

CHAPTER 13
CONDUCT OF OPERATIONS

TABLE OF CONTENTS

<u>Section</u>	<u>Title</u>	<u>Page</u>
13.1	ORGANIZATIONAL STRUCTURE OF APPLICANT	13.1-1
13.1.1	MANAGEMENT AND TECHNICAL SUPPORT ORGANIZATION	13.1-1
13.1.1.1	Design, Construction, and Operating Responsibilities	13.1-1
13.1.1.2	Provisions for Technical Support Functions	13.1-2
13.1.1.2.1	Engineering	13.1-3
13.1.1.2.2	Nuclear Safety Assurance	13.1-4
13.1.1.2.3	Quality Assurance	13.1-4
13.1.1.2.4	Chemistry	13.1-5
13.1.1.2.5	Radiation Protection	13.1-5
13.1.1.2.6	Fueling and Refueling Support	13.1-6
13.1.1.2.7	Training and Development	13.1-6
13.1.1.2.8	Maintenance Support	13.1-7
13.1.1.2.9	Operations Support	13.1-7
13.1.1.2.10	Fire Protection	13.1-7
13.1.1.2.11	Emergency Organization	13.1-8
13.1.1.2.12	Outside Contractual Assistance	13.1-8
13.1.1.3	Organizational Arrangement	13.1-9
13.1.1.3.1	Executive Management Organization	13.1-9
13.1.1.3.1.1	Chief Executive Officer	13.1-9
13.1.1.3.1.2	Chief Generation and Chief Nuclear Officer (CNO) ...	13.1-9
13.1.1.3.1.3	Executive In Charge of Nuclear Operations	13.1-10
13.1.1.3.1.4	Site Executive(s) In Charge of Nuclear Operations (McGuire, Catawba, Oconee)	13.1-10
13.1.1.3.1.5	Executive in Charge of Nuclear Plant Development	13.1-10
13.1.1.3.1.6	Executive in Charge of Major Projects	13.1-10
13.1.1.3.1.7	Executive in Charge of Nuclear Corporate	13.1-10
13.1.1.3.1.8	Functional Manager In Charge of Employee Concerns	13.1-11
13.1.1.3.1.9	Functional Manager in Charge of Centers of Excellence	13.1-11
13.1.1.3.1.10	Functional Manager In Charge of Nuclear Engineering	13.1-11
13.1.1.3.1.11	Functional Manager In Charge of Plant Support	13.1-11
13.1.1.3.1.12	Functional Manager in Charge of Independent Nuclear Oversight (INOS)	13.1-11
13.1.1.3.2	Site Support Organization	13.1-12
13.1.1.3.2.1	Manager In Charge of Engineering	13.1-12

TABLE OF CONTENTS (Continued)

<u>Section</u>	<u>Title</u>	<u>Page</u>
13.1.1.3.2.1.1	Functional Manager In Charge of System Engineering	13.1-12
13.1.1.3.2.1.2	Functional Manager In Charge of Design Engineering	13.1-12
13.1.1.3.2.1.3	Functional Manager In Charge of Engineering Programs	13.1-13
13.1.1.3.2.2	Manager In Charge of Nuclear Safety Assurance ...	13.1-13
13.1.1.3.2.2.1	Functional Manager In Charge of Plant Licensing and Regulatory Compliance.....	13.1-13
13.1.1.3.2.2.2	Functional Manager In Charge of Corrective Actions and Performance Improvement.....	13.1-14
13.1.1.3.2.2.3	Functional Manager In Charge of Emergency Preparedness.....	13.1-14
13.1.1.3.2.2.4	Functional Manager In Charge of Security	13.1-14
13.1.1.3.2.3	Manager In Charge of Site Business	13.1-14
13.1.1.3.2.4	Functional Manager in Charge of Environment, Safety, and Health	13.1-15
13.1.1.3.2.5	Manager In Charge of Training and Development...	13.1-15
13.1.1.3.2.6	Manager in Charge of Site Services	13.1-15
13.1.1.4	Qualifications of Technical Support Personnel	13.1-15
13.1.2	OPERATING ORGANIZATION	13.1-16
13.1.2.1	Plant Organization	13.1-16
13.1.2.1.1	Plant Manager	13.1-17
13.1.2.1.1.1	Manager In Charge of Maintenance	13.1-18
13.1.2.1.1.2	Maintenance Discipline Functional Managers	13.1-18
13.1.2.1.1.3	Maintenance Discipline Supervisors	13.1-19
13.1.2.1.1.4	Manager in Charge of Work Control	13.1-19
13.1.2.1.1.5	Functional Manager In Charge of Radiation Protection	13.1-19
13.1.2.1.1.6	Supervisor In Charge of Radiation Protection.....	13.1-20
13.1.2.1.1.7	Radiation Protection Technicians	13.1-20
13.1.2.1.1.8	Functional Manager In Charge of Chemistry	13.1-21
13.1.2.1.1.9	Supervisor of Radwaste Operations	13.1-21
13.1.2.1.2	Operations Department	13.1-21
13.1.2.1.2.1	Manager In Charge of Operations	13.1-22
13.1.2.1.2.2	Assistant Manager In Charge of Operations.....	13.1-22
13.1.2.1.2.3	Assistant Manager In Charge of Operations Support	13.1-23
13.1.2.1.2.4	Manager in Charge On-Shift	13.1-23
13.1.2.1.2.5	Supervisor in Charge On-Shift	13.1-24
13.1.2.1.2.6	Reactor Operator	13.1-24
13.1.2.1.2.7	Non-Licensed Operator.....	13.1-25
13.1.2.1.2.8	Shift Technical Advisor	13.1-25
13.1.2.1.2.9	Engineer in Charge of Fire Protection	13.1-26
13.1.2.1.3	Conduct of Operations.....	13.1-27

TABLE OF CONTENTS (Continued)

<u>Section</u>	<u>Title</u>	<u>Page</u>
13.1.2.1.4	Operating Shift Crews.....	13.1-27
13.1.2.1.5	Fire Brigade	13.1-28
13.1.3	QUALIFICATIONS OF NUCLEAR PLANT PERSONNEL.....	13.1-28
13.1.3.1	Qualification Requirements.....	13.1-28
13.1.3.2	Qualifications of Plant Personnel	13.1-29
13.1.4	COMBINED LICENSE INFORMATION ITEM	13.1-29
13.1.5	REFERENCES	13.1-29
13.2	TRAINING	13.2-1
13.2.1	COMBINED LICENSE INFORMATION ITEM	13.2-1
13.2.2	REFERENCES	13.2-1
13.3	EMERGENCY PLANNING	13.3-1
13.3.1	COMBINED LICENSE INFORMATION ITEM	13.3-1
13.4	OPERATIONAL PROGRAMS	13.4-1
13.4.1	COMBINED LICENSE INFORMATION ITEM	13.4-1
13.4.2	REFERENCES	13.4-1
13.5	PLANT PROCEDURES.....	13.5-1
13.5.1	ADMINISTRATIVE PROCEDURES	13.5-1
13.5.2	OPERATING AND MAINTENANCE PROCEDURES	13.5-3
13.5.2.1	Operating and Emergency Operating Procedures.....	13.5-3
13.5.2.2	Maintenance and Other Operating Procedures	13.5-3
13.5.2.2.1	Plant Radiation Protection Procedures.....	13.5-3
13.5.2.2.2	Emergency Preparedness Procedures.....	13.5-4
13.5.2.2.3	Instrument Calibration and Test Procedures	13.5-4
13.5.2.2.4	Chemistry Procedures	13.5-4
13.5.2.2.5	Radioactive Waste Management Procedures	13.5-4
13.5.2.2.6	Maintenance, Inspection, Surveillance, and Modification Procedures	13.5-4
13.5.2.2.6.1	Maintenance Procedures	13.5-4
13.5.2.2.6.2	Inspection Procedures	13.5-5
13.5.2.2.6.3	Modification Procedures	13.5-5
13.5.2.2.7	Material Control Procedures	13.5-5
13.5.2.2.8	Security Procedures	13.5-5
13.5.2.2.9	Special Nuclear Material (SNM) Material Control and Accounting Procedures.....	13.5-6
13.5.3	COMBINED LICENSE INFORMATION ITEM	13.5-6
13.5.4	REFERENCES	13.5-6

TABLE OF CONTENTS (Continued)

<u>Section</u>	<u>Title</u>	<u>Page</u>
13.6	SECURITY	13.6-1
13.6.1	COMBINED LICENSE INFORMATION ITEMS	13.6-1
13.6.2	REFERENCES	13.6-1
13.7	FITNESS FOR DUTY	13.7-1
13.7.1	REFERENCES	13.7-1
APP. 13AA	DESIGN AND CONSTRUCTION	13AA-1
13AA.1.1.1.1	Design and Construction Activities	13AA-1
13AA.1.1.1.1.1	Principal Site-Related Engineering Work	13AA-1
13AA.1.1.1.1.2	Design of Plant and Ancillary Systems	13AA-2
13AA.1.1.1.1.3	Review and Approval of Plant Design Features	13AA-3
13AA.1.1.1.1.4	Site Layout With Respect to Environmental Effects and Security Provisions	13AA-3
13AA.1.1.1.1.5	Development of Safety Analysis Reports.....	13AA-3
13AA.1.1.1.1.6	Review and Approval of Material and Component Specifications	13AA-3
13AA.1.1.1.1.7	Procurement of Materials and Equipment.....	13AA-3
13AA.1.1.1.1.8	Management and Review of Construction Activities	13AA-4
13AA.1.1.1.2	Preoperational Activities	13AA-4
13AA.1.1.1.2.1	Development of Human Factors Engineering Design Objectives and Design Phase Review of Proposed Control Room Layouts.....	13AA-5
13AA.1.1.1.2.2	Preoperational Testing Organization	13AA-5
13AA.1.1.1.3	Development and Implementation of Staff Recruiting and Training Programs	13AA-5
13AA.1.1.1.4	Development of Plant Maintenance Programs	13AA-6
13AA.1.1.1.5	Qualification	13AA-6

LIST OF TABLES

<u>Number</u>	<u>Title</u>
13.1-201	Generic Position / Site Specific Position Cross Reference
13.1-202	Minimum On-Duty Operations Shift Organization for Two-Unit Plant
13.4-201	Operational Programs Required by NRC Regulations
13.5-201	Pre-COL Phase Administrative Programs and Procedures

LIST OF FIGURES

<u>Number</u>	<u>Title</u>
13.1-201	Plant Management Organization
13.1-202	Shift Operations Organization
13.1-203	Nuclear Executive Organization
13.1-204	Duke Energy Corporate
13AA-201	Construction Management Organization
13AA-202	Hiring Schedule for Plant Staff

CHAPTER 13**CONDUCT OF OPERATIONS****13.1 ORGANIZATIONAL STRUCTURE OF APPLICANT**

This **section** of the referenced DCD is incorporated by reference with the following departures and/or supplements.

STD DEP 1.1-1 **DCD Subsection 13.1.1**, Combined License Information, is renumbered in this FSAR section to 13.1.4.

WLS COL 13.1-1 This section describes organizational positions of a nuclear power station and owner/applicant corporations and associated functions and responsibilities. The position titles used in the text are generic and describe the function of the position. **Table 13.1-201**, Generic Position/Site Specific Position Cross Reference, provides a cross-reference to identify the corresponding site-specific position titles.

13.1.1 MANAGEMENT AND TECHNICAL SUPPORT ORGANIZATION

Duke Energy has over 40 years of experience in the design, construction, and operation of nuclear generating stations. Duke Energy operates multiple nuclear units on three sites: McGuire Units 1 and 2, Catawba Units 1 and 2, and Oconee Units 1, 2, and 3.

13.1.1.1 Design, Construction, and Operating Responsibilities

The chief executive officer has overall responsibility for functions involving design, construction and operation. Line responsibilities for those functions are assigned to the chief generation and chief nuclear officer. The chief generation and chief nuclear officer maintains control of nuclear plant activities through the executives in charge of nuclear support and nuclear operations. The first priority and responsibility of each member of the nuclear staff throughout the life of the plant is nuclear safety. Decision making for station activities is performed in a conservative manner with expectations of this core value regularly communicated to appropriate personnel by management interface, training, and station directives.

Lines of authority, decision making, and communication are clearly and unambiguously established to enable the understanding of the various project members, including contractors, that utility management is in charge and directs the project.

Key executive and corporate management positions, functions, and responsibilities are discussed in **Subsection 13.1.1.3.1**. Corporate and construction management organizations are shown in **Figures 13.1-203** and

13AA-201. The management and technical support organization for design, construction, and preoperational activities is addressed in **Appendix 13AA**.

13.1.1.2 Provisions for Technical Support Functions

Before beginning preoperational testing, the site executive in charge of plant management establishes the organization of managers, functional managers, supervisors, and staff sufficient to perform required functions for support of safe plant operation. These functions include the following:

- Nuclear, mechanical, structural, electrical, thermal-hydraulic, metallurgical and material, and instrumentation and controls engineering
- Safety review
- Quality assurance, audit and surveillance
- Plant chemistry
- Radiation protection and environmental support
- Fueling and refueling operations support
- Training
- Maintenance support
- Operations support
- Fire protection
- Emergency planning organization
- Outside contractual assistance

In the event that station personnel are not qualified to deal with a specific problem, the services of qualified individuals from other functions within the company or an outside consultant are engaged. For example, major contractors, such as the reactor technology vendor or turbine generator manufacturer, provide technical support when equipment modifications or special maintenance problems are considered. Special studies, such as environmental monitoring, may be contracted to qualified consultants.

Figure 13.1-201 illustrates the management and technical support organizations supporting operation of the plant. See **Section 13.1.2** for description of responsibilities and authorities of management positions for organizations providing technical support. **Table 13.1-201** shows the estimated number of positions required for each function.

Multiple layers of protection are provided to preserve unit integrity including organization. Organizationally, operators and other shift members are assigned to a specific unit. In addition, station procedures and programs provide operating staff with methods to minimize human error including tagging programs, procedure adherence requirements, and training.

13.1.1.2.1 Engineering

The onsite engineering department consists of system engineering, design engineering, and engineering programs. These groups are responsible for performing the classical design activities as well as providing engineering expertise in other areas. They are also responsible for probabilistic safety assessment and other safety issues, plant system reliability analysis, performance and technical support, core management and periodic reactor testing and for programs, such as inservice inspection/inservice testing (ISI/IST), fire protection, snubbers, and valves.

The onsite engineering groups (systems, design, and programs) have functional managers who report to the manager in charge of engineering. Nuclear fuels engineering and safety and engineering analysis are located offsite and report to the executive in charge of nuclear engineering.

The onsite engineering department is responsible for:

- Support of plant operations in the engineering areas of mechanical, structural, electrical, thermal-hydraulic, metallurgy and materials, electronic, instrument and control, and fire protection. Priorities for support activities are established based on input from the plant manager with emphasis on issues affecting safe operation of the plant.
- Engineering programs.
- Support of procurement, chemical and environmental analysis and maintenance activities in the plant as requested by the plant manager.
- Performance of design engineering of plant modifications.
- Maintaining the design basis by updating the record copy of design documents as necessary to reflect the actual as-built configuration of the plant.
- Accident and transient analyses.
- Human Factors Engineering design process

Reactor engineering, part of system engineering, provides technical assistance in the areas of core design, core operations, core thermal limits, and core thermal hydraulics.

Engineering work may be contracted to and performed by outside companies in accordance with the quality assurance (QA) program.

Engineering resources are shared between units. A single management organization oversees the engineering work associated with the station units. Physical separation of units helps to minimize wrong-unit activities.

13.1.1.2.2 Nuclear Safety Assurance

Plant licensing, regulatory compliance, corrective actions and performance improvement, security, Environment Safety and Health (ES&H), and emergency preparedness each have a functional manager who reports to and receives direction from the manager in charge of nuclear safety assurance.

The nuclear safety assurance (NSA) organization, through the licensing department, is the normal contact point for the station with the NRC in matters concerning licensing and is responsible for addressing NRC bulletins and orders. Typical duties include;

- Developing licensee event reports (LERs) and responding to notices of violations.
- Writing/submitting operating license and technical specification amendments and updating the FSAR.
- Tracking commitments and answering generic letters.
- Analyzing operating experience data and monitoring industry issues.
- Preparing station for special NRC inspections, interfacing with NRC inspectors, and interpreting NRC regulations.
- Maintaining the licensing basis.

The department also administers the corrective action program, the security program, the station's emergency preparedness program, and programs to protect the environment, employee health, and ES&H.

Personnel resources of the NSA organization are shared between units. A single management organization oversees the NSA organization for the station units.

Oversight of safety review of station programs, procedures, and activities is performed by a plant safety review committee, a corporate safety review committee, and the NSA organization. Review and audit activities are addressed in [Chapter 17](#).

13.1.1.2.3 Quality Assurance

Safety related activities associated with the operation of the plant are governed by QA direction established in [Chapter 17](#) of the FSAR and the Quality Assurance

Program Description (QAPD). The requirements and commitments contained in the QAPD apply to activities associated with structures, systems, and components which are safety related and are mandatory and must be implemented, enforced, and adhered to by individuals and organizations. QA requirements are implemented through the use of approved procedures, policies, directives, instructions, or other documents which provide written guidance for the control of quality related activities and provide for the development of documentation to provide objective evidence of compliance. QA is a corporate function under the manager in charge of nuclear QA oversight and includes:

- General quality assurance indoctrination and training for the nuclear station personnel.
- Maintenance of the QAPD.
- Coordinating the development of audit schedules.
- Audit, surveillance, and evaluation of nuclear division suppliers.
- Quality control (QC) inspection/testing activities.

QA/QC management is independent of the station management line organization. Onsite personnel resources of the QA/QC organization are shared between units.

13.1.1.2.4 Chemistry

A chemistry department is established to monitor and control the chemistry of various plant systems such that corrosion of components and piping is minimized and radiation from corrosion byproducts is kept to levels that allow operations and maintenance with radiation doses as low as reasonably achievable.

The functional manager in charge of chemistry is responsible to the plant manager for maintaining chemistry programs and for monitoring and maintaining the water chemistry of plant systems. The chemistry organization is also responsible for operating radwaste process equipment. The staff of the chemistry department consists of laboratory technicians, support personnel, and supervisors who report to the functional manager in charge of chemistry.

Personnel resources of the chemistry organization are shared between units. A single management organization oversees the chemistry group for the station units.

13.1.1.2.5 Radiation Protection

A radiation protection (RP) department is established to protect the health and safety of the surrounding public and personnel working at the plant. The RP program is described in [Chapter 12](#) of the FSAR. The program includes:

- Respiratory Protection
- Personnel Dosimetry
- Bioassay
- Survey Instrument Calibration and Maintenance
- Radioactive Source Control
- Effluents and Environmental Monitoring and Assessment
- Radioactive Waste Shipping
- Radiation Work Permits
- Job Coverage
- Radiation Monitoring and Surveys

The RP department is staffed by radiation protection technicians, support personnel, and supervisors who report to the functional manager in charge of radiation protection. To provide sufficient organizational freedom from operating pressures, the manager in charge of radiation protection reports directly to the plant manager.

Personnel resources of the RP organization are shared between units. A single management organization oversees the RP group for both units.

13.1.1.2.6 Fueling and Refueling Support

The function of fueling and refueling is performed by a combination of personnel from various departments including operations, maintenance, radiation protection, engineering, and reactor technology vendor or other contractor staff. Initial fueling and refueling operations are a function of the work control organization. The manager in charge of work control is responsible for planning and scheduling outages and for refueling support and reports to the plant manager.

Personnel resources of the work control organization are shared between units. A single management organization oversees the work control associated with both units.

13.1.1.2.7 Training and Development

The training department is responsible for providing training programs that are established, maintained, and implemented in accordance with applicable plant administrative directives, regulatory requirements, and company operating policies so that station personnel can meet the performance requirements of their jobs in operations, maintenance, technical support, and emergency response. The objective of training programs is to provide qualified personnel to operate and

maintain the plant in a safe and efficient manner and to provide compliance with the license, technical specifications, and applicable regulations. The training department's responsibilities encompass operator initial license training, requalification training, and plant staff training as well as the plant access training (general employee training) and radworker training. The functional manager of training and development is independent of the operating line organization to provide for independence from operating pressures. Nuclear plant training programs are described in [Section 13.2](#) of the FSAR.

Personnel resources of the training department are shared between units. A single management organization provides oversight of station training activities.

13.1.1.2.8 Maintenance Support

In support of maintenance activities, planners, schedulers, and parts specialists prepare work packages, acquire proper parts, and develop procedures that provide for the successful completion of maintenance tasks. Maintenance tasks are integrated into the station schedule for evaluation of operating or safe shutdown risk elements and to provide for efficient and safe performance. Personnel of the maintenance support organization receive direction from the manager in charge of work control who reports to the plant manager.

Personnel of the maintenance support organization are shared between units. A single management organization oversees the function of maintenance support for the station units.

13.1.1.2.9 Operations Support

The operations support function is provided under the direction of the manager in charge of operations. Operations support includes the following programs:

- Operations procedures
- Operations surveillances
- Equipment tagging

WLS COL 9.5-1 13.1.1.2.10 Fire Protection

The station is committed to maintaining a fire protection program as described in [DCD Subsection 9.5.1](#). The site executive in charge of plant management is responsible for the fire protection program. Assigning the responsibilities at that level provides the authority to obtain the resources and assistance necessary to meet fire protection program objectives, resolve conflicts, and delegate appropriate responsibility to fire protection staff. The relationship of the site executive in charge of plant management to other staff personnel with fire protection responsibilities is shown on [Figure 13.1-201](#). Fire protection for the facility is organized and administered by the engineer in charge of fire protection.

The site executive in charge of plant management, through the engineer in charge of fire protection, is responsible for development and implementation of the fire protection program including development of fire protection procedures and inspections of fire protection systems and functions. Fire brigade training, drills, and practice are organized by the functional manager in charge of emergency preparedness in consultation with the engineer in charge of fire protection. Fire protection trainers are qualified to perform classroom instruction or practical training as discussed in **FSAR Subsection 9.5.1.8.2.2**. The engineer in charge of fire protection reports to the site executive in charge of plant management through engineering department management and coordinates operations related fire protection program activities with the manager in charge of operations. Functional descriptions of position responsibilities are included in appropriate procedures. Station personnel are responsible for adhering to the fire protection/prevention requirements detailed in **DCD Subsection 9.5.1**. The site executive of the operating unit(s) has the lead responsibility for the overall site fire protection during construction of new units.

Personnel resources that implement the fire protection program are shared between units. A single management organization oversees the fire protection program for the station units.

13.1.1.2.11 Emergency Organization

WLS COL 13.1-1 The emergency organization is a matrixed organization composed of personnel who have the experience, training, knowledge, and ability necessary to implement actions to protect the public in the case of emergencies. Managers and station personnel assigned positions in the emergency organization are responsible for supporting the emergency preparedness organization and emergency plan as required. The staff members of the emergency planning organization orchestrate drills and training to maintain qualification of personnel and develop procedures to guide and direct the emergency organization during an emergency. The functional manager in charge of emergency preparedness reports to the manager in charge of nuclear safety assurance. The site emergency plan organization is described in the Emergency Plan.

Resources of the emergency planning group are shared between units. A single management organization oversees the emergency planning group for the station units.

13.1.1.2.12 Outside Contractual Assistance

Contract assistance with vendors and suppliers of services not available from organizations established as part of utility staff is provided by the materials, purchasing, and contracts organization. Personnel in the materials, purchasing, and contracts organization perform the necessary functions to contract vendors of special services to perform tasks for which utility staff does not have the experience or equipment required. The functional manager in charge of materials,

purchasing, and contracts reports to the senior executive chief procurement officer.

Resources of the materials, purchasing, and contracts organization are shared between units. A single management organization oversees the materials, purchasing, and contracts group for the station units.

13.1.1.3 Organizational Arrangement

13.1.1.3.1 Executive Management Organization

Executive management is ultimately responsible for execution of activities and functions for the nuclear generating plants owned by the utility. Executive management establishes expectations such that a high level of quality, safety, and efficiency is achieved in aspects of plant operations and support activities through an effective management control system and an organization selected and trained to meet the above objectives. The nuclear executive organization is shown in [Figure 13.1-203](#). A high-level chart of the Duke Energy corporate organization showing the relationship of the nuclear division to the rest of the corporate organization is illustrated in [Figure 13.1-204](#). Executives and managers with direct line of authority for activities associated with operation of the plant are shown in [Figure 13.1-201](#). Responsibilities of those executives and managers are specified below.

13.1.1.3.1.1 Chief Executive Officer

The chief executive officer (CEO) has the ultimate responsibility for the safe and reliable operation of each nuclear station owned and/or operated by the utility. The CEO is responsible for the overall direction and management of the corporation, and the execution of the company policies, activities, and affairs. The CEO is assisted by the chief generation and chief nuclear officer, and other executive staff in the nuclear division of the corporation.

13.1.1.3.1.2 Chief Generation and Chief Nuclear Officer (CNO)

The group executive in charge of nuclear generation is the chief generation and chief nuclear officer. The chief generation and chief nuclear officer reports to the chief executive officer. The chief generation and chief nuclear officer has responsibility for overall plant nuclear safety and takes the measures needed to provide acceptable performance of the staff in operating, maintaining, and providing technical support to the plant. The chief generation and chief nuclear officer delegates authority and responsibility for the operation and support of the sites through the executive in charge of nuclear operations to the site executives in charge of nuclear operations. The executive in charge of office of nuclear development reports to the chief generation and chief nuclear officer. It is the responsibility of the chief generation and chief nuclear officer to provide guidance and direction such that safety-related activities, including engineering, construction, operations, maintenance, and planning are performed following the guidelines of the QA program. The Independent Nuclear Oversight Committee reports directly to the chief generation and chief nuclear officer. Also reporting to

the chief generation and chief nuclear officer are executives for the areas regulated fleet generation, and generation support and procurement supply chain.

13.1.1.3.1.3 Executive In Charge of Nuclear Operations

The executive in charge of nuclear operations is responsible for oversight of operations at each of the stations. The site executives in charge of nuclear operations for the McGuire, Catawba, and Oconee operating plants report to the executive in charge of nuclear operations. The executive in charge of nuclear operations reports to the chief generation and chief nuclear officer.

13.1.1.3.1.4 Site Executive(s) In Charge of Nuclear Operations (McGuire, Catawba, Oconee)

The site executive(s) in charge of nuclear operations reports to the executive in charge of nuclear operations. The site executive in charge of nuclear operations is directly responsible for management and direction of activities associated with the efficient, safe, and reliable operation of the nuclear station, except for those functions delegated to the executive in charge of nuclear corporate. The site executive in charge of nuclear operations is assisted in management and technical support activities by the plant manager, and managers in charge of nuclear safety assurance, engineering, training, site services, and site business. The site executive in charge of nuclear operations is responsible for the site fire protection program through the engineer in charge of fire protection and engineering management.

13.1.1.3.1.5 Executive in Charge of Nuclear Plant Development

The executive in charge of nuclear plant development is responsible for development of the licensing actions needed in support of new nuclear site development. Responsibilities also include engineering oversight of contractors, site layout, staffing, and program development. The executive in charge of nuclear plant development is assisted by a support staff and reports directly to the chief generation and chief nuclear officer.

13.1.1.3.1.6 Executive in Charge of Major Projects

The executive in charge of major projects provides project management, engineering, and vendor oversight for selected large projects at the nuclear sites. Providing oversight for these significant projects provides more focus and continuity for upgrades and eliminates distractions for site management. The executive in charge of major projects reports to the chief generation and chief nuclear officer.

13.1.1.3.1.7 Executive in Charge of Nuclear Corporate

The executive in charge of nuclear corporate has the responsibility for support functions including licensing, quality assurance and oversight, technical services, emergency planning, performance improvement, and workforce in-processing. The independent nuclear oversight manager, the centers of excellence manager,

the nuclear engineering manager, the plant support manager, and the employee concerns manager report to the executive in charge of nuclear corporate. The executive in charge of nuclear corporate reports to the chief generation and chief nuclear officer.

13.1.1.3.1.8 Functional Manager In Charge of Employee Concerns

The functional manager in charge of employee concerns investigates concerns identified through the employee concerns programs to determine their validity and initiate corrective actions as appropriate. Employee concerns also promotes the safety conscious work environment (SCWE) program and is sensitive to SCWE concerns during investigations performed.

13.1.1.3.1.9 Functional Manager in Charge of Centers of Excellence

The functional manager in charge of the centers of excellence provides governance and oversight of the nuclear fleet and our fleet excellence model, promoting fleet consistency and industry best practices among the nuclear plants.

13.1.1.3.1.10 Functional Manager In Charge of Nuclear Engineering

The functional manager in charge of nuclear engineering provides support to the stations in severe accident analysis, safety analysis, nuclear design, core mechanical and thermal hydraulic analysis, fuel management, switchyard support, metallurgical laboratory services, material aging program, steam generator maintenance, ISI program support, QC inspector training and certification, procurement engineering, welding and radiological engineering.

13.1.1.3.1.11 Functional Manager In Charge of Plant Support

The functional manager in charge of plant support provides support to the stations for rotating equipment, reactor services (for fuel handling, head activities and dry fuel storage), safety assurance (NRC interface, licensing and regulatory compliance group, EP team, fleet security team, and fleet performance improvement team), scientific services (fleet RP staff organization, fleet chemistry staff organization, TLD laboratory, standards lab and radiological/environmental lab), centralized training and in-processing, and operations/work control.

13.1.1.3.1.12 Functional Manager in Charge of Independent Nuclear Oversight (INOS)

The functional manager in charge of independent nuclear oversight (INOS) provides support and leadership to the general office and stations with QA program audits, performance assessment, procurement quality, supplier verification, and QA, QC, NDE, and in-service inspection (ISI), as applicable. In addition, INOS provides an advisory function to senior management through the NSRB. The manager, INOS has the authority and organizational freedom to: Identify quality problems, initiate, recommend or provide solutions to quality problems through designated channels, verify the implementation of solutions to quality problems, and ensure cost and schedule do not influence decision making

involving quality. The manager, INOS has unfettered access to the chief nuclear officer to communicate QA program concerns and issues.

The manager, INOS is delegated primary ownership of the department QA program description and is responsible for day-to-day administration of the program and resolution of QA issues. If significant quality problems are identified by INOS personnel, the manager, INOS or designee, has the responsibility and authority to stop work pending satisfactory resolution of the identified problem.

13.1.1.3.2 Site Support Organization

13.1.1.3.2.1 Manager In Charge of Engineering

The manager in charge of engineering reports to the site executive in charge of plant management. The manager in charge of engineering is responsible for engineering activities related to the operation or maintenance of the plant and design change implementation support activities and other functions described in [Section 13.1.1.2.1](#).

The manager in charge of engineering directs functional managers responsible for system engineering, design engineering, and engineering programs.

13.1.1.3.2.1.1 Functional Manager In Charge of System Engineering

The functional manager in charge of system engineering reports to the manager in charge of engineering and supervises a technical staff of engineers and other engineering specialists and coordinates their work with that of other groups. System engineering staff includes reactor engineering as discussed in [Section 13.1.1.2.1](#). The functional manager in charge of system engineering is responsible for providing direction and guidance to system engineers as follows:

- Monitoring the efficiency and proper operation of balance of plant and reactor systems.
- Planning programs for improving equipment performance, reliability, or work practices.
- Conducting operational tests and analyzing the results.
- Identification of plant spare parts for cognizant systems.

13.1.1.3.2.1.2 Functional Manager In Charge of Design Engineering

The functional manager in charge of design engineering reports to the manager in charge of engineering and is responsible for:

- Resolution of design issues.
- Onsite development of design related change packages and plant modifications.

- Implementation of effective project management methods and procedures, including cost controls, for implementation of modifications and construction activities.
- Management of contractors who may perform modification or construction activities.
- Maintaining configuration control program.

13.1.1.3.2.1.3 Functional Manager In Charge of Engineering Programs

The functional manager in charge of engineering programs reports to the manager in charge of engineering and is responsible for programs such as:

- Valve engineering
- Maintenance rule tracking and trending
- Fire protection
- Piping erosion/corrosion
- Inservice testing
- Equipment reliability engineering.

13.1.1.3.2.2 Manager In Charge of Nuclear Safety Assurance

The manager in charge of nuclear safety assurance is responsible for those functions described in [Subsection 13.1.1.2.2](#) and reports to the site executive in charge of plant management. The responsibilities of the manager in charge of nuclear safety assurance are fulfilled through the functional managers in charge of plant licensing and regulatory compliance, corrective actions and performance improvement, security, emergency preparedness, and environmental safety and health.

13.1.1.3.2.2.1 Functional Manager In Charge of Plant Licensing and Regulatory Compliance

The responsibility of the functional manager in charge of plant licensing and regulatory compliance is to provide a coordinated focus for interface with the NRC and technical direction and administrative guidance for the licensing staff for those activities listed in [Subsection 13.1.1.2.2](#). The functional manager in charge of plant licensing and regulatory compliance reports directly to the manager in charge of nuclear safety assurance.

13.1.1.3.2.2.2 Functional Manager In Charge of Corrective Actions and Performance Improvement

The responsibilities of the functional manager in charge of corrective actions and performance improvement includes establishing processes and procedures to facilitate identification and correction of conditions adverse to quality and implement corrective actions. The functional manager in charge of corrective actions and performance improvement reports directly to the manager in charge of nuclear safety assurance.

13.1.1.3.2.2.3 Functional Manager In Charge of Emergency Preparedness

The functional manager in charge of emergency preparedness is responsible for:

- Coordinating and implementing the plant emergency response plan with state and local emergency plans.
- Developing, planning, and executing emergency drills and exercises including coordination of fire brigade training exercises with the engineer in charge of fire protection.
- Emergency action level development.
- NRC reporting associated with 10CFR50.54(q).

The functional manager in charge of emergency preparedness reports directly to the manager in charge of nuclear safety assurance.

13.1.1.3.2.2.4 Functional Manager In Charge of Security

The functional manager in charge of security is responsible for:

- Implementation and enforcement of security directives, procedures and instructions received from appropriate authorities.
- Day-to-day supervision of the security guard force.
- Administration of the security program.

The functional manager in charge of security reports directly to the manager in charge of nuclear safety assurance.

13.1.1.3.2.3 Manager In Charge of Site Business

The manager in charge of site business is responsible for planning, scheduling, and implementing special projects and financial programs, and for providing oversight of accounting and payroll processes for the site. The manager in charge of site business reports to the site executive in charge of plant management.

13.1.1.3.2.4 Functional Manager in Charge of Environment, Safety, and Health

The functional manager in charge of environment, safety, and health is responsible for site safety programs and reports to the manager in charge of nuclear safety assurance.

WLS COL
18.10-1

13.1.1.3.2.5 Manager In Charge of Training and Development

The manager in charge of training and development is responsible for training programs at the site required for the safe and proper operation and maintenance of the plant including:

- Operations training programs
- Plant staff training programs
- Plant access training
- Emergency plan training
- Radiation worker training

The manager in charge of training may seek assistance from other departments within the company or outside specialists, such as educators and manufacturers. The manager in charge of training supervises a staff of training supervisors who coordinate the development, preparation and presentation of training programs for nuclear plant personnel and reports to the site executive in charge of plant management.

WLS COL 13.1-1 13.1.1.3.2.6 Manager in Charge of Site Services

The manager in charge of site services reports to the executive in charge of plant management. Manager in charge of site services responsibilities include managing warehouses and tools, site facilities, and equipment distribution.

13.1.1.4 Qualifications of Technical Support Personnel

WLS COL 18.6-1 The qualifications of managers and supervisors of the technical support organization meet the qualification requirements in education and experience for those described in ANSI/ANS-3.1-1993 ([Reference 201](#)) as endorsed and amended by Regulatory Guide 1.8. For positions that do not have a cross-reference section in ANSI/ANS-3.1 the most comparable section of ANSI/ANS-3.1 is used for guidance in establishing experience and education requirements. The

qualification and experience requirements of headquarters staff is established in corporate policy and procedure manuals.

WLS COL 13.1-1 13.1.2 OPERATING ORGANIZATION

13.1.2.1 Plant Organization

The plant management, technical support, and plant operating organizations are shown in [Figure 13.1-201](#). The on-shift operating organization is presented in [Figure 13.1-202](#) which shows those positions requiring NRC licenses. Additional personnel are required to augment normal staff during outages.

Nuclear plant employees are responsible for reporting problems with plant equipment and facilities. They are required to identify and document equipment problems in accordance with the QA program. QA program requirements, as they apply to the operating organization, are described in FSAR [Chapter 17](#). The guidelines of Regulatory Guide 1.33, for the operating organization, onsite review, and rules of practice are implemented at the site via administrative procedure or standing order and include:

- Establishment of a quality assurance program for the operational phase.
- Preparation of procedures necessary to carry out an effective quality assurance program. See FSAR [Section 13.5](#) for description of the station procedure program.
- A program for review and audit of activities affecting plant safety. See FSAR [Section 17.5](#) for description of station review and audit programs.
- Programs and procedures for rules of practice as described in Section 5.2 of ANSI/ANS-3.2-1988 ([Reference 203](#)).

Managers and supervisors within the plant operating organization are responsible for establishing goals and expectations for their organization and to reinforce behaviors that promote radiation protection. Specifically, managers and supervisors are responsible for the following, as applicable to their position within the plant organization:

- Interface directly with radiation protection staff to integrate radiation protection measures into plant procedures and design documents and into the planning, scheduling, conduct, and assessment of operations and work.
- Notify radiation protection personnel promptly when radiation protection problems occur or are identified, take corrective actions, and resolve deficiencies associated with operations, procedures, systems, equipment, and work practices.

- Train site personnel on radiation protection, and provide periodic retraining, in accordance with 10 CFR Part 19 so that they are properly instructed and briefed for entry into restricted areas.
- Periodically observe and correct, as necessary, radiation worker practices.
- Support radiation protection management in implementing the radiation protection program.
- Maintain exposures to site personnel ALARA.

13.1.2.1.1 Plant Manager

The plant manager reports to the site executive in charge of plant management, is responsible for overall safe operation of the plant, and has control over those onsite activities necessary for safe operation and maintenance of the plant including the following:

- Operations
- Maintenance and modification
- Chemistry and radiochemistry
- Outage management
- Scheduling and activity coordination

Additionally, the plant manager has overall responsibility for occupational and public radiation safety. Radiation protection responsibilities of the plant manager are consistent with the guidance in Regulatory Guide 8.8 and Regulatory Guide 8.10 including the following:

- Provide management radiation protection policy throughout the plant organization.
- Provide an overall commitment to radiation protection by the plant organization.
- Interact with and support the manager in charge of radiation protection on implementation of the radiation protection program.
- Support identification and implementation of cost-effective modifications to plant equipment, facilities, procedures and processes to improve radiation protection controls and reduce exposures.
- Establish plant goals and objectives for radiation protection.
- Maintain exposures to site personnel ALARA.

- Support timely identification, analysis and resolution of radiation protection problems (e.g., through the plant corrective action program).
- Provide training to site personnel on radiation protection in accordance with 10 CFR Part 19.
- Establish an ALARA Committee with delegated authority from the plant manager that includes, at a minimum, the managers in charge of operations, maintenance, engineering, and radiation protection to help provide for effective implementation of line organization responsibilities for maintaining worker doses ALARA.

The line of succession of authority and responsibility for overall operations in the event of unexpected events of a temporary nature is:

- a. Manager in charge of operations
- b. Manager in charge of plant maintenance
- c. Assistant manager in charge of operations

As described in **Subsection 13.1.2.1.2.4**, the manager in charge on-shift is the plant manager's direct representative for the conduct of operations. The succession of authority includes the authority to issue standing or special orders as required.

13.1.2.1.1.1 Manager In Charge of Maintenance

Maintenance of the plant is performed by the maintenance department mechanical, electrical, and instrumentation and control disciplines. The functions of this department are to perform preventive and corrective maintenance, equipment testing, and implement modifications as necessary.

The manager in charge of plant maintenance is responsible for the performance of preventive and corrective maintenance and modification activities required to support operations, including compliance with applicable standards, codes, specifications, and procedures. The manager in charge of plant maintenance reports to the plant manager and provides direction and guidance to the maintenance discipline functional managers and maintenance support staff.

13.1.2.1.1.2 Maintenance Discipline Functional Managers

The functional managers of each maintenance discipline (mechanical, electrical, and instrumentation and control) are responsible for maintenance activities within their discipline including plant modifications. They provide guidance in maintenance planning and craft supervision. They establish the necessary manpower levels and equipment requirements to perform both routine and emergency type maintenance activities, seeking the services of others in performing work beyond the capabilities of the plant maintenance group. Each discipline functional manager is responsible for liaison with other plant staff

organizations to facilitate safe operation of the station. These functional managers report to the manager in charge of plant maintenance.

13.1.2.1.1.3 Maintenance Discipline Supervisors

The maintenance discipline supervisors (mechanical, electrical, and instrumentation and control) supervise maintenance activities, assist in the planning of future maintenance efforts, and guide the efforts of the craft within their discipline. The maintenance discipline supervisors report to the appropriate maintenance discipline functional managers.

13.1.2.1.1.4 Manager in Charge of Work Control

The manager in charge of work control is responsible for planning, scheduling, and coordinating maintenance, modification, and testing activities during power operations and shutdown periods. This includes taking necessary measures to minimize risk to the plant and personnel during the above activities.

The manager in charge of work control reports to the plant manager.

13.1.2.1.1.5 Functional Manager In Charge of Radiation Protection

The functional manager in charge of radiation protection has the responsibility for providing adequate protection of the health and safety of personnel working at the plant and members of the public during activities covered within the scope and extent of the license. Radiation protection responsibilities of the functional manager in charge of radiation protection are consistent with the guidance in Regulatory Guide 8.8 and Regulatory Guide 8.10. They include:

- Manage the radiation protection organization.
- Establish, implement, and enforce the radiation protection program.
- Provide radiation protection input to facility design and work planning.
- Track and analyze trends in radiation work performance and take necessary actions to correct adverse trends.
- Support the plant emergency preparedness program and assign emergency duties and responsibilities within the radiation protection organization.
- Delegate authority to appropriate radiation protection staff to stop work or order an area evacuated (in accordance with approved procedures) when, in his or her judgment, the radiation conditions warrant such an action and such actions are consistent with plant safety.

The functional manager in charge of radiation protection reports to the plant manager and is assisted by the supervisors in charge of radiation protection.

The functional manager in charge of radiation protection reports indirectly to and receives support from the corporate general manager in charge of nuclear support.

13.1.2.1.1.6 Supervisor In Charge of Radiation Protection

The supervisors in charge of radiation protection are responsible for carrying out the day-to-day operations and programs of the radiation protection department as listed in [Subsection 13.1.1.2.5](#).

Supervisors in charge of radiation protection report to the functional manager in charge of radiation protection.

13.1.2.1.1.7 Radiation Protection Technicians

Radiation protection technicians (RPTs) directly carry out responsibilities defined in the radiation protection program and procedures. In accordance with technical specifications an RPT is on site whenever there is fuel in the vessel. See [Table 13.1-202](#).

The following are some of the duties and responsibilities of the RPTs:

- As delegated authority by the manager in charge of radiation protection, stop work or order an area evacuated (in accordance with approved procedures) when, in his or her judgment, the radiation conditions warrant such an action and such actions are consistent with plant safety.
- Provide coverage and monitor radiation conditions for jobs potentially involving significant radiation exposure.
- Conduct surveys, assess radiation conditions and establish radiation protection requirements for access to and work within restricted, radiation, high radiation, very high radiation, airborne radioactivity areas, and areas containing radioactive materials.
- Provide control over the receipt, storage, movement, use, and shipment of licensed radioactive materials.
- Review work packages, proposed design modifications, and operations and maintenance procedures to facilitate integration of adequate radiation protection controls and dose-reduction measures.
- Review and oversee implementation of plans for the use of process or other engineering controls to limit the concentrations of radioactive materials in the air.
- Provide personnel monitoring and bioassay services.

- Maintain, prescribe and oversee the use of respiratory protection equipment.
- Perform assigned emergency response duties.

13.1.2.1.1.8 Functional Manager In Charge of Chemistry

The functional manager in charge of chemistry is responsible for development, implementation, and direction and coordination of the chemistry, radiochemistry and nonradiological environmental monitoring programs. The chemistry department is also responsible for operation of the radwaste systems and has charge of overall operation of the hot lab, cold lab, emergency offsite facility lab, and non-radiological environmental monitoring. The functional manager in charge of chemistry is responsible for the development, administration, and implementation of procedures and programs which provide for effective compliance with environmental regulations. The functional manager in charge of chemistry reports to the plant manager and directly supervises the chemistry supervisors and chemistry technicians as assigned. The functional manager in charge of chemistry reports indirectly to and receives support from the corporate located general manager in charge of nuclear support.

13.1.2.1.1.9 Supervisor of Radwaste Operations

The supervisor of radwaste operations is responsible for development, implementation, direction, and coordination of the radwaste program. The supervisor of radwaste operations reports to the functional manager in charge of chemistry. The supervisor of radwaste operations supervises radwaste operators.

13.1.2.1.2 Operations Department

All operations activities are conducted with safety of personnel, the public, and equipment as the overriding priority. The operations department is responsible for:

- Operation of station equipment.
- Monitoring and surveillance of safety and non-safety related equipment.
- Fuel handling.
- Providing the nucleus of emergency and fire-fighting teams.

The operations department maintains sufficient licensed and senior licensed operators to staff the control room continuously using a crew rotation system. The operations department is under the direction of the manager in charge of operations, who through the assistant manager in charge of operations directs the day-to-day operation of the plant.

Specific duties, functions, and responsibilities of key shift members are discussed in **Subsections 13.1.2.1.2.4** through **13.1.2.1.2.8** and in plant administrative

procedures and the technical specifications. The minimum shift manning requirements are shown in [Table 13.1-202](#).

Some resources of the operations organization are shared between units. Administrative and support personnel perform their duties on either unit. Additional operations staff is required to fill the on-shift staffing requirements of the additional units. To operate, or supervise the operation of more than one unit, a senior reactor operator (SRO) or reactor operator (RO) must hold an appropriate, current license for each unit. A single management organization oversees the operations group for the station units. See [Table 13.1-201](#) for estimated number of staff in the operations department for a single unit. Positions required for operation of the second unit are also shown.

The operations support section is staffed with sufficient personnel to provide support activities for the operating shifts and overall operations department. The following is an overview of the operations organization.

13.1.2.1.2.1 Manager In Charge of Operations

The manager in charge of operations has overall responsibility for the day-to-day operation of the plant. The manager in charge of operations reports to the plant manager and is assisted by the assistant manager in charge of operations and assistant manager in charge of operations support. The manager in charge of operations receives support from the engineer in charge of fire protection for coordination of operations related fire protection activities. The manager in charge of operations or the assistant manager of operations is SRO licensed.

13.1.2.1.2.2 Assistant Manager In Charge of Operations

The assistant manager in charge of operations, under the direction of the manager in charge of operations, is responsible for:

- Shift plant operations in accordance with the operating license, technical specifications, and written procedures.
- Providing supervision of operating shift personnel for operational shift activities including those of emergency and firefighting teams.
- Coordinating with the assistant manager in charge of operations support and other plant staff sections.
- Verifying that nuclear plant operating records and logs are properly prepared, reviewed, evaluated and turned over to the assistant manager in charge of operations support.

The assistant manager in charge of operations is assisted in these areas by the managers in charge on-shift who direct the operating shift personnel. The assistant manager in charge of operations reports to the manager in charge of operations and in the absence of the manager in charge of operations or assistant

manager in charge of operations support may assume the duties and responsibilities of either of these positions.

13.1.2.1.2.3 Assistant Manager In Charge of Operations Support

The assistant manager in charge of operations support, under the direction of the manager in charge of operations, is responsible for:

- Directing and guiding plant operations support activities in accordance with the operating license, technical specifications, and written procedures.
- Providing supervision of operating support personnel, for operations support activities, and coordination of support activities.
- Providing for nuclear plant operating records and logs to be turned over to the nuclear records group for maintenance as quality assurance records.

The assistant manager in charge of operations support is assisted by the supervisors of work management, operations procedures group, and other support personnel. In the absence of the manager in charge of operations or assistant manager in charge of operations, the assistant manager in charge of operations support may assume the duties and responsibilities of either of these positions.

13.1.2.1.2.4 Manager in Charge On-Shift

The manager in charge on-shift is a licensed SRO responsible for the control room command function, and is the plant manager's direct management representative for the conduct of operations. As such, the manager in charge on-shift has the responsibility and authority to direct the activities and personnel onsite as required to:

- Protect the health and safety of the public, the environment, and personnel on the plant site.
- Protect the physical security of the plant.
- Prevent damage to site equipment and structures.
- Comply with the operating license.

The manager in charge on-shift retains this responsibility and authority until formally relieved of operating responsibilities by a licensed SRO. Additional responsibilities of the manager in charge on-shift include:

- Directing nuclear plant employees to report to the plant for response to potential and real emergencies.

- Seeking the advice and guidance of the shift technical advisor and others in executing the duties of the manager in charge on-shift whenever in doubt as to the proper course of action.
- Promptly informing responsible supervisors of significant actions affecting their responsibilities.
- Participating in operator training, retraining, and requalification activities from the standpoint of providing guidance, direction, and instruction to shift personnel.

The manager in charge on-shift is assisted in carrying out the above duties by the supervisors in charge on shift and the operating shift personnel. The manager in charge on-shift reports to the assistant manager in charge of operations.

13.1.2.1.2.5 Supervisor in Charge On-Shift

The supervisor in charge on-shift is a licensed SRO. The primary function of the supervisor in charge on-shift is to administratively support the manager in charge on-shift such that the “command function” is not overburdened with administrative duties and to supervise the licensed and non-licensed operators in carrying out the activities directed by the manager in charge on-shift. Other duties include:

- Being aware of maintenance and testing performed during the shift.
- Shutting down the reactor if conditions warrant this action.
- Informing the manager in charge on-shift and other station management in a timely manner of conditions which may affect public safety, plant personnel safety, plant capacity or reliability, or cause a hazard to equipment.
- Initiating immediate corrective action as directed by the manager in charge on-shift in any upset situation until assistance, if required, arrives.
- Participating in operator training, retraining, and requalification activities from the standpoint of providing guidance, direction, and instruction to shift personnel.

The supervisor in charge on-shift reports directly to the manager in charge on-shift.

13.1.2.1.2.6 Reactor Operator

The ROs are licensed reactor operators and normally report to the supervisor in charge on-shift or manager in charge on-shift. They are responsible for routine plant operations and performance of major evolutions at the direction of the manager/supervisor in charge on-shift. The RO duties include:

- Monitoring control room instrumentation.
- Responding to plant or equipment abnormalities in accordance with approved plant procedures.
- Directing the activities of non-licensed operators.
- Documenting operational activities, plant events, and plant data in shift logs.
- Initiating plant shutdowns or scrams or other compensatory actions when observation of plant conditions indicates a nuclear safety hazard exists or when approved procedures so direct.

Whenever there is fuel in the reactor vessel, at least one reactor operator is in the control room monitoring the status of the unit at the main control panel. The RO assigned to the main control panel is designated the “operator at the controls” and conducts monitoring and operating activities in accordance with the guidance set forth in Regulatory Guide 1.114, which is further described in [Subsection 13.1.2.1.3](#), Conduct of Operations.

13.1.2.1.2.7 Non-Licensed Operator

The non-licensed operators perform routine duties outside the control room as necessary for continuous, safe plant operation including:

- Assisting in plant startup, shutdown, surveillance, and emergency response by manually or remotely changing equipment operating conditions, placing equipment in service, or securing equipment from service at the direction of the reactor operator.
- Performing assigned tasks in procedures and checklists such as valve manipulations for plant startup or data sheets on routine equipment checks, and making accurate entries according to the applicable procedure, data sheet, or checklist.
- Assisting in training of new employees and for improvement and upgrading of their own performance by participating in the applicable sections of the training program.

Non-licensed operators include auxiliary operators as shown in [Figure 13.1-202](#).

13.1.2.1.2.8 Shift Technical Advisor

The station is committed to meeting NUREG-0737 TMI Action Plan item I.A.1.1 for shift technical advisors. The shift technical advisor (STA) reports directly to the manager in charge on-shift and provides advanced technical assistance to the operating shift complement during normal and abnormal operating conditions. The STA's responsibilities are detailed in plant administrative procedures as required

by TMI Action Plan I.A.1.1 and NUREG-0737 Appendix C. These responsibilities include:

- Activities to monitor core power distribution and critical parameters.
- Activities to assist the operating shift with technical expertise during normal and emergency conditions.
- Evaluation of technical specifications, special reports, and procedural issues.

The STA is to primarily contribute to maximizing safety of operations by independently observing plant status and advising shift supervision of conditions that could compromise plant safety. During transients or accident situations the STA independently assesses plant conditions and provides technical assistance and advice to mitigate the incident and minimize the effect on personnel, the environment, and plant equipment.

A senior reactor operator on shift who meets the qualifications for the combined SRO/STA position specified for Option 1 of Generic Letter 86-04 ([Reference 202](#)) may also serve as the STA. If this option is used for a shift, then the separate STA position may be eliminated for that shift.

13.1.2.1.2.9 Engineer in Charge of Fire Protection

WLS COL 9.5-1 The engineer in charge of fire protection and the fire protection program staff are responsible for the following:

- Fire protection program requirements, including consideration of potential hazards associated with postulated fires, knowledge of building layout, and system design.
- Post-fire shutdown capability.
- Design, maintenance, surveillance, and quality assurance of fire protection features (e.g., detection systems, suppression systems, barriers, dampers, doors, penetration seals and fire brigade equipment).
- Fire prevention activities (administrative controls and training).
- Fire brigade organization and oversight of fire brigade training.
- Pre-fire planning including review and updating of pre-fire plans at least every two years.

The engineer in charge of fire protection reports through engineering department management to the site executive in charge of plant management who has

ultimate responsibility for fire protection of the plant. Additionally, the engineer in charge of fire protection works with the manager in charge of operations to coordinate activities and program requirements with the operations department. In accordance with Regulatory Guide 1.189 the engineer in charge of fire protection is a graduate of an engineering curriculum of accepted standing and has completed not less than six years of engineering experience, three of which were in a responsible position in charge of fire protection engineering work. The engineer in charge of fire protection is trained and experienced in nuclear plant safety or has available personnel who are trained and experienced in nuclear plant safety.

13.1.2.1.3 Conduct of Operations

WLS COL 13.1-1 Station operations are controlled and/or coordinated through the control room. Maintenance activities, surveillances, and removal from/return to service of structures, systems, and components affecting the operation of the plant may not commence without the approval of senior control room personnel. The rules of practice for control room activities, as described by administrative procedures, which are based on Regulatory Guide 1.114 address the following:

- Position/placement of operator at the controls workstation and the expected area of the control room where the majority of the supervisor/manager in charge on shift's time should be spent.
- Definition and outline of "surveillance area" and requirement for continuous surveillance by the operator at the controls.
- Relief requirements for operator at the controls and the supervisor/manager in charge on shift.

In accordance with 10 CFR 50.54:

- Reactivity controls may be manipulated only by licensed reactor operators and senior reactor operators except as allowed for training under 10 CFR Part 55.
- Apparatus and mechanisms other than controls which may affect reactivity or power level of the reactor shall be operated only with the consent of the operator at the controls or the manager/supervisor in charge on-shift.
- During operation of the facility in modes other than cold shutdown or refueling a senior operator shall be in the control room and a licensed reactor operator or senior reactor operator shall be present at the controls.

13.1.2.1.4 Operating Shift Crews

Plant administrative procedures implement the required shift staffing. These procedures establish crews with sufficient qualified plant personnel to staff the

operational shifts and be readily available in the event of an abnormal or emergency situation. The objective is to operate the plant with the required staff and to develop work schedules that minimize overtime for plant staff members who perform safety-related functions. Work hour limitations and shift staffing requirements defined by TMI Action Plan I.A.1.3 are retained in station procedures. When overtime is necessary the provisions in the technical specifications and the plant administrative procedures apply. Shift crew staffing plans may be modified during refueling outages to accommodate safe and efficient completion of outage work in accordance with the proceduralized work hour limitations.

The minimum composition of the operating shift crew is contingent upon the unit operating status. Position titles, license requirements and minimum shift manning for various modes of operation are contained in Technical Specifications, administrative procedures, and [Table 13.1-202](#), and illustrated in [Figure 13.1-202](#).

13.1.2.1.5 Fire Brigade

The station is designed and the fire brigade organized to be self sufficient with respect to fire fighting activities. The fire brigade is organized to deal with fires and related emergencies that could occur. It consists of a fire brigade leader and a sufficient number of team members to be consistent with the equipment that must be put in service during a fire emergency. A sufficient number of trained and physically qualified fire brigade members are available on site during each shift. The fire brigade consists of at least five members on each shift. Members of the fire brigade are knowledgeable of building layout and system design. The assigned fire brigade members for any shift does not include the manager in charge on shift nor any other members of the minimum shift operating crew necessary for safe shutdown of the unit. Nor does it include any other personnel required for other essential functions during a fire emergency. Fire brigade members for a shift are designated in accordance with established procedures at the beginning of the shift.

13.1.3 QUALIFICATIONS OF NUCLEAR PLANT PERSONNEL

13.1.3.1 Qualification Requirements

WLS COL 18.6-1 Qualifications of managers, supervisors, operators, and technicians of the
WLS COL 13.1-1 operating organization meet the qualification requirements in education and experience for those described in ANSI/ANS-3.1-1993 ([Reference 201](#)), as endorsed and amended by Regulatory Guide 1.8. For positions that do not have a cross-reference section in ANSI/ANS-3.1 the most comparable section of ANSI/ANS-3.1 is used for guidance in establishing experience and education requirements.

13.1.3.2 Qualifications of Plant Personnel

Resumes and/or other documentation of qualification and experience of initial appointees to appropriate management and supervisory positions are available for review by regulators upon request after position vacancies are filled.

STD DEP 1.1-1 13.1.4 COMBINED LICENSE INFORMATION ITEM

WLS COL 13.1-1 This COL item is addressed in **Subsections 13.1, 13.1.1.2.11, 13.1.1.3.2.6, 13.1.2, 13.1.2.1.3, 13.1.4, and Appendix 13AA.**

13.1.5 REFERENCES

201. American Nuclear Society, "American National Standard for Selection, Qualification, and Training of Personnel for Nuclear Power Plant," ANSI/ANS-3.1-1993.
 202. U.S. Nuclear Regulatory Commission, "Generic Letter 86-04, Policy Letter, Engineering Expertise on Shift."
 203. American Nuclear Society, "American National Standard for Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants," ANSI/ANS-3.2-1988.
-

WLS COL 13.1-1

WLS COL 18.6-1

TABLE 13.1-201 (Sheet 1 of 5)
 GENERIC POSITION / SITE SPECIFIC POSITION CROSS REFERENCE

Nuclear Function	Function Position - ANSI/ANS-3.1-1993 section reference		Nuclear Plant Position (Site-Specific)	Expected Positions 1st unit	Expected additional positions 2nd unit	
Executive management	chief executive officer	n/a	President and Chief Executive Officer, Duke Energy	1	-	
	chief nuclear officer	n/a	Group Executive, Nuclear Generation and Chief Nuclear Officer	1	-	
	executive, nuclear operations	n/a	Senior Vice President, Nuclear Operations	1	-	
Nuclear support	executive, nuclear support	n/a	Vice President, Nuclear Fleet Performance	1	-	
	manager	4.2.4	Manager, Nuclear Plant Support		-	
Plant management	executive	n/a	Site Vice President	1	-	
	plant manager	4.2.1	Nuclear Station Manager	1	-	
Engineering	executive	n/a	Vice President, Nuclear Engineering	1	-	
	executive	n/a	Vice President, Major Projects	1	-	
	manager	4.2.4	Manager Engineering	1	-	
	manager	4.2.4	Manager, Nuclear Technical Services	1	-	
	system engineering	functional manager	4.3.9	Manager, System Engineering	1	-
		system engineer	4.6.1	System Engineer	16	4
	design engineering	functional manager	4.3.9	Manager, Design Engineering	1	-

WLS COL 13.1-1

WLS COL 18.6-1

TABLE 13.1-201 (Sheet 2 of 5)
 GENERIC POSITION / SITE SPECIFIC POSITION CROSS REFERENCE

Nuclear Function	Function Position - ANSI/ANS-3.1-1993 section reference		Nuclear Plant Position (Site-Specific)	Expected Positions 1st unit	Expected additional positions 2nd unit
	design engineer	4.6 - staff engineer	Design Engineer	23	7
safety and engineering analysis	functional manager	4.3.9	Manager, Safety and Engineering Analysis	1	-
	programs engineer	4.6 - staff engineer	Analysis Engineer	4	-
engineering programs	functional manager	4.3.9	Manager, Engineering Programs	1	-
	programs engineer	4.6 - staff engineer	Programs Engineer	20	5
reactor engineering	functional manager	4.3.9	Manager, Reactor Engineering	1	-
	reactor engineer	4.6 - staff engineer	Reactor Engineer	3	1
Maintenance	manager	4.2.3	Manager, Maintenance	1	-
instrumentation and control	functional manager	4.3.4	Manager, Instrumentation and Control	1	-
	supervisor	4.4.7	Supervisor, Instrumentation and Control	7	-
	technician	4.5.3.3	Instrumentation and Control Technician	30	17

WLS COL 13.1-1

WLS COL 18.6-1

TABLE 13.1-201 (Sheet 3 of 5)
 GENERIC POSITION / SITE SPECIFIC POSITION CROSS REFERENCE

Nuclear Function	Function Position - ANSI/ANS-3.1-1993 section reference		Nuclear Plant Position (Site-Specific)	Expected Positions 1st unit	Expected additional positions 2nd unit	
Operations	mechanical	functional manager	4.3.6	Manager, Mechanical	1	-
		supervisor	4.4.9	Supervisor, Mechanical	9	-
		technician	4.5.7.2	Mechanic	30	14
	electrical	functional manager	4.3.5	Manager, Electrical	1	-
		supervisor	4.4.8	Supervisor, Electrical	6	4
		technician	4.5.7.1	Electrician	18	3
	support	functional manager	4.3	Manager, Maintenance Support	1	-
		manager	4.2.2	Manager, Operations	1	-
	operations, plant	functional manager	4.3.8	Assistant Operations Manager	1	-
	operations, admin	functional manager	4.3.8	Assistant Operations Manager Support	1	-
	operations, (on-shift)	functional manager	4.4.1	Shift Manager	5	5
		supervisor	4.4.2	Shift Supervisor	5	5
		licensed operator	4.5.1	Control Room Operator	10	10
		non-licensed operator	4.5.2	Plant Equipment Operator	30	30
		shift technical advisor	4.6.2	Shift Technical Advisor	5	5
Fire protection	supervisor	4.4	Fire Protection Engineer	1	-	
Radiation protection	functional manager	4.3.3	Manager, Radiation Protection	1	-	
	supervisor	4.4.6	Radiation Protection Supervisor	3	-	
	technician	4.5.3.2	Radiation Protection Technician	20	10	
	ALARA specialist	n/a	ALARA Specialist	2	-	

WLS COL 13.1-1
WLS COL 18.6-1

TABLE 13.1-201 (Sheet 4 of 5)
GENERIC POSITION / SITE SPECIFIC POSITION CROSS REFERENCE

Nuclear Function	Function Position - ANSI/ANS-3.1-1993 section reference		Nuclear Plant Position (Site-Specific)	Expected Positions 1st unit	Expected additional positions 2nd unit
Chemistry	functional manager	4.3.2	Manager Chemistry	1	-
	supervisor	4.4.5	Chemistry Supervisor	3	-
	technician	4.5.3.1	Chemistry Technician	14	12
radwaste	supervisor	4.4	Radwaste Supervisor	1	-
	radwaste operator	4.5.2	Radwaste Operator	5	4
Nuclear safety assurance	manager	4.2	Manager, Nuclear Safety Assurance	1	-
licensing	functional manager	4.3	Manager, Plant Licensing and Regulatory Compliance	1	-
	licensing engineer	n/a	Licensing Engineer	5	-
corrective action	functional manager	4.3	Manager, Corrective Action and Performance Improvement	1	-
	corrective action engineer	n/a	corrective action engineer	2	-
emergency preparedness	functional manager	4.3	Manager, Emergency Preparedness	1	-
	EP planner	n/a	EP Planner	2	-
Training	functional manager	4.3.1	Manager, Training and Development	1	-
	supervisor ops trng	4.4.4	Training Supervisor, Operations	1	-
	ops training instructor		Ops Training Instructor	6	6

WLS COL 13.1-1
WLS COL 18.6-1

TABLE 13.1-201 (Sheet 5 of 5)
GENERIC POSITION / SITE SPECIFIC POSITION CROSS REFERENCE

Nuclear Function	Function Position - ANSI/ANS-3.1-1993 section reference		Nuclear Plant Position (Site-Specific)	Expected Positions 1st unit	Expected additional positions 2nd unit
	supervisor tech staff/maint trng	4.5.4	Supervisor Tech Staff/Maint Trng	1	-
	tech staff/maint instructors	4.4.4	Tech Staff/Maint Instructor	8	-
Purchasing, and contracts	functional manager	4.3	Manager, Purchasing and Contracts	1	-
Security	functional manager	4.3	Manager, Security	1	-
Planning and scheduling	functional manager	4.3	Manager, Planning and Scheduling	1	-
	functional manager	4.3	Manager, Outages	1	-
Quality assurance	functional manager	4.3.7	Manager, Quality Assurance	1	-
	supervisor	4.4.13	Quality Assurance Supervisor	1	-
	QA auditor	4.5.6	QA Auditor	6	-
	supervisor	4.4.13	Quality Control Supervisor	1	-
	QC inspector	4.5.5	QC Inspector	4	2
Startup testing	supervisor	4.4.11	Startup Testing Supervisor	1	-
	startup test engineer	4.4.1	Startup Test Engineer	6	-
	supervisor	4.4.12	Preop Testing Supervisor	1	-
	preop test engineer	4.4.1	Preop Test Engineer	20	-

WLS COL 13.1-1
WLS COL 18.6-1

TABLE 13.1-202
MINIMUM ON-DUTY OPERATIONS SHIFT ORGANIZATION FOR TWO-UNIT PLANT

Units Operating	Two Units Two Control Rooms
All Units Shutdown	1 SM (SRO) 2 RO 3 NLO
One Unit Operating ^(a)	1 SM (SRO) 1 SRO 3 RO 3 NLO
Two Units Operating ^(a)	1 SM (SRO) 2 SRO 4 RO 4 NLO
SM – shift manager	RO – Licensed Reactor Operator
SRO – Licensed Senior Reactor Operator	NLO – non-licensed operator

a) Operating modes other than cold shutdown or refueling.

Notes:

- (1) In addition, one Shift Technical Advisor (STA) is assigned per shift during plant operation. A shift manager or another SRO on shift, who meets the qualifications for the combined Senior Reactor Operator/Shift Technical Advisor position, as specified for option 1 of Generic Letter 86-04 ([Reference 202](#)), the commission's policy statement on engineering expertise on shift, may also serve as the STA. If this option is used for a shift, then the separate STA position may be eliminated for that shift.
- (2) In addition to the minimum shift organization above, during refueling a licensed senior reactor operator or senior reactor operator limited (fuel handling only) is required to directly supervise any core alteration activity.
- (3) A shift manager/supervisor (SRO licensed for each unit that is fueled), shall be on site at all times when at least one unit is loaded with fuel.
- (4) A radiation protection technician shall be on site at all times when there is fuel in a reactor.
- (5) A chemistry technician shall be on site during plant operation in modes other than cold shutdown or refueling.
- (6) To operate, or supervise the operation of more than one unit, an operator (SRO or RO) must hold an appropriate, current license for each unit.

13.2 TRAINING

This **section** of the referenced DCD is incorporated by reference with the following departures and/or supplements.

STD COL 13.2-1 This section incorporates by reference NEI 06-13A, Template for an Industry Training Program Description. See **Table 1.6-201**.

Table 13.4-201 provides milestones for training implementation.

STD COL 18.10-1 Operators involved in the Human Factors Engineering Verification and Validation (V&V) Program receive additional training specific to the task of performing V&V. A systematic approach to training is incorporated in developing this training program along with input from WCAP-14655, Designer's Input to the Training of the Human Factors Engineering Verification and Validation Personnel (**Reference 201**).

13.2.1 COMBINED LICENSE INFORMATION ITEM

STD COL 13.2-1 This COL Item is addressed in **Section 13.2**.

13.2.2 REFERENCES

201. Westinghouse, "Designer's Input to the Training of the Human Factors Engineering Verification and Validation Personnel", WCAP-14655, Revision 1, August 1996.
-

13.3 EMERGENCY PLANNING

This **section** of the referenced DCD is incorporated by reference with the following departures and/or supplements.

WLS COL 13.3-1 The emergency planning information is submitted to the Nuclear Regulatory Commission as a separate licensing document.

STD COL 13.3-1 Post-72 hour support actions, as discussed in **DCD Subsections 1.9.5.4 and 6.3.4**, are addressed in **DCD Subsections 6.2.2, 8.3, and 9.1.3**. Provisions for establishing post-72 hour ventilation for the main control room, instrumentation and control rooms, and dc equipment rooms are established in operating procedures.

STD COL 13.3-2 The emergency plan describes the plans for coping with emergency situations, including communications interfaces and staffing of the emergency operations facility.

STD SUP 13.3-1 **Table 13.4-201** provides emergency planning implementation milestones.

13.3.1 COMBINED LICENSE INFORMATION ITEM

STD COL 13.3-1 This COL item is addressed in **Section 13.3**.

STD COL 13.3-2 This COL item is addressed in **Section 13.3** and in the emergency plan.

13.4 OPERATIONAL PROGRAMS

This **section** of the referenced DCD is incorporated by reference with the following departures and /or supplements.

STD COL 13.4-1 Operational programs are specific programs that are required by regulations. **Table 13.4-201** lists each operational program, the regulatory source for the program, the section of the FSAR in which the operational program is described, and the associated implementation milestone(s).

13.4.1 COMBINED LICENSE INFORMATION ITEM

STD COL 13.4-1 This COL Item is addressed in **Section 13.4**.

13.4.2 REFERENCES

201. ASME Boiler and Pressure Vessel Code (B&PVC), "Section XI - Rules for Inservice Inspection of Nuclear Power Plant Components".
 202. ASME "OM Code for the Operation and Maintenance of Nuclear Power Plants".
-

STD COL 13.4-1

TABLE 13.4-201 (Sheet 1 of 9)
 OPERATIONAL PROGRAMS REQUIRED BY NRC REGULATIONS

Item	Program Title	Program Source (Required by)	FSAR/ DCD Section	Implementation	
				Milestone	Requirement
1.	Inservice Inspection Program	10 CFR 50.55a(g)	5.2.4, 5.4.2.5, 6.6	Prior to Commercial service	10 CFR 50.55a(g); ASME XI IWA- 2430(b) (Reference 201)
2.	Inservice Testing Program	10 CFR 50.55a(f); 10 CFR Part 50, Appendix A	3.9.6, 5.2.4	After generator online on nuclear heat ^(a)	10 CFR 50.55a(f), ASME OM Code (Reference 202)
3.	Environmental Qualification Program	10 CFR 50.49(a)	3.11	Prior to initial fuel load	License Condition
4.	Preservice Inspection Program	10 CFR 50.55a(g)	5.2.4, 5.4.2.5, 6.6	Completion prior to initial plant start-up	10 CFR 55a(g); ASME XI IWB- 2200(a) (Reference 201)
5.	Reactor Vessel Material Surveillance Program	10 CFR 50.60; 10 CFR 50.61; 10 CFR Part 50, Appendix H	5.3.2.6	Prior to initial criticality	License Condition
6.	Preservice Testing Program	10 CFR 50.55a(f)	3.9.6	Prior to initial fuel load	License Condition
7.	Containment Leakage Rate Testing Program	10 CFR 50.54(o); 10 CFR 50, Appendix A (GDC 52); 10 CFR 50, Appendix J	6.2.5.1	Prior to initial fuel load	License Condition

STD COL 13.4-1

TABLE 13.4-201 (Sheet 2 of 9)
 OPERATIONAL PROGRAMS REQUIRED BY NRC REGULATIONS

Item	Program Title	Program Source (Required by)	FSAR/ DCD Section	Implementation	
				Milestone	Requirement
8.	Fire Protection Program	10 CFR 50.48	9.5.1.8	Prior to receipt of fuel onsite	License Condition
	(portions applicable to radioactive material)	10 CFR 30.32 10 CFR 40.31 10 CFR 70.22		Prior to initial fuel load Prior to initial receipt of byproduct source, or special nuclear materials (excluding Exempt Quantities as described in 10 CFR 30.18)	10 CFR 30.32(a) 10 CFR 40.31(a) 10 CFR 70.22(a)
9.	Process and Effluent Monitoring and Sampling Program:				
	Radiological Effluent Technical Specifications/Standard	10 CFR 20.1301 and 20.1302;	11.5	Prior to initial fuel load	License Condition
	Radiological Effluent Controls	10 CFR 50.34a; 10 CFR 50.36a; 10 CFR 50, Appendix I, Section II and IV			
	Offsite Dose Calculation Manual	Same as above	11.5	Prior to initial fuel load	License Condition
	Radiological Environmental Monitoring Program	Same as above	11.5	Prior to initial fuel load	License Condition
	Process Control Program	Same as above	11.4	Prior to initial fuel load	License Condition

STD COL 13.4-1

TABLE 13.4-201 (Sheet 3 of 9)
 OPERATIONAL PROGRAMS REQUIRED BY NRC REGULATIONS

Item	Program Title	Program Source (Required by)	FSAR/ DCD Section	Implementation	
				Milestone	Requirement
10.	Radiation Protection Program (including ALARA principle)	10 CFR 20.1101 10 CFR 20.1406	12.1 12.5		License Condition
	<ul style="list-style-type: none"> Radioactive Source Control (assignment of RP Supervisor) Assignment of RP Supervisor Minimization of Contamination Personnel Dosimetry Radiation Monitoring and Surveys Radiation Work Permits Assignment of RP Manager Respiratory Protection Bioassay Effluents and Environmental Monitoring and Assessment Job Coverage Radioactive Waste Shipping 			1. Prior to initial receipt of by-product, source, or special nuclear materials (excluding Exempt Quantities as described in 10 CFR 30.18) 2. Prior to receipt of fuel onsite 3. Prior to initial fuel load 4. Prior to first shipment of radioactive waste	

STD COL 13.4-1

TABLE 13.4-201 (Sheet 4 of 9)
 OPERATIONAL PROGRAMS REQUIRED BY NRC REGULATIONS

Item	Program Title	Program Source (Required by)	FSAR/ DCD Section	Implementation	
				Milestone	Requirement
11.	Non Licensed Plant Staff Training Program	10 CFR 50.120	13.2	18 months prior to scheduled date of initial fuel load	10 CFR 50.120(b)
	(portions applicable to radioactive material)	10 CFR 30.32 10 CFR 40.31 10 CFR 70.22		Prior to initial receipt of byproduct source, or special nuclear materials (excluding Exempt Quantities as described in 10 CFR 30.18)	10 CFR 30.32(a) 10 CFR 40.31(a) 10 CFR 70.22(a)
12.	Reactor Operator Training Program	10 CFR 55.13; 10 CFR 55.31; 10 CFR 55.41; 10 CFR 55.43; 10 CFR 55.45	13.2	18 months prior to scheduled date of initial fuel load	License Condition
13.	Reactor Operator Requalification Program	10 CFR 50.34(b); 10 CFR 50.54(i); 10 CFR 55.59	13.2	Within 3 months after the date the Commission makes the finding under 10 CFR 52.103(g)	10 CFR 50.54(i-1)

STD COL 13.4-1

TABLE 13.4-201 (Sheet 5 of 9)
 OPERATIONAL PROGRAMS REQUIRED BY NRC REGULATIONS

Item	Program Title	Program Source (Required by)	FSAR/ DCD Section	Implementation	
				Milestone	Requirement
14.	Emergency Planning	10 CFR 50.47; 10 CFR 50, Appendix E	13.3	Full participation exercise conducted within 2 years of scheduled date for initial loading of fuel.	10 CFR Part 50, Appendix E, Section IV.F.2.a(ii)
				Onsite exercise conducted within 1 year before the schedule date for initial loading of fuel	10 CFR Part 50, Appendix E, Section IV.F.2.a(ii)
				Applicant's detailed implementing procedures for its emergency plan submitted at least 180 days prior to scheduled date for initial loading of fuel	10 CFR Part 50, Appendix E, Section V
15.	Security Program:				
	Physical Security Program	10 CFR 73.55(b); 10 CFR 73.55(c)(3); 10 CFR 73.56; 10 CFR 73.57;	13.6	Prior to receipt of fuel onsite (protected area)	10 CFR 73.55(a)(4)

STD COL 13.4-1

TABLE 13.4-201 (Sheet 6 of 9)
 OPERATIONAL PROGRAMS REQUIRED BY NRC REGULATIONS

Item	Program Title	Program Source (Required by)	FSAR/ DCD Section	Implementation	
				Milestone	Requirement
	Physical Protection Program (applicable to protection of special nuclear material prior to the protected area being declared operational)	10 CFR 73.1 10 CFR 73.67	13.5.2.2.8 13.6	Prior to initial receipt of special nuclear material	10 CFR 73.1(a) 10 CFR 73.67
	Safeguards Contingency Program	10 CFR 73.55(c)(5); 10 CFR 73.55(k); 10 CFR Part 73, Appendix C	13.6	Prior to receipt of fuel onsite (protected area)	10 CFR 73.55(a)(4)
	Training and Qualification Program	10 CFR 73.55(c)(4); 10 CFR 73.55(d)(3); 10 CFR Part 73, Appendix B	13.6	Prior to receipt of fuel onsite (protected area)	10 CFR 73.55(a)(4)
16.	Quality Assurance Program – Operation	10 CFR 50.54(a); 10 CFR Part 50, Appendix A (GDC 1); 10 CFR Part 50, Appendix B	17.5	COL Issuance	10 CFR 50.54(a)(1)
17.	Maintenance Rule	10 CFR 50.65	17.6	Prior to fuel load authorization per 10 CFR 52.103(g)	10 CFR 50.65(a)(1)
18.	Motor-Operated Valve Testing	10 CFR 50.55a(b)(3)(ii)	3.9.6.2.2	Prior to initial fuel load	License Condition

STD COL 13.4-1

TABLE 13.4-201 (Sheet 7 of 9)
 OPERATIONAL PROGRAMS REQUIRED BY NRC REGULATIONS

Item	Program Title	Program Source (Required by)	FSAR/ DCD Section	Implementation	
				Milestone	Requirement
19.	Initial Test Program	10 CFR 50.34; 10 CFR 52.79(a)(28)	14.2	Prior to the first construction test being conducted for the Construction Test Program	License Condition
				Prior to the first preoperational test for the Preoperational Test Program	
				Prior to initial fuel load for the Startup Test Program	
20.	Fitness for Duty (FFD) Program for Construction (workers and first-line supervisors)	10 CFR 26.4(f)	13.7	Prior to initiating 10 CFR Part 26 construction activities	10 CFR Part 26, Subpart K
	FFD Program for Construction (management and oversight personnel)	10 CFR 26.4(e)	13.7	Prior to initiating 10 CFR Part 26 construction activities	10 CFR Part 26, Subparts A - H, N, and O
	FFD Program for Security Personnel	10 CFR 26.4(e)(1)	13.7	Prior to initiating 10 CFR Part 26 construction activities	10 CFR Part 26, Subparts A - H, N, and O

STD COL 13.4-1

TABLE 13.4-201 (Sheet 8 of 9)
 OPERATIONAL PROGRAMS REQUIRED BY NRC REGULATIONS

Item	Program Title	Program Source (Required by)	FSAR/ DCD Section	Implementation	
				Milestone	Requirement
		10 CFR 26.4(a)(5) or 26.4(e)(1)		Prior to the earlier of: A. Licensee's receipt of SNM in the form of fuel assemblies, or B. Establishment of a protected area, or C. The 10 CFR 52.103(g) finding	10 CFR Part 26, Subparts A - I, N, and O
	FFD Program for FFD Program personnel	10 CFR 26.4(g)	13.7	Prior to initiating 10 CFR Part 26 construction activities	10 CFR Part 26, Subparts A, B, D - H, N, O, and C per licensee's discretion
	FFD Program for persons required to physically report to the Technical Support Center (TSC) or Emergency Operations Facility (EOF)	10 CFR 26.4(c)	13.7	Prior to the conduct of the first full-participation emergency preparedness exercise under 10 CFR Part 50, App. E, Section F.2.a	10 CFR Part 26, Subparts A - I, N, and O, except for §§ 26.205 – 209
	FFD Program for Operation	10 CFR 26.4(a) and (b)	13.7	Prior to the earlier of: A. Establishment of a protected area, or B. The 10 CFR 52.103(g) finding	10 CFR Part 26, Subparts A - I, N, and O, except for individuals listed in § 26.4(b), who are not subject to §§ 26.205 – 209

STD COL 13.4-1

TABLE 13.4-201 (Sheet 9 of 9)
 OPERATIONAL PROGRAMS REQUIRED BY NRC REGULATIONS

Item	Program Title	Program Source (Required by)	FSAR/ DCD Section	Implementation	
				Milestone	Requirement
21.	Cyber Security Program	10 CFR 73.54(b); 10 CFR 73.55(b)(8); 10 CFR 73.55(c)(6)	13.6	Prior to receipt of fuel onsite (protected area)	10 CFR 73.55(a)(4)
22.	SNM Material Control and Accounting Program	10 CFR 74, Subpart B (§§ 74.11 – 74.19, excl. § 74.17)	13.5.2.2.9	Prior to receipt of special nuclear material	License Condition

- a) Inservice Testing Program will be fully implemented by generator on line on nuclear heat. Appropriate portions of the program are implemented as necessary to support the system operability requirements of the technical specifications.

13.5 PLANT PROCEDURES

This **section** of the referenced DCD is incorporated by reference with the following departures and/or supplements.

STD DEP 1.1-1 DCD Subsection 13.5.1, Combined License Information, is renumbered in this FSAR section to 13.5.3.

STD COL 13.5-1 This section of the FSAR describes the administrative and other procedures which are not described in the DCD that the operating organization (plant staff) uses to conduct the routine operating, abnormal, and emergency activities in a safe manner.

The Quality Assurance Program Description (QAPD), as discussed in **Section 17.5**, describes procedural document control, record retention, adherence, assignment of responsibilities, and changes.

Procedures are identified in this section by topic, type, or classification in lieu of the specific title and represent general areas of procedural coverage.

Procedures are issued prior to fuel load to allow sufficient time for plant staff familiarization and to develop operator licensing examinations.

The format and content of procedures are controlled by the applicable AP1000 Writer's Guideline.

Each procedure is sufficiently detailed for an individual to perform the required function without direct supervision, but does not provide a complete description of the system or plant process. The level of detail contained in the procedure is commensurate with the qualifications of the individual normally performing the function.

Procedures are developed consistent with guidance described in **DCD Section 18.9**, "Procedure Development" and with input from the human factors engineering process and evaluations.

13.5.1 ADMINISTRATIVE PROCEDURES

This section describes administrative procedures that provide administrative control over activities that are important to safety for the operation of the facility.

Procedures outline the essential elements of the administrative programs and controls as described in ANSI/ANS 3.2-1988 (**Reference 201**) and in **Section 17.5**. These procedures are organized such that the program elements are prescribed in documents normally referred to as administrative procedures. Regulatory and

industry guidance for the appropriate format, content and typical activities delineated in written procedures is implemented as appropriate.

Administrative procedures contain adequate programmatic controls to provide effective interface between organizational elements. This includes contractor and owner organizations providing support to the station operating organization.

A Writer's Guideline promotes the standardization and application of human factors engineering principles to procedures. The Writer's Guideline establishes the process for developing procedures that are complete, accurate, consistent, and easy to understand and follow. The Writer's Guideline provides objective criteria so that procedures are consistent in organization, style, and content. The Writer's Guideline includes criteria for procedure content and format including the writing of action steps and the specification of acceptable acronym lists and acceptable terms to be used.

Procedure maintenance and control of procedure updates are performed in accordance with the QAPD, as discussed in [Section 17.5](#).

The administrative programs and associated procedures developed in the pre-COL phase are described in [Table 13.5-201](#) (for future designation as historical information).

The plant administrative procedures provide procedural instructions for the following:

- Procedures review and approval.
- Equipment control procedures - These procedures provide for control of equipment, as necessary, to maintain personnel and reactor safety, and to avoid unauthorized operation of equipment.
- Control of maintenance and modifications.
- Crane Operation Procedures - Crane operators who operate cranes over fuel pools are qualified and conduct themselves in accordance with ANSI B30.2 (Chapter 2-3), "Overhead and Gantry Cranes" ([Reference 202](#)).
- Temporary changes to procedures.
- Temporary procedure issuance and control.
- Special orders of a temporary or self-canceling nature.
- Standing orders to shift personnel including the authority and responsibility of the shift manager, licensed senior reactor operator in the control room, control room operator and shift technical advisor.

- Manipulation of controls and assignment of shift personnel to duty stations per the requirements of 10 CFR 50.54 (i), (j), (k), (l), and (m) including delineation of the space designated for the "At the Controls" area of the Control Room.
- Shift relief and turnover procedures.
- Fitness for Duty.
- Control Room access.
- Working hour limitations.
- Feedback of design, construction, and applicable important industry and operating experience.
- Shift Manager administrative duties.
- Verification of correct performance of operational activities.
- A vendor interface program that provides vendor information for safety related components is incorporated into plant documentation.
- Fire protection program implementation.
- A process for implementing the safety/security interface requirements of 10 CFR 73.58.

13.5.2 OPERATING AND MAINTENANCE PROCEDURES

13.5.2.1 Operating and Emergency Operating Procedures

This information is addressed in the DCD.

13.5.2.2 Maintenance and Other Operating Procedures

The QAPD, as described in [Section 17.5](#), provides guidance for procedural adherence. Regulatory and industry guidance for the appropriate format, content, and typical activities delineated in written procedures is implemented as appropriate.

13.5.2.2.1 Plant Radiation Protection Procedures

The plant radiation protection program is contained in procedures. Procedures are developed and implemented for such things as: maintaining personnel exposures, plant contamination levels, and plant effluents ALARA; monitoring both external and internal exposures of workers, considering industry-accepted techniques; routine radiation surveys; environmental monitoring in the vicinity of the plant; radiation monitoring of maintenance and special work activities; evaluation of radiation protection implications of proposed modifications; establishing quality

assurance requirements applicable to the Radiation Protection Program; and maintaining radiation exposure records of workers and others.

13.5.2.2.2 Emergency Preparedness Procedures

A discussion of emergency preparedness procedures can be found in the Emergency Plan.

13.5.2.2.3 Instrument Calibration and Test Procedures

The QAPD, as discussed in [Section 17.5](#), provides a description of procedural requirements for instrumentation calibration and testing.

13.5.2.2.4 Chemistry Procedures

Procedures provided for chemical and radiochemical control activities include the nature and frequency of sampling and analyses; instructions for maintaining fluid quality within prescribed limits; the use of control and diagnostic parameters; and limitations on concentrations of agents that could cause corrosive attack, foul heat transfer surfaces or become sources of radiation hazards due to activation.

Procedures are also provided for the control, treatment, and management of radioactive wastes and control of radioactive calibration sources.

13.5.2.2.5 Radioactive Waste Management Procedures

Procedures for the operation of the radwaste processing systems provide for the control, treatment, and management of on-site radioactive wastes. Procedural controls are in place for radiological releases.

13.5.2.2.6 Maintenance, Inspection, Surveillance, and Modification Procedures

13.5.2.2.6.1 Maintenance Procedures

Maintenance procedures describe maintenance planning and preparation activities. Maintenance procedures are developed considering the potential impact on the safety of the plant, license limits, availability of equipment required to be operable, and possible safety consequences of concurrent or sequential maintenance, testing or operating activities.

Maintenance procedures contain sufficient detail to permit the maintenance work to be performed correctly and safely. Procedures include provisions for conducting and recording results of required tests and inspections, if not performed and documented under separate test and inspection procedures. References are made to vendor manuals, plant procedures, drawings, and other sources as applicable.

Instructions are included, or referenced, for returning the equipment to its normal operating status. Testing is commensurate with the maintenance that has been

performed. Testing may be included in the maintenance procedure or be covered in a separate procedure.

The preventive maintenance program, including preventive and predictive procedures, as appropriate for structures, systems and components, prescribes the frequency and type of maintenance to be performed. An initial program based on service conditions, experience with comparable equipment and vendor recommendations is developed prior to fuel loading. The program is revised and updated as experience is gained with the equipment. To facilitate this, equipment history files are created and kept current. The files are organized to provide complete and easily retrievable equipment history.

13.5.2.2.6.2 Inspection Procedures

The QAPD, as discussed in [Section 17.5](#), provides a description of procedural requirements for inspections.

13.5.2.2.6.3 Modification Procedures

Plant modifications and changes to setpoints are developed in accordance with approved procedures. These procedures control necessary activities associated with the modifications such that they are carried out in a planned, controlled, and orderly manner. For each modification, design documents such as drawings, equipment and material specifications, and appropriate design analyses are developed or the as-built design documents are utilized. Separate reviews are conducted by individuals knowledgeable in both technical and QA requirements to verify the adequacy of the design effort.

Proposed modification(s) which involve a license amendment or a change to Technical Specifications are processed as proposed license amendment request(s).

Plant procedures impacted by modifications are changed prior to declaring the system operable to reflect revised plant conditions; and cognizant personnel who are responsible for operating and maintaining the modified equipment are adequately trained.

13.5.2.2.7 Material Control Procedures

The QAPD, as discussed in [Section 17.5](#), provides a description of procedural requirements for material control.

13.5.2.2.8 Security Procedures

A discussion of security procedures is provided in the Security Plan.

The Special Nuclear Material (SNM) Physical Protection Program describes the 10 CFR Part 70 required protection program in effect for the period of time during which new fuel as SNM is received and stored in a controlled access area (CAA), in accordance with the requirements of 10 CFR 73.67.

The New Fuel Shipping Plan addresses the applicable 10 CFR 73.67 requirements in the event that unirradiated new fuel assemblies or components are returned to the supplying fuel manufacturer(s) facility.

13.5.2.2.9 Special Nuclear Material (SNM) Material Control and Accounting Procedures

STD COL 13.5-1 A material control and accounting system consisting of special nuclear material accounting procedures is utilized to delineate the requirements, responsibilities, and methods of special nuclear material control from the time special nuclear material is received until it is shipped from the plant. These procedures provide detailed steps for SNM shipping and receiving, inventory, accounting, and preparing records and reports. The Special Nuclear Material (SNM) Material Control and Accounting (MC&A) Program description is submitted to the Nuclear Regulatory Commission as a separate licensing basis document.

STD DEP 1.1-1 13.5.3 Combined License Information Item

STD COL 13.5-1 Information for this COL item is addressed in [Section 13.5](#).

13.5.4 REFERENCES

201. ANSI/ANS 3.2-1988, "Administrative Control and Quality Assurance for the Operational Phase of Nuclear Power Plants".
 202. ANSI B30.2 (Chapter 2-3), "Overhead and Gantry Cranes".
-

STD COL 13.5-1

TABLE 13.5-201
PRE-COL PHASE ADMINISTRATIVE PROGRAMS AND
PROCEDURES

(This table is included for future designation as historical information.)

- Design/Construction Quality Assurance Program
- Reporting of Defects and Noncompliance, 10 CFR Part 21 Program
- Design Reliability Assurance Program

13.6 SECURITY

This **section** of the referenced DCD is incorporated by reference with the following departures and /or supplements.

WLS COL 13.6-1 The Security Plan consists of the Physical Security Plan, the Training and
WLS COL 13.6-5 Qualification Plan, and the Safeguards Contingency Plan. The Security Plan is submitted to the Nuclear Regulatory Commission as a separate licensing document in order to fulfill the requirements of 10 CFR 52.79(a)(35) and 52.79(a)(36). The Security Plan meets the requirements contained in 10 CFR Part 73 and will be maintained in accordance with the requirements of 10 CFR 52.98. The Plan is categorized as Security Safeguards Information and is withheld from public disclosure pursuant to 10 CFR 73.21.

WLS COL 13.6-5 The Cyber Security Plan is submitted to the Nuclear Regulatory Commission as a separate licensing document to fulfill the requirements contained in 10 CFR 52.79(a)(36) and 10 CFR 73.54. The Cyber Security Plan will be maintained in accordance with the requirements of 10 CFR 52.98. The Plan is withheld from public disclosure pursuant to 10 CFR 2.390.

Table 13.4-201 provides milestones for security program implementation.

13.6.1 COMBINED LICENSE INFORMATION ITEMS

STD COL 13.6-1 Information for the Security Plan portion of this COL item is addressed in **Section 13.6**.

Information for the Physical Security ITAAC portion of this COL item is addressed in **Subsection 14.3.2.3.2**.

STD COL 13.6-5 Information for the cyber security program portion of this COL item is addressed in **Section 13.6**.

13.6.2 REFERENCES

201. Not used.

202. Not used.

- STD DEP 1.1-1 DCD Section 13.7 is redistributed to include DCD Section 13.7 References 7, 8, and 10 with COLA **FSAR Subsection 13.5.4** and DCD Section 13.7 References 2, 3, and 4 with COLA **FSAR Subsection 13.6.2**.
-

Add the following new section after DCD Section 13.6.

13.7 FITNESS FOR DUTY

- WLS SUP 13.7-1 The Fitness for Duty (FFD) Program is implemented and maintained in two phases; the construction phase program and the operating phase program. The construction and operations phase programs are implemented as identified in **Table 13.4-201**.

The construction phase program is consistent with NEI 06-06 (**Reference 201**). The workforce population subject to random testing during construction is determined on a weekly basis by averaging the total number of active construction badges over the preceding seven-day period. The random selection from each week's workforce population is identified by a standard computer-generated random number generator using the number of active badges as the range of numbers considered in the weekly random testing selection.

The operations phase program is consistent with 10 CFR Part 26.

13.7.1 REFERENCES

201. Nuclear Energy Institute "Fitness for Duty Program Guidance for New Nuclear Power Plant Construction Sites", NEI 06-06, Revision 4, February 2009.
-

Add the following new appendix at the end of DCD Chapter 13.

APPENDIX 13AA DESIGN AND CONSTRUCTION

The information in this appendix is included for future designation as historical information. Paragraphs are numbered to be subsequent to **Subsection 13.1.1.1**.

WLS COL 13.1-1 13AA.1.1.1.1 Design and Construction Activities

The Westinghouse Electric Company (WEC) was selected to design, fabricate, deliver, and install the AP1000 advanced light water pressurized water reactors (PWR) and to provide technical direction for installation and startup of this equipment. **DCD Subsection 1.4.1** provides detailed information regarding WEC past experience in design, development, and manufacturing of nuclear power facilities. Operating experience from design, construction, and operation of earlier WEC PWRs is applied in the design, construction, and operation of the AP1000 as described in numerous locations throughout the DCD (e.g., **DCD Subsections 3.6.4.4, 3.9.4.2.1, 4.2.3.1.3**).

A construction architect engineer (AE) provides the construction of the plant and additional design engineering for selected site specific portions of the plant. The AE is selected based on experience and proven technical capability in nuclear construction projects or projects of similar scope and complexity.

Other design and construction activities are generally contracted to qualified suppliers of such services. Implementation or delegation of design and construction responsibilities is described in the subsections below. Quality assurance aspects of these activities are described in **Chapter 17**.

13AA.1.1.1.1.1 Principal Site-Related Engineering Work

The principal site engineering activities accomplished towards the construction and operation of the plant are:

a. Meteorology

Information concerning local (site) meteorological parameters is developed and applied by station and contract personnel to assess the impact of the station on local meteorological conditions. Onsite meteorological measurements are obtained by station personnel to produce data for the purpose of making atmospheric dispersion estimates for postulated accidental and expected routine airborne releases of effluents. Maintenance procedures are established for surveillance, calibration, and repair of instruments. Meteorological information is summarized in **Section 2.3**.

b. Geology

Information relating to site and regional geotechnical conditions is developed and evaluated by utility and contract personnel to determine if geologic conditions could present a challenge to safety of the plant. Items of interest include geologic structure, seismicity, geological history, and groundwater conditions. During construction, foundations within the power block area are mapped or visually inspected and photographed. [Section 2.5](#) provides details of these investigations.

c. Seismology

Information relating to seismological conditions is developed and evaluated by utility and contract personnel to determine if the site location and area surrounding the site is appropriate from a safety standpoint for the construction and operation of a nuclear power plant. Information regarding tectonics, seismicity, correlation of seismicity with tectonic structure, characterization of seismic sources, and ground motion are assessed to estimate the potential for strong earthquake ground motions or surface deformation at the site. [Section 2.5](#) provides details of these investigations.

d. Hydrology

Information relating to hydrological conditions at the plant site and the surrounding area is developed and evaluated by utility and contract personnel. The study includes hydrologic characteristics of streams, lakes, shore regions, the regional and local groundwater environments, and existing or proposed water control structures that could influence flood control and plant safety. [Section 2.4](#) includes more detailed information regarding this subject.

e. Demography

Information relating to local and surrounding area population distribution is developed and evaluated by utility and contract personnel. The data is used to determine if requirements are met for establishment of exclusion area, low population zone, and population center distance. [Section 2.1](#) includes more detailed information regarding population around the plant site.

f. Environmental Effects

Monitoring procedures are developed to enable the collection of data necessary to determine possible impact on the environment due to construction, startup, and operational activities and to establish a baseline from which to evaluate future environmental monitoring.

13AA.1.1.1.1.2 Design of Plant and Ancillary Systems

Responsibility for design and construction of systems outside the power block such as circulating water, service water, switchyard, and secondary fire protection systems is delegated to qualified contractors.

13AA.1.1.1.1.3 Review and Approval of Plant Design Features

Design engineering review and approval is performed in accordance with the reactor technology vendor QA program and FSAR [Section 17.1](#). The reactor technology vendor is responsible for design control of the power block. Verification is performed by competent individuals or groups other than those who performed the original design. Design issues arising during construction are addressed and implemented with notification and communication of changes to the manager in charge of engineering for review. As systems are tested and approved for turnover and operation, control of design is turned over to plant staff. The manager in charge of engineering, along with functional managers and staff, assumes responsibility for review and approval of modifications, additions, or deletions in plant design features, as well as control of design documentation, in accordance with the operational QA program. Design control becomes the responsibility of the manager in charge of engineering prior to loading fuel. During construction, startup, and operation, changes to human-system interfaces of control room design are approved using a human factors engineering evaluation addressed within [Chapter 18](#). See organization charts, [Figure 13.1-201](#) and [13AA-201](#) for reporting relationships.

13AA.1.1.1.1.4 Site Layout With Respect to Environmental Effects and Security Provisions

Site layout was considered when determining the expected environmental effects from construction.

The Physical Security Plan is designed with provisions that meet the applicable NRC regulations. Site layout was considered when developing the Physical Security Plan.

13AA.1.1.1.1.5 Development of Safety Analysis Reports

Information regarding the development of the FSAR is found in [Chapter 1](#).

13AA.1.1.1.1.6 Review and Approval of Material and Component Specifications

Safety-related material and component specifications of structures, systems, and components designed by the reactor technology vendor are reviewed and approved in accordance with the reactor technology vendor quality assurance program and [Section 17.1](#). Review and approval of items not designed by the reactor technology vendor are controlled for review and approval by [Section 17.5](#) and the QAPD.

13AA.1.1.1.1.7 Procurement of Materials and Equipment

Procurement of materials during construction phase is the responsibility of the reactor technology vendor and constructor. The process is controlled by the construction QA programs of these organizations under the flowdown requirements established by the Duke Energy quality assurance program in effect.

Oversight of the inspection and receipt of materials process is the responsibility of the manager in charge of nuclear QA and oversight.

13AA.1.1.1.1.8 Management and Review of Construction Activities

Overall management and responsibility for construction activities is assigned to the site executive in charge of plant management. The project director of the engineering, procurement, and construction (EPC) contractor is accountable to the site executive in charge of plant management for construction activities. See organization chart [Figure 13AA-201](#). Construction management personnel are sufficient in number to provide effective oversight in the areas of cost, schedule, and other functions as deemed necessary by the manager in charge of construction. [Table 13.1-201](#) provides additional information regarding the number of station personnel. Monitoring and review of construction activities by utility personnel is a continuous process at the plant site. Contractor performance is monitored to provide objective data to utility management in order to identify problems early and develop solutions. Monitoring of construction activities verifies that contractors are in compliance with contractual obligations for quality, schedule, and cost. Monitoring and review of construction activities is divided functionally across the various disciplines of the utility construction staff, e.g., electrical, mechanical, instrument and control, etc., and tracked by schedule based on system and major plant components/areas.

After each system is turned over to plant staff the construction organization relinquishes responsibility for that system. At that time they will be responsible for completion of construction activities as directed by plant staff and available to provide support for preoperational and start-up testing as necessary.

Periodic assessment involving both the construction and operations organizations continues to identify SSCs that could reasonably be expected to be impacted by scheduled construction activities. Appropriate administrative and managerial controls are then established as necessary. Specific hazards, impacted SSCs, and managerial and administrative controls are reviewed on a recurring basis and, if necessary, controls are revised/developed and implemented and maintained current as work progresses on site. For example, prior to construction activities that involve the use of large construction equipment such as cranes, managerial and administrative controls are in place to prevent adverse impacts on any operating unit(s) overhead power lines, switchyard, security boundary, etc., by providing the necessary restrictions on the use of large construction equipment.

13AA.1.1.1.2 Preoperational Activities

The plant manager reports to the site executive in charge of plant management. The plant manager, with the aid of those managers that report directly to the plant manager, is responsible for the activities required to transition the unit from the construction phase to the operational phase. These activities include turnover of systems from construction, preoperational testing, schedule management, procedure development for tests, fuel load, integrated startup testing, and turnover of systems to plant staff.

13AA.1.1.1.2.1 Development of Human Factors Engineering Design Objectives and Design Phase Review of Proposed Control Room Layouts

Human Factors Engineering design objectives are initially developed by the reactor technology vendor in accordance with [Chapter 18](#) of the FSAR and the Design Control Document (DCD). As a collaborative team, personnel from the reactor technology vendor design staff and personnel, including, licensed operators, engineers, and instrumentation and control technicians from owner and other organizations in the nuclear industry assess the design of the control room and man-machine interfaces to attain safe and efficient operation of the plant. See [Section 18.2](#) for additional details of human factors engineering (HFE) program management.

Modifications to the certified design of the control room or man-machine interface described in the DCD are reviewed per engineering procedures, as required by [Section 18.2](#), to evaluate the impact to plant safety. The manager in charge of engineering is responsible for the HFE design process and for the design commitment to HFE during construction and throughout the life of the plant as noted in [Subsection 13.1.1.2.1](#). The HFE program is established in accordance with the description and commitments in [Chapter 18](#).

13AA.1.1.1.2.2 Preoperational Testing Organization

Preoperational and startup testing is conducted by the plant test and operations (PT&O) organization. The PT&O organization functions and responsibilities are addressed in [Section 14.2](#). Sufficient numbers of personnel are assigned to perform preoperational and startup testing to facilitate safe and efficient implementation of the testing program. Plant specific training provides instruction on the administrative controls of the test program. To improve operational experience, operations and technical staff are used as support in conducting the test program and in reviewing test results.

See [Figure 13AA-201](#) for organization chart for preoperational and startup testing.

13AA.1.1.1.3 Development and Implementation of Staff Recruiting and Training Programs

Staffing plans are developed based on operating plant experience with input from the reactor technology vendor as determined by HFE. See [Section 18.6](#). These plans are developed under the direction and guidance of the site executive in charge of plant management. Staffing plans are completed and manager level positions are filled prior to start of preoperational testing. Personnel selected to be licensed reactor operators and senior reactor operators along with other staff necessary to support the safe operation of the plant are hired with sufficient time available to complete appropriate training programs, and become qualified, and licensed, if required, prior to fuel being loaded in the reactor vessel. See [Figure 13AA-202](#) for an estimated timeline of hiring requirements for operator and technical staff relative to fuel load.

Because of the dynamic nature of the staffing plans and changes that occur over time, it is expected that specific numbers of personnel on site will change; however, [Table 13.1-201](#) includes the initial estimated number of staff for selected positions and the estimated number of additional positions required for a second unit. Recruiting of personnel to fill positions is the shared responsibility of the manager in charge of human resources and the various heads of departments.

The training program is described in [Section 13.2](#).

13AA.1.1.1.4 Development of Plant Maintenance Programs

To ensure equipment operability and reliability, plant maintenance programs such as preventive and corrective maintenance are developed and made effective during the preoperation/startup phase with approved administrative procedures under the direction of the managers in charge of maintenance, engineering, and work control.

13AA.1.1.1.5 Qualification

Qualification and experience requirements for personnel of the PT&O organization are addressed in FSAR [Subsection 14.2.2.2](#). Station management and supervisory personnel in the design and construction management organization meet the qualification requirements in education and experience for those described in ANSI/ANS-3.1-1993 ([Reference 13.1.5-201](#)) as endorsed and amended by Regulatory Guide 1.8. For positions listed in FSAR [Table 13.1-201](#) that do not have a cross-reference section in ANSI/ANS-3.1 the most comparable section of ANSI/ANS-3.1 is used for guidance in establishing experience and education requirements.
