EDUCATION:	U. S. Coast Guard Academy B.S. Naval Engineering (with honors) - 1963 University of Pittsburgh - Post Graduate study in Metallurgy - 1969 Master of Business Administration Program - 1969-1972 University of South Carolina - Executive Development Program - 1979
REGISTRATION:	Registered professional engineer in the state of California.
EXPERIENCE:	
1976 - Present	South Carolina Electric & Gas Company
1983-Present	Director, Nuclear Services - Responsible for the technological support associated with the Company's nuclear facility. Included is managerial supervision of the functions of Nuclear Engineering, Nuclear Safety, Independent Site Engineering Review, Nuclear Licensing, Corporate Health Physics and Environmental Programs, Nuclear Security, Nuclear Fuel Management, Emergency Planning and Nuclear Education and Training. These responsibilities are discharged through four Group Managers and a staff of managers, engineers and technical specialists providing diverse technical education and experience necessary to manage and provide comprehensive support to the nuclear facility under all operational modes. The management of engineering and technical service consultants including the architect/engineer and reactor system supplier is accomplished in this organization.
1981 - 1983	Group Manager, Nuclear Services - Responsible for all nuclear quality and fuel management services associated with the nuclear facility. Included is the development and management of quality assurance, quality control and fuel management systems through the Manager, Quality Assurance; Manager, Nuclear Quality Control and the Manager, Nuclear Fuel Management. Quality activities include the development and implementation of review, surveillance audit and inspection programs in support of safe and reliable operation of the nuclear plant. Fuel management includes incore and excore activities associated with design and procurement of reload cores and systems associated with spent fuel disposition. Development and management of analytical models necessary to support neutronics calculations

1981 - 1983 (cont.)	leading to reload design and safety analysis capability while maintaining operational support of station reactor engineering is a major responsibility. Fuel Management is held accountable to assure that required reloads are available when they are needed, configured in a fashion to safely produce maximum energy content utilization at the lowest possible cost.
1978 - 1980	Group Manager of Quality Assurance and Security - In addition to the responsibilities indicated for quality assurance below, managed the development of both nuclear and conventional security systems within the Company through the Manager, Quality Assurance and the Manager, Security. Developed the organization to not only operate, but design, install and maintain diverse security systems. The operational programs ranged from those related to nuclear fuel diversion and sabotage with risk to the public; to those concerned with protection of Company personnel and property.
1976 - 1978	Manager of Quality Assurance - Responsible for all aspects of design, development, implementation, surveillance and audit of quality assurance programs within the Company. Accountable for ensuring that all of nuclear safety related structures, systems and components for nuclear power plants are designed, fabricated, erected, tested, and operated according to engineering specifications and regulatory requirements.
1972 - 1976	Gilbert Associates, Inc.
1973 - 1976	Quality Assurance Program Manager - Responsible for the development and implementation of the quality assurance system for the design, manufacture and installation of a 2775 MWt nuclear power generating plant. Included are quality aspects of specification generation, procurement control, vendor surveillance and design control audits for balance of plant systems, audits of the nuclear steam system supplier and associated vendors.
1972 - 1973	Quality Assurance Mechanical Engineer - Review and evaluation of specifications, proposals, procurement documents and drawings, performance of vendor evaluation surveys and analysis, review and evaluation of methods of manufacturing, non-destructive testing and inspection within the quality assurance program. Performance of general design and nuclear steam supply system audits.

Station with intermittent assignment to Wateree Station. Responsible for:

1. Urquhart Station - Coordination of site installation and engineering activities associated with the removal of mechanical precipitators and the installation of electrostatic precipitators on Units #1, #2, and #3.
2. Wateree Station - Various activities associated with the construction of Units #1 and #2 electrical, mechanical, and civil systems, components, and structures including field supervision, field coordination of construction activities.

ADDITIONAL COURSES:

1/78	Principles and Applications of PERT/CPM
9/79	Project Management for Engineers
9/79	Electrical Protection of Computers and Other Electronic Equipment Exposed to Power and Lightning Surges
7/80	Westinghouse Pressurized Water Reactors
11/80	Advanced Electrical Systems Design
11/80	Analog Controls
11/80	Management of Facility Expenditures in the Electric Utility Industry

Site Manager for V. C. Summer Station Unit #1. Assigned positions included:

1. The Nuclear Site Management Group Staff electrical engineer responsible for all electrical temporary power facilities, for the review of electrical design packages for V. C. Summer Station Unit #1, and for coordination of the constructor's electrical construction program with other project organizations.
2. The Electrical Manager for the constructor's Project Manager, responsible for all construction electrical activities on-site, including engineering management and field supervision, procedural program development and maintenance, electrical design package review for constructability, and coordination of construction activities with quality control and operations.

Mid 1971-Mid 1973 — Electrical Engineer, S. C. Electric & Gas Company/Construction assigned to the Electrical Check-out and Start-up Group. Responsible for the electrical check-out and testing of electrical systems and components and turnover of same to operations after initial startup. Performed these activities at Wateree Station, Unit #2 and A. M. Williams Station.

Mid 1970-Mid 1971 — Electrical Engineer, S. C. Electric & Gas Company/Construction assigned to Saluda Hydro Unit #5. Responsible for the management and coordination of the electrical installation for the hydro unit. Activities included supervision of electrical field personnel, resolution of field electrical installation problems with engineering, and coordination of generator installation and testing with the generator contractor.

1968-Mid 1970 — Electrical Engineer, S. C. Electric & Gas Company/Construction primarily assigned to Urquhart

	problem resolution, as required. The activities included engineering management of design activities of both the A/E and Nuclear Engineering staff engineers.
Mid 1978-1979	Electrical Engineer, S. C. Electric & Gas Company/Nuclear Engineering, assigned to the site Resident Engineers office responsible for the site activities of A/E electrical and I&C engineers. Activities included the resolution of construction and start-up problems. This period also included a temporary assignment of approximately eight months during 1979 as the Project Electrical Engineer for the constructor, responsible for the management of all electrical engineering activities on site and the coordination of those activities with various site organizations.
Mid 1975-Mid 1978	S. C. Electric and Gas Company Quality Control Manager for V. C. Summer Station Unit #1. The responsibilities included the development and maintenance of a quality control program for the civil, electrical, and non-ASME Mechanical construction activities at V. C. Summer Station Unit #1, utilizing both SCE&G Company personnel and subcontract personnel. The activities included quality program development and maintenance, personnel training program development and maintenance, and overall quality control inspection program coordination with site engineering, construction, and operations personnel. Responsibilities also included chairmanship of the site Field Review Board Committee for the periodic evaluation of the effectiveness of site quality activities and programs during construction.
Mid 1973-Mid 1975	Electrical Engineer, S. C. Electric & Gas Company/Construction assigned to the SCE&G Nuclear

NAME: Kenneth W. Nettles, Sr.

POSITION: Group Manager, Technical Services

FORMAL EDUCATION: 1963-67 Clemson University
B. S. Degree - Electrical Engineering

REGISTRATION: Registered professional engineer in the state of South Carolina (#5222)

EXPERIENCE:

January,1983 - Present	Senior Electrical Engineer, S. C. Electric & Gas Company/Production Engineering, assigned to the Vice President, Nuclear Operations staff. Responsibilities include various special projects as assigned by the Vice President, Nuclear Operations.
1981-1982	Senior Electrical Engineer, S. C. Electric & Gas Company/Production Engineering, assigned to the Group Manager, Construction and Production Engineering and responsible for V. C. Summer Station Unit #1 pipe analysis activities as required by IEB's 79-14 and 79-02. Responsibilities included the engineering management of all A/E activities and the activities of several contractors, including the NSSS supplier, associated with the pipe analyses, both on-site and off-site. Activities included the planning, scheduling, and coordination of design modifications required by the pipe analyses with the construction and start-up organizations.
1980	Senior Electrical Engineer, S. C. Electric & Gas Company/Nuclear Engineering, responsible for the coordination of all electrical and I&C design activities for V. C. Summer Station Unit #1 including design, procurement, and installation and testing

1967 - 1971 — Quality Control Engineer and Inspection Supervisor
Townsend Company

Responsible for planning product appraisal techniques for a high production product. Utilized existing and/or developed special inspection techniques and sampling plans; scheduled and directed an inspection staff and mechanical testing lab to accommodate plant loading while maintaining quality requirements; designed special gages or mechanical testing fixtures for specialty product designs; provided customer liaison relative to quality related requirements or complaints; and participated on the Material Review Board for in-house discrepancies.

1965 - 1967 — Engineering Assistant
Armco Steel Corporation

Responsible for layout and detail for modification and installation of fabricating equipment.

ADDITIONAL EDUCATION:

- Radiography and Complimentary NDE in the Nuclear Industry - 1973
- Management Techniques for Professional Personnel - 1973
- Elements of Quality Control Engineering - 1972
- Design of Experiments - 1971
- Applied QC Engineering - 1970
- Pre MBA Courses at Penn State University - 1976 to 1977
- Nuclear Operations Course for Managers at Westinghouse/Zion Simulator - 1982

1975 - 1976

Quality Assurance Assistant Program Manager
Gilbert/Commonwealth Companies

Responsible for supporting Quality Assurance Program Manager in directing the total Quality Assurance Program efforts for the design, procurement, and construction of South Carolina Electric & Gas Company's V. C. Summer Station, Unit 1, 900 MW. Project responsibility included coordination with client, vendor, and prospective vendor personnel to integrate quality program requirements; administrating assignments within the Quality Assurance Division; participation in quality surveys, and NSSS audits; and procurement activities from specification preparation through vendor inspection. Also responsible for administering NSSS audit and hardware witness programs.

1974 - 1975

Quality Assurance Engineer
Gilbert/Commonwealth Companies

Responsible for supporting Quality Assurance Programs including the review and evaluation of specifications, vendor proposals, procurement documents and drawings for adequate quality requirements consistent with applicable codes, regulations, and standards. Responsible for the performance of internal design control audits, vendor audits and vendor surveys.

1971 - 1974

Quality Assurance Engineer
Westinghouse Electro-Mechanical Division

Total quality assurance project responsibility for nuclear pumps and valves. Responsible for review and evaluation of purchase orders and specifications for quality requirements. Also prepared quality plans for use in the manufacture of nuclear pumps and valves. Responsible for customer and vendor liaison when quality requirements or audits were involved; and review and modification of the Quality Program Manual. Also in charge of the division's auditing program which assured compliance with quality program requirements.

1979 - 1980

Director, Surveillance Systems (QA)
South Carolina Electric & Gas Company

Responsible for surveillance and audit activities to support the QA Program for the V. C. Summer Station. Responsible for verifications that plant management and programs complied with regulatory requirements and that suppliers of equipment and services had sufficient controls to provide product that complied with purchasing documents.

1978 - 1979

Senior Engineer, Quality Assurance
South Carolina Electric & Gas Company

Responsible for supporting the QA Program for the V. C. Summer Station by performing reviews and evalutions of specifications, vendor proposals and procurement documents for adequate quality requirements consistent with applicable codes, regulations, and standards. Responsible for performance of internal audits and surveillance and vendor audits and surveys.

1977 - 1978

Quality Assurance Program Manager
Gilbert/Commonwealth Companies

Responsible for the development and technical administration of the Quality Assurance Program for the design, manufacture, construction and installation of Ohio Edison Company's Erie Nuclear Power Plant, Units 1 and 2, 1200 MW each. Scope includes quality assurance measures related to specification generation, procurement control, manufacturing and construction surveillance, manufacturer's and constructor's procedure review, design control audits for balance of plant systems, and auditing of NSSS suppliers and associated vendors. Also responsible for assisting client in interpretation of NRC and other applicable quality assurance requirements related to the utility industry.

1976 - 1977

Quality Assurnce Program Manager
Gilbert/Commonwealth Companies

Responsible for the development and implementation of the Quality Assurance System for the design, manufacture and installation of South Carolina Electric & Gas Company's V. C. Summer Station, Unit 1, 900 MW. Scope included quality assurance measures related to specification generation, procurement control, vendor inspection, design control audits for balance of plant systems, audits of the nuclear steam system supplier and associated vendors, and site surveillance and audit during construction. Assisted client in interpretation of NRC and other applicable quality assurance requirements related to the utility industry.

NAME: David R. Moore

POSITION: Group Manager, Quality Services

FORMAL EDUCATION: 1962-1971 - Carnegie Mellon University
B. S. Mechanical Engineering

REGISTRATIONS: Registered Professional Engineer (Mechanical) in the States of South Carolina and Pennsylvania.
Registered Professional Engineer (Quality) in the State of California
Member Southeastern Electric Exchange Quality Assurance Committee.

EXPERIENCE:

1983 - Present — Group Manager, Quality Services
South Carolina Electric & Gas Company

Responsible for development and implementation of Quality Assurance and Quality Control Programs for the V. C. Summer Station. These Quality functions include review, surveillance, audit, and inspection activities associated with plant operations, maintenance, and modification as well as corporate office activities associated with the plant. Responsibilities include assurance that technical specifications, license conditions and other technical requirements and regulations are complied with by responsible line management via prudent application of the Quality functions and proper apprisal of responsible management.

1980 - 1983 — Manager, Quality Assurance
South Carolina Electric & Gas Company

Responsible for development and implementation of the Quality Assurance Program for the V. C. Summer Station. Inherent in these responsibilities is to assure plant operations, maintenance, modifications and inspections are performed by line responsible organizations by using quality verification methods of review, surveillance, and audit. Responsibilities include identification of problem areas to responsible management for resolution and assuring adequate and timely corrective actions are taken.

ACCUMULATIVE WORK EXPERIENCE BEFORE FUEL LOADING:	Fossil power plant	12 months
	Nuclear experience in non power plant	84 months
	Nuclear power plant design	24 months
	Nuclear power plant start-up, testing, operation and maintenance	238 months
	Total credible power plant experience	29 years, 10 months

1961-1967	I&C Technician, and Instrument and Electrical Supervisor, CVTR Reactor Plant, Parr, S. C. Responsible for maintenance and testing of instrument and electrical plant equipment from preop through power operation and R&D test program.
1967-1969	I&C Engineer, Duke Power Company for Oconee Nuclear Station. Worked with design engineering group in writing, reviewing specifications. Selection of plant instrumentation for primary nuclear plant. Conducted I&C training program for hot and cold license groups for Oconee personnel.
1969-1973	I&C Engineer, Oconee Nuclear Station. Responsible for selection, hiring and training of plant staff for I&C Group. Responsible for I&C portion of preop, start-up, power ascension test program and maintenance of all instrumentation for units 1 and 2.
1973-1974	Technical Support Group Supt, Oconee Nuclear Station. Responsible for zero power physics and power ascension test program, unit 3. Also accountable for I&C Section, Chemistry Section, Performance Section, and Health Physics Section activities for units 1, 2, and 3.
1974-1978	Supt. of Maintenance, Oconee Nuclear Station. Responsible for all Mechanical Maintenance Section, Instrument & Electrical Section, Planning/Scheduling and Material Section activities for Station. This consisted of managing six refueling outages in adddition to numerous maintenance outages and normal operational support activities.
1978	Maintenance Supervisor, South Carolina Electric and Gas Company, V. C. Summer Nuclear Station. Responsible for all Mechanical, Instrument and Control, and Electrical Maintenance activities. Also responsible for the Materials Section of the station.
1978-	Station Manager, V. C. Summer Nuclear Station. Responsible for the plant activities during the finalization of the construction phase, startup testing, licensing process, initial fuel load, and power ascension test program. Also responsible for the staffing and organization of the plant for an operational mode.

NAME: O. S. Bradham

POSITION: Director of Plant Operations

FORMAL EDUCATION:	1947	High School, Manning, S. C.
	1951	Officer Candidate School, Fort Benning, Ga.
	1952	Advanced Infantry Officer Course, Fort Benning, Ga.
	1953	Infantry Officer Communications Course, Fort Benning, Ga.
	1960	ICS/Electrical Engineering Course
TRAINING:	1954	E. I. DuPont (SRP) Instrument and Controls Course (Pneumatic)
	1955	E. I. DuPont (SRP) Instrument and Controls Course (Electronic)
	1961	Foxboro Instrument & Controls Course, Foxboro, Mass.
	1962	Westinghouse Nuclear & Radiation Monitoring Course, East Pittsburgh, Pa.
	1968	Duke Power Company Second Level Management Course, Hickory, N. C.
	1969	Babcock & Wilcox PWR System Design Course, Lynchburg. Va.
	1970	Bailey Meter Company Reactor Protective and 721 Analog Control System Courses, Wickliffe Ohio
	1977	Duke Power Company Advanced Management Training, Hickory, N. C.
EXPERIENCE:	1953-1961	Instrument Technician, Savannah River Plant. Performed calibration and maintenance on reactor plant equipment.

ADDITIONAL TRAINING
AND EDUCATION:

Reliability in Nuclear Power Generating Stations - IEEE Standards Board - 30 hours - 1974

Reliability Engineering Conference for the Electric Power Industry - M.E. Department University of Miami - 30 hours - 1979

Concepts and Applications of Quality Circles - Trident Technical College - 20 hours - 1981

Nuclear Operations Course for Managers - Westinghouse/Zion Simulator - 32 hours - 1982

Nuclear Plant Systems and Processes for Managers and Engineers - SCE&G Nuclear Training Center - 70 hours - 1982

Westinghouse Electric Utility Engineering Conference - 80 hours - 1983

EPRI Transfer of Technology Conference - Chicago, Illinois - 20 hours - 1983

1968 - 1972	Westinghouse-Bettis Atomic Power Laboratory, West Mifflin, Pennsylvania
1970 - 1972	Senior Mechanical Engineer - Performed feasibility study and conceptual design of fueling/refueling system for an advance submarine reactor. Project Engineer on the design and procurement of several multi-million dollar items associated with the A-4-W reactor plant.
1968 - 1970	Mechanical Engineer - Design of, and specification preparation for, fueling/refueling systems required for new class aircraft carrier and associated prototype plant installation at Naval Reactors — Facility, Idaho. Included equipment design and preparation of specifications, system descriptions and servicing operational procedures.
MILITARY SERVICE:	Commissioned Officer, U. S. Coast Guard - 1963-1968
1967 - 1968	Merchant Marine Inspector during all phases of construction and testing of commercial marine vessels. Inspection consisted of general surveillance, radiographic examination of weldments, ultrasonic gaging and examination, P.T. and magnetic particle examination, materials testing and certification, welder qualification and vessel start-up and operational testing.
1963 -1967	Sea Duty Qualified engineering watch officer on steam turbine and diesel propulsion plants. Assistant engineering officer and damage control assistant. Qualified deck watch officer. Participated in two major shipyard overhauls.
ADDITIONAL TRAINING AND EDUCATION:	Damage Control/Nuclear, Biological, Chemical Warfare School - U. S. Coast Guard - 4 month school - 1965 Fire Fighting/Emergency Operations School - U. S. Coast Guard 3 week school - 1965 Merchant Marine Inspection School - U. S. Coast Guard 6 month course in ship design, construction, testing and inspection - 1967