CHAPTER 13

CONDUCT OF OPERATIONS

TABLE OF CONTENTS

TABLE OF CONTENTS (Continued)

TABLE OF CONTENTS (Continued)

TABLE OF CONTENTS (Continued)

LIST OF TABLES

LIST OF FIGURES

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.

HAR 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 HAR 2 and 3 specific to show the HNP interface of the position.

Table 13.1-201, Generic Position/Site Specific Position Cross Reference, provides a cross-reference to identify the corresponding generic position titles.

STD DEP 1.1-1

13.1.1 MANAGEMENT AND TECHNICAL SUPPORT ORGANIZATION

Progress Energy has over 35 years of experience in the design, construction, and operation of nuclear generating stations. The Progress Energy Nuclear Generation Group operates five nuclear units at four sites: Harris Nuclear Plant Unit 1, Brunswick Nuclear Plant Units 1 and 2, H.B. Robinson Nuclear Plant Unit 2, and Crystal River Nuclear Plant Unit 3. The Nuclear Generation Group organization includes, but is not limited to Nuclear Plant Development, Nuclear Projects and Construction, Nuclear Engineering and Services, Nuclear Information Technology, Material Services, Nuclear Security, and Performance Evaluation and Regulatory Affairs.

13.1.1.1 Design, Construction, and Operating Responsibilities

The Chief Executive Officer has overall responsibility for functions involving design, construction, and operation of Progress Energy's nuclear plants. Line responsibilities for those functions are assigned to the Senior Vice President – Nuclear Generation Group / Chief Nuclear Officer (CNO) who directs the Vice President at each nuclear plant site in the operation of current plants, the Vice President – Nuclear Engineering and Services in the support of the current plants, and the Vice President – Nuclear Projects and Construction in the design and construction of new nuclear plant generation. 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. The corporate organization is shown in Figure 13.1-203. 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 Vice President – Nuclear Projects and Construction or designated project manager for HAR 2 and 3, the Plant General Manager for HAR 2 and 3 and the Vice President – Nuclear Engineering and Services establish 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 13.1.1.3.2 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. Physical separation of units helps to minimize wrong-unit activities. 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 Nuclear Engineering and Services

The Nuclear Engineering and Services department consists of system engineering, design engineering, engineering programs, nuclear fuel management, and safety and engineering analysis. These groups are responsible for performing the classical design activities, as well as providing engineering expertise in other areas of new plant sites and license renewal at current plant sites.

Each of the engineering groups has a functional manager who reports to the Vice President – Nuclear Engineering and Services. See Figure 13.1-201.

The Nuclear Engineering and Services 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 site management 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 site management.
- 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, led by the Manager – Nuclear Fuel Management and Safety Analysis, 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 Program Description (QAPD).

Engineering resources are shared between units. A single management organization oversees the engineering work associated with the station units.

13.1.1.2.2 Nuclear Safety Assurance

The Performance Evaluation and Regulatory Affairs Section (PE&RAS) provides independent oversight of the plants' nuclear assessment sections, maintains the Quality Assurance Program Manual, administers the nuclear employee concerns program and is the normal contact point for the corporation with the NRC in matters concerning licensing.

Review and audit activities are covered in Chapter 17 and the QAPD. Performance evaluation, regulatory affairs, and self evaluation each have a supervisor who reports to and receives direction from the Manager – Performance Evaluation and Regulatory Affairs. Oversight of safety review of station programs, procedures, and activities is performed by a plant nuclear safety review committee, a corporate nuclear safety review committee, and the PE&RA organization.

Personnel resources of the PE&RAS organization are shared between units.

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 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. The QA function includes:

- Maintenance of the QAPD.
- Coordinating the development of audit schedules.
- Audit, surveillance, and evaluation of nuclear division suppliers.
- Support of general quality assurance indoctrination and training for the nuclear station personnel.

The site Nuclear Assessment Section contains the QA organization and is independent of the station operating line organization. Quality Control (QC) inspection/testing activities to support plant operation, maintenance, and outages are independent of the station operating line organization. QA and QC personnel report to the Manager – Nuclear Assessment HNP.

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

13.1.1.2.4 Chemistry

A chemistry program 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 Superintendent – Environmental & Chemistry is responsible to the Plant General Manager for maintaining chemistry programs and for monitoring and maintaining the water chemistry of plant systems. The staff of the chemistry department consists of laboratory technicians, support personnel, and supervisors who report to the Superintendent – Environmental & Chemistry.

Personnel resources of the chemistry organization are shared between units. Separate management organizations oversee the chemistry groups for HNP and HAR Units 2 and 3.

13.1.1.2.5 Radiation Protection

A radiation protection (RP) program 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 Superintendent – Radiation Protection. To provide sufficient organizational freedom from operating pressures, the Superintendent – Radiation Protection reports directly to the Plant General Manager.

Personnel resources of the RP organization are shared between units. Separate management organizations oversee the RP groups for HNP and HAR Units 2 and 3.

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 outage organization. The Manager – Outage & Scheduling is responsible for planning and scheduling outages and for refueling support. The Manager – Outage and Scheduling reports to the Plant General Manager.

Personnel resources of the outage and scheduling organization are shared between units. Separate management organizations oversee the outage and scheduling groups for HNP and HAR Units 2 and 3.

13.1.1.2.7 Training and Development

The site 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 Manager – Training HNP 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. Separate management organizations oversee the training groups for HNP and HAR Units 2 and 3.

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. The Manager – Maintenance reports to the Plant General Manager. .

Personnel of the maintenance support organization are shared between units. Separate management organizations oversee the maintenance groups for HNP and HAR Units 2 and 3.

13.1.1.2.9 Operations Support

The operations support function is provided under the direction of the Manager – Operations at each site. Operations support includes the following programs:

- Operations procedures
- Operations surveillances
- Equipment tagging
- Fire protection testing and surveillance
- Radwaste system operation

13.1.1.2.10 Fire Protection

HAR COL 9.5-1

The station is committed to maintaining a Fire Protection Program as described in Section 9.5. The Vice President – HNP 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 Vice President – HNP 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 Supervisor – Fire Protection. The Vice President – HNP, through the Supervisor – Fire Protection is responsible for development and implementation of the Fire Protection Program including development of fire protection procedures, site personnel and fire brigade training, and inspections of fire protection systems and functions. The Lead Engineer – Fire Protection Program reports through the direct line of authority to the Vice President – HNP. Functional descriptions of position responsibilities are included in appropriate procedures. Station personnel are responsible for adhering to the fire protection/ prevention requirements detailed

in Section 9.5. The Vice President – HNP has the lead responsibility for the overall site fire protection during construction of new units.

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

13.1.1.2.11 Emergency Response Organization

HAR COL 13.1-1 The emergency response 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 administrate and orchestrate drills and training to maintain qualification of station staff members and develop procedures to guide and direct the emergency organization during an emergency. At each site, the Supervisor – Emergency Preparedness reports to the Manager – Support Services. 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 Manager – Material Services reports to the Vice President – Nuclear Engineering and Services.

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. A high-level chart of the utility headquarters and engineering organization is illustrated in Figure 13.1-203. Executives and management 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 responsible for directing Progress Energy's core operational business including Progress Energy Florida, Progress Energy Carolinas, Nuclear Generation and Power Operations Groups. The CEO is assisted in the direction of nuclear operations by the Senior Vise President – Nuclear Generation Group / Chief Nuclear Officer and other executive staff in the nuclear division of the corporation.

13.1.1.3.1.2 Senior Vice President – Nuclear Generation Group / Chief Nuclear Officer

The Senior Vice President – Nuclear Generation Group / Chief Nuclear Officer (CNO) reports to the CEO. The CNO is responsible for overall plant nuclear safety and takes the measures needed to provide acceptable performance of the staff in constructing, operating, maintaining, and providing technical support to the plant. The CNO is responsible for oversight of operations at each of the operating nuclear units in the system. The CNO delegates authority and responsibility for the operation and support of the site through the Vice President – HNP, Vice President – Nuclear Engineering and Services and Manager – Performance Evaluation and Regulatory Affairs. The CNO delegates authority and responsibility for the development and construction of new nuclear generation through the Vice President – Nuclear Projects and Construction. It is the responsibility of the CNO to provide guidance and direction such that safety-related activities, including engineering, construction, operations, operations support, maintenance and planning are performed following the guidelines of the Quality Assurance (QA) Program. The CNO has no ancillary responsibilities that might detract attention from nuclear safety matters.

13.1.1.3.1.3 Vice President – HNP

The Vice President – HNP reports to the CNO. The Vice President – HNP is directly responsible for management and direction of activities associated with the efficient, safe, and reliable operation of the nuclear station. The Vice President – HNP is assisted in management and technical support activities by the Director – Site Operations, Manager – Nuclear Assessment and Manager – Support Services as shown in Figure 13.1-201.

The Vice President – HNP is responsible for the site Fire Protection Program through the Supervisor – Fire Protection. See Subsection 13.1.1.2.10.

13.1.1.3.1.4 Vice President – Nuclear Engineering and Services

The Vice President – Nuclear Engineering and Services reports to the Chief Nuclear Officer and is responsible for providing guidance to the site engineering departments, directing the management of nuclear fuels, license renewal of current plants and licensing activities for new nuclear plants. Direction on matters relating to operational analysis, design, systems, engineering programs, and nuclear fuels is accomplished through the Chief Engineer – Nuclear Engineering and Services and the functional managers of engineering as detailed in Subsections 13.1.1.2.1 and 13.1.1.3.2.1. Direction on matters relating to new plant licensing and current plant license renewal are accomplished through the General Manager – Nuclear Plant Development and License Renewal.

13.1.1.3.1.5 Manager – Performance Evaluation and Regulatory Affairs

The Manager – Performance Evaluation and Regulatory Affairs (Section (PE&RAS) is responsible for corporate regulatory affairs, maintenance of the Quality Assurance Program Manual, administration of the nuclear employee concerns program, and providing independent oversight of the plants' nuclear assessment sections. Additionally, PE&RAS acts as the company's interface with INPO and NEI. The Manager – PE&RAS reports to the CNO.

13.1.1.3.1.6 Manager – Materials Services

The Manager – Material Services is responsible for providing direction and guidance for the preparation, review, approval, and issuance of procurement requisitions; qualification of suppliers, including supplier QA program implementation; and receipt and storage of materials, parts, and components, including receipt inspections. The Manager – Material Services reports to the Vice President – Nuclear Engineering and Services.

13.1.1.3.1.7 Manager – Nuclear Security

The Manager – Nuclear Security is responsible for providing guidance and direction to the Superintendent – Security at each site on the nuclear security, access authorization, and Fitness for Duty programs. The Manager – Nuclear Security reports to the CNO.

13.1.1.3.1.8 Vice President – Nuclear Projects and Construction

The Vice President – Nuclear Projects and Construction (VP–NP&C) is responsible for new nuclear generation, design, and construction, construction scheduling and cost control, testing activities, and turnover to operations for new nuclear generation facilities. This position will be responsible for the development and implementation of a construction QA organization and program consistent with company organization and policy. The VP– NP&C maintains control of new

nuclear generation construction through the managers in charge of nuclear project management and nuclear support services. The VP – NP&C reports to the CNO.

13.1.1.3.1.9 Director-Nuclear Information Technology

The Director – Nuclear Information Technology provides information technology services, safety related software services, and design, maintenance, and configuration control for NPD plant computing systems, structures and components. This position supports NPD activities through an interface agreement with Nuclear Engineering and Services.

13.1.1.3.2 Site Support Organization

13.1.1.3.2.1 Manager – Harris Engineering and Support

The Manager – Harris Engineering and Support is the on-site lead position for engineering and reports to the Director – Site Operations. The Manager – Harris Engineering and Support 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 Subsection 13.1.1.2.1. The Manager – Harris Engineering and Support directs functional managers responsible for system engineering, design engineering, and engineering programs.

A single management organization oversees the engineering support for the station units.

13.1.1.3.2.1.1 Superintendent – System Engineering

The Superintendent – System Engineering 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 Subsection 13.1.1.2.1.

The Superintendent – 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.
- Providing safety-related software services including the maintenance, testing and configuration control of plant digital I&C systems.
- Identification of plant spare parts for cognizant systems.

13.1.1.3.2.1.2 Superintendent – Design Engineering

The Superintendent – Design Engineering is responsible for:

- Resolution of design issues.
- On-site 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.
- Implementation of the Fire Protection Program.

13.1.1.3.2.1.3 Superintendent – Technical Services

The Superintendent – Technical Services is responsible for programs such as:

- Materials engineering
- Performance/ISI engineering
- Valve engineering
- Maintenance rule tracking and trending
- Piping erosion/corrosion
- Inservice testing
- Equipment reliability engineering

13.1.1.3.2.2 Manager – Nuclear Assessment HNP

The Manager – Nuclear Assessment HNP is responsible for overall management of independent assessment, independent safety review, and quality control programs. In this capacity, the manager shall: manage performance-based assessments activities in a manner that facilitates achievement of world class performance by the line organizations in the area of nuclear safety; identify issues and weaknesses in the area of nuclear performance to plant and senior management; promote self-assessment within the line organization by on-the-job training and example; manage quality control functions to ensure plant activities are conducted in accordance with appropriate regulatory and design commitments; and manage the independent safety review program. The

responsibilities of the Manager – Nuclear Assessment HNP are fulfilled through the Superintendent – Plant Support Assessment and the QA/QC personnel under the authority of the Manager – Nuclear Assessment HNP. The Manager – Nuclear Assessment HNP reports to the Vice President – HNP.

13.1.1.3.2.3 Manager – Support Services

The Manager – Support Services provides staff functions to the entire plant for licensing activities, document services and management of the operating experience, corrective action and Emergency Preparedness Programs. The section is responsible for the maintenance of the FSAR and Technical Specifications and serves as the primary contact for the NRC. The Manager – Support Services is assisted by supervisors and staff within the following units:

- Licensing / Regulatory programs
- Emergency Preparedness
- Self-evaluation / Document Services
- Financial Services

13.1.1.3.2.3.1 Supervisor – Licensing and Regulatory Programs

The responsibility of the Supervisor – Licensing and Regulatory Programs is to provide a coordinated focus for interface with the NRC and technical direction and administrative guidance for the licensing staff for the following activities:

- Developing licensee event reports (LERs) and responding to notices of violations.
- Writing / submitting operating licensee and technical specification amendments and updating the UFSAR.
- 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 license basis.

The Supervisor – Licensing and Regulatory Programs reports directly to the Manager – Support Services.

13.1.1.3.2.3.2 Supervisor – Self Evaluation and Document Services

The Supervisor – Self Evaluation and Document Services is responsible for:

- Establishing processes and procedures to facilitate identification.
- Correction of conditions adverse to quality.
- Implementation of corrective actions to preclude repetition.

The Supervisor – Self Evaluation and Document Services reports to the Manager – Support Services.

13.1.1.3.2.3.3 Supervisor – Emergency Preparedness

The Supervisor – 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.
- Emergency action level development.
- NRC reporting associated with 10 CFR 50.54(q).

The Supervisor – Emergency Preparedness reports to the Manager – Support Services.

13.1.1.3.2.3.4 Supervisor – Financial Services

The Supervisor – Financial Services is responsible for assisting plant management with:

- Budget development, cost control, and budgeting status.
- Business Plan development and status reporting.
- Project analysis and cost control support.
- Financial Performance Analysis and reporting.

The Supervisor – Financial Services reports to the Manager – Support Services.

13.1.1.3.2.4 Manager – Training HNP

HAR COL 18.10-1

The Manager – Training HNP is responsible for training programs 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 – Training HNP may seek assistance from other departments within the company or outside specialists such as educators and manufacturers. The Manager – Training HNP supervises a staff of training supervisors who coordinate the development, preparation, and presentation of training programs for nuclear plant personnel. The Manager – Training HNP reports to the Director – Site Operations.

13.1.1.3.2.4.1 Superintendent – Operations Training

The responsibilities of the Superintendent – Operations Training for HAR 2 and 3 include:

- Coordinating and supervising the development and administration of the licensed operator training program.
- Verifying proper content and conduct of the licensed operator training program.
- Maintaining the licensed operator training program in compliance with the latest revision of applicable regulations or codes.
- Implementing necessary training that reflects changes to plant design and procedures.

The Superintendent – Operations Training reports to the Manager – Training HNP.

Separate management organizations oversee the HNP and HAR 2 and 3 Operations training programs.

13.1.1.3.2.4.2 Supervisor – Technical Training

The responsibilities of the Supervisor – Technical Training for HAR Units 2 and 3 include:

- Coordinating and supervising the development and administration of the maintenance, chemistry, radiation protection, engineering support, and general employee training programs.
- Verifying proper content and conduct of the technical training programs.
- Maintaining the technical training program in compliance with the latest revision of applicable regulations or codes.

- Implementing necessary training that reflects changes to plant design and procedures.

The Supervisor – Technical Training reports to the Manager – Training HNP.

Separate management organizations oversee the HNP and HAR Units 2 and 3 operator training programs.

HAR COL 13.1-1

13.1.1.3.2.5 Superintendent – Materials and Contract Services

The Superintendent – Materials and Contract Services is responsible for providing sufficient and proper materials to support the material needs of the plant and performing related activities including:

- Procedure development
- Materials storage
- Supply system database maintenance
- Meeting QA and internal audit requirements.
- Site purchasing

The Superintendent – Materials and Contract Services reports directly to the corporate Manager – Material Services and indirectly to the Plant General Manager.

13.1.1.3.2.6 Superintendent – Security

The Superintendent – 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 Superintendent – Security reports directly to the corporate Manager – Nuclear Security and indirectly to the Vice President – HNP.

13.1.1.3.2.7 Manager – Nuclear Information Technology

The Manager – Nuclear Information Technology provides site support for safety-related software services including the design, maintenance, and configuration control of plant computing structures, systems or components.

The Manager – Nuclear Information Technology reports directly to the Director – Nuclear Information Technology for the Nuclear Generation Group and indirectly to the Manager – Support Services.

13.1.1.4 Qualifications of Technical Support Personnel

HAR 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. The qualification and experience requirements of headquarters staff is established in accordance with current corporate nuclear policy and procedure manuals.

STD DEP 1.1-1

13.1.2 OPERATING ORGANIZATION

HAR COL 13.1-1

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 Chapter 17 and the QAPD. Administrative procedures or standing orders include:

- Establishment of a QA Program for the operational phase.
- Preparation of procedures necessary to carry out an effective QA Program. See Section 13.5 for description of the station procedure program.
- A program for review and audit of activities affecting plant safety. See Section 17.5 and the QAPD for description of station review and audit programs.
- Programs and procedures for rules of practice as described in Section 5.2 of N18.7-1976/ANS-3.2 (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.

- Ensure department personnel receive training on radiation protection and 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 Director – Site Operations

The Director – Site Operations directs the efforts of the Manager – Training HNP, the Manager – Engineering HNP, the Plant General Manager for HNP, and the Plant General Manager for HAR 2 and 3. The Director – Site Operations reports to the Vice President – HNP.

13.1.2.1.2 Plant General Manager

The Plant General Manager is responsible for overall safe operation of the plant and has control over those on-site activities necessary for safe operation and maintenance of the plant including the following:

- Operations

- Maintenance and modification

- Chemistry and radiochemistry

- Outage management

Additionally, the Plant General Manager has overall responsibility for occupational and public radiation safety. Radiation protection responsibilities of the Plant General 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 Superintendent – 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 General 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.

In the absence of the Plant General Manager – HNP or Plant General Manager HAR 2 and 3, the on-site individual designated by the applicable Plant General Manager shall be "in charge" for the duration of the absence. This will normally be the scheduled Duty Manager. The succession of authority includes the authority to issue standing or special orders as required.

As described in Subsection 13.1.2.1.3.4, the Superintendent – Shift Operations is the Plant General Manager's direct representative for the conduct of operations.

13.1.2.1.2.1 Manager – Maintenance

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

The Manager – 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 – Maintenance reports to the Plant General Manager and provides direction and guidance to the maintenance discipline functional managers and maintenance support staff.

13.1.2.1.2.2 Maintenance Superintendents

The superintendent of each maintenance discipline (mechanical, electrical, instrumentation and control, and support) is 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 superintendent is responsible for liaison with other plant staff organizations to facilitate safe operation of the station. These superintendents report to the Manager – Maintenance.

13.1.2.1.2.3 Maintenance Supervisors

The maintenance 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 superintendent.

13.1.2.1.2.4 Maintenance Mechanics, Electricians, and Instrumentation and Control Technicians

The discipline craft perform electrical and mechanical maintenance, I&C and support tasks as assigned by the discipline supervisors. They trouble shoot, inspect, repair, maintain, and modify plant equipment and perform technical specification surveillances on equipment for which they have cognizance. They perform these tasks in accordance with approved procedures and work packages.

13.1.2.1.2.5 Manager – Outage and Scheduling

The Manager – Outage and Scheduling is responsible for:

- Planning and scheduling refueling, maintenance, and forced outages.
- Providing direction and guidance to staff members in establishing outage activities.
- Minimizing shutdown risk during outages with proper planning and preparation.
- Directing activities during outages to provide safe, efficient, and effective outages.
- Planning and scheduling online work activities, monitoring the online work process and risk management.

The Manager – Outage and Scheduling is assisted by the Supervisor – Outage Management and the Supervisor – Online Scheduling. The Manager – Outage and Scheduling reports to the Plant General Manager. See Subsection 13.1.1.2.6.

13.1.2.1.2.6 Superintendent – Radiation Protection

The Superintendent – Radiation Protection has the direct 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 Superintendent – 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 Superintendent – Radiation Protection reports to the Plant General Manager and is assisted by the Supervisor – Radiation Protection.

13.1.2.1.2.7 Supervisors – Radiation Protection

The Supervisors – 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.

Supervisor – Radiation Protection report to the Superintendent – Radiation Protection.

13.1.2.1.2.8 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 Superintendent – 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.

13.1.2.1.2.9 Superintendent – Environmental & Chemistry

The Superintendent – Environmental & Chemistry is responsible for development, implementation, and direction and coordination of the chemistry, radiochemistry, and nonradiological environmental monitoring programs. This area includes overall operation of the hot lab, cold lab, emergency off-site facility lab, and nonradiological environmental monitoring. The Superintendent – Environmental & Chemistry is responsible for the development, administration, and implementation of procedures and programs, which provide for effective compliance with environmental regulations. The Superintendent – Environmental & Chemistry reports to the Plant General Manager and directly supervises the chemistry supervisors and chemistry technicians as assigned.

13.1.2.1.3 Operations Department

Operations activities are conducted with safety of the public, personnel, 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 loading.
- 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 authority of the Manager – Operations, who through the Manager – Shift 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. To operate, or supervise the operation of more than one unit, an operator (senior reactor operator [SRO] or reactor operator [RO]) must hold an appropriate, current license for each unit. A separate management organization oversees the operations group for HNP or HAR 2 and 3. See Table 13.1-201 for estimated number of staff in the operations department for single or multiple unit sites.

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.

13.1.2.1.3.1 Manager – Operations

The Manager – Operations has overall responsibility for the day-to-day operation of the plant. The Manager – Operations reports to the Plant General Manager and is assisted by the Manager – Shift Operations for each unit and the Superintendent – Operations Support. The Manager – Operations or the Manager – Shift Operations for each unit is SRO licensed.

13.1.2.1.3.2 Manager – Shift Operations

The Manager – Shift Operations, under the direction of the Manager – 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 Superintendent – 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 Superintendent – Operations Support.

The Manager – Shift Operations is assisted in these areas by the Superintendents – Shift Operations who direct the operating shift personnel. The Manager – Shift Operations reports to the Manager – Operations.

13.1.2.1.3.3 Superintendent – Operations Support

The Superintendent – Operations Support, under the direction of the Manager – 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.

- Coordinating operations related to Fire Protection Program activities with the Supervisor – Fire Protection.

The Superintendent – Operations Support is assisted by the work management, operations procedures and other support personnel.

13.1.2.1.3.4 Superintendent – Shift Operations

The Superintendent – Shift Operations (S–SO) is a licensed SRO responsible for the control room command function, and is the Plant General Manager's direct management representative for the conduct of operations. As such, the S–SO has the responsibility and authority to direct the activities and personnel on-site 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 S–SO retains this responsibility and authority until formally relieved of operating responsibilities by a licensed SRO. Additional responsibilities of the S–SO 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 S–SO 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 S–SO is assisted in carrying out the above duties by the Control Room Supervisors in charge on shift and the operating shift personnel. The S–SO reports to the Manager – Shift Operations.

13.1.2.1.3.5 Control Room Supervisors

The Control Room Supervisor (CRS) is a licensed SRO. The primary function of the CRS is to administratively support the S–SO 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 S–SO. Other duties include:

- Being aware of maintenance and testing performed during the shift.
- Shutting down the reactor if conditions warrant this action.
- Informing the S–SO 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 S–SO 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 Control Room Supervisor reports directly to the S–SO.

13.1.2.1.3.6 Reactor Operator

The Reactor Operators are licensed reactor operators and report to the Control Room Supervisor. They are responsible for routine plant operations and performance of major evolutions at the direction of the Control Room Supervisor. 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 13.1.2.1.4, Conduct of Operations.

13.1.2.1.3.7 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 building operators and auxiliary operators as shown in Figure 13.1-202.

13.1.2.1.3.8 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 S–SO 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.

13.1.2.1.3.9 Supervisor – Fire Protection

HAR COL 9.5-1

Within the HNP Engineering and Support Unit, the Supervisor – Fire Protection is in charge of fire protection and the fire protection staff. Fire protection program implementation and maintenance are the responsibilities of the Lead Engineer – Fire Protection Program. The Supervisor – Fire Protection is responsible for:

- 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 training.
- Pre-fire planning including review and updating of pre-fire plans at least every two years.

The Supervisor – Fire Protection reports through the Manager – Harris Engineering and Support to the Vice President – HNP who has ultimate responsibility for fire protection of the plant. Additionally, the Supervisor – Fire Protection works with the Superintendent – Operations Support to coordinate activities and program requirements with the operations department. In accordance with Regulatory Guide 1.189 the Lead Engineer – Fire Protection Program 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.

HAR COL 13.1-1

13.1.2.1.3.10 Radwaste Operations Lead

The Radwaste Operations Lead is responsible for development, implementation, direction, and coordination of the radwaste activities. The Radwaste Operations Lead reports to the Manager – Shift Operations.

The Radwaste Operations Lead supervises radwaste operators assigned to the radwaste area.

13.1.2.1.4 Conduct of Operations

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 time of the Control Room Supervisor 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 Control Room Supervisor.

In accordance with 10 CFR 50.54:

- Reactivity controls may be manipulated only by licensed operators and senior 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 Control Room Supervisor.

- 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 operator or senior operator shall be present at the controls.

13.1.2.1.5 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. Routine shift operations staffing is illustrated in Figure 13.1-202.

13.1.2.1.6 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 S–SO nor any other members of the minimum shift operating crew necessary for safe shutdown of the unit. It does not 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.

STD DEP 1.1-1

13.1.3 QUALIFICATION REQUIREMENTS OF NUCLEAR PLANT PERSONNEL

13.1.3.1 Minimum Qualification Requirements

HAR COL 18.6-1

Qualifications of managers, supervisors, operators, and technicians of the 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, except for cold license operators as discussed in Appendix 13BB.

13.1.3.2 Qualification Documentation

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

STD DEP 1.1-1

13.1.4 COMBINED LICENSE INFORMATION ITEM

HAR COL 13.1-1

This COL item is addressed in Subsections 13.1.1 through 13.1.3.

13.1.5 REFERENCES

HAR COL 18.6-1
HAR COL 13.1-1

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”, N18.7-1976/ANS-3.2.

HAR COL 18.6-1
HAR COL 13.1-1

Table 13.1-201 (Sheet 1 of 7)
Generic Position/Site-Specific Position Cross Reference

Nuclear Function	Function Position – ANSI/ANS-3.1-1993 Section Reference		Nuclear Plant Position (Site-Specific)	Expected Additional Positions Second Unit	Expected Additional Positions Third Unit
Executive Management	Chief Executive Officer		Chief Executive Officer (CEO)	0	-
	Chief Nuclear Officer		Chief Nuclear Officer	0	-
	Executive, Nuclear Operations		Chief Nuclear Officer	0	-
	Executive, Nuclear Generation and Development		Vice President, Nuclear Projects and Construction	0	-
Nuclear Support	Executive, Operations Support		Vice President – HNP	0	-
Plant Management	Executive		Vice President – HNP	0	-
	Plant Manager	4.2.1	Plant General Manager	1	-
Engineering	Executive		Vice President – Nuclear Engineering and Services	0	-
	Manager	4.2.4	Manager – Harris Engineering & Support	0	-
System Engineering	Functional Manager	4.3.9	Superintendent – System Engineering	0	-
	System Engineer		System Engineer	24	12
Design Engineering	Functional Manager	4.3.9	Superintendent – Design Engineering	0	-
	Design Engineer		Design Engineer	12	0

HAR COL 18.6-1
HAR COL 13.1-1

Table 13.1-201 (Sheet 2 of 7)
Generic Position/Site-Specific Position Cross Reference

Nuclear Function	Function Position – ANSI/ANS-3.1-1993 Section Reference		Nuclear Plant Position (Site-Specific)	Expected Additional Positions Second Unit	Expected Additional Positions Third Unit
Engineering Programs	Functional Manager	4.3.9	Superintendent – Technical Services	0	-
	Programs Engineer		Programs Engineer	12	6
Reactor Engineering	Functional Manager	4.3.9	Supervisor – Reactor Engineering	1	-
	Reactor Engineer		Reactor Engineering	3	1
Maintenance	Manager	4.2.3	Manager – Maintenance	1	-
Instrumentation and Control	Functional Manager	4.3.4	Superintendent – Instrumentation and Control	1	-
	Supervisor	4.4.7	Supervisor – Instrumentation and Control Maintenance	3	1
	Technician	4.5.3.3	Instrumentation and Control Technician	22	12
Mechanical	Functional Manager	4.3.6	Superintendent – Mechanical Maintenance	2	-
	Supervisor	4.4.9	Supervisor – Mechanical	2	1
	Technician	4.5.7.2	Mechanic	22	8

HAR COL 18.6-1
HAR COL 13.1-1

Table 13.1-201 (Sheet 3 of 7)
Generic Position/Site-Specific Position Cross Reference

Nuclear Function	Function Position – ANSI/ANS-3.1-1993 Section Reference		Nuclear Plant Position (Site-Specific)	Expected Additional Positions Second Unit	Expected Additional Positions Third Unit
Electrical	Functional Manager	4.3.5	Superintendent – Instrumentation and Control / Electrical	1	-
	Supervisor	4.4.8	Supervisor – Electrical Maintenance	2	1
	Technician	4.5.7.1	Electrician	14	6
Support	Functional Manager	4.3	Superintendent – Programs, Projects & Facility Services	1	-
Operations	Manager	4.2.2	Manager – Operations	1	-
Operations, Plant	Functional Manager	4.3.8	Manager – Shift Operations	1	1
Operations, Admin	Functional Manager	4.3.8	Superintendent – Operations Support	1	-
Operations, (On-shift)	Functional Manager	4.4.1	Superintendent – Shift Operations	5	5
	Supervisor	4.4.2	Control Room Supervisor	5	5
	Licensed Operator	4.5.1	Control Room Operator	10	10
	Non-Licensed Operator	4.5.2	Non-Licensed Operator	25	15
	Shift Technical Supervisor	4.6.2	Shift Technical Advisor	5	5

HAR COL 18.6-1
HAR COL 13.1-1

Table 13.1-201 (Sheet 4 of 7)
Generic Position/Site-Specific Position Cross Reference

Nuclear Function	Function Position – ANSI/ANS-3.1-1993 Section Reference		Nuclear Plant Position (Site-Specific)	Expected Additional Positions Second Unit	Expected Additional Positions Third Unit
Operations – Radwaste	Supervisor	4.4	Lead – Radwaste Operations	1	-
Fire Protection	Supervisor	4.4	Lead Engineer – Fire Protection Program	1	-
Radiation Protection	Functional Manager	4.5.3.2	Superintendent – Radiation Protection	1	-
	Supervisor		Supervisor – Radiation Protection	3	2
	Technician		Radiation Protection Technician	18	9
	ALARA specialist		ALARA Specialist	3	1
	Decon Technician		Decon Technician	6	2
Chemistry	Functional Manager	4.3.2	Superintendent – Environmental & Chemistry	1	-
	Supervisor	4.4.5	Supervisor–Environmental & Chemistry	2	1
	Technician	4.5.3.1	Chemistry Technician	18	9
Nuclear Safety Assurance	Manager	4.2	Manager – Nuclear Assessment HNP	-	-
Licensing	Functional Manager	4.3	Manager –PE&RA	-	-
	Supervisor		Supervisor – Licensing & Regulatory Affairs	-	-
	Licensing Engineer		Licensing Engineer	4	-

HAR COL 18.6-1
HAR COL 13.1-1

Table 13.1-201 (Sheet 5 of 7)
Generic Position/Site-Specific Position Cross Reference

Nuclear Function	Function Position – ANSI/ANS-3.1-1993	Section Reference	Nuclear Plant Position (Site-Specific)	Expected Additional Positions Second Unit	Expected Additional Positions Third Unit
Corrective Action	Functional Manager	4.3	Supervisor – Self Evaluation	1	-
	Corrective Action Specialist		Corrective Action Specialist	2	2
Emergency Preparedness	Functional Manager	4.3	Supervisor–Emergency Preparedness	1	-
	EP Planner		EP Specialist	3	1
Training	Functional Manager	4.3.1	Manager – Training HNP	0	-
	Supervisor Ops Trng	4.4.4	Superintendent – Operations Training	1	-
	Ops Training Instructor		Supervisor – Operations Training	2	-
	Supervisor Tech. Staff/ Maint Trng		Ops. Training Instructor	9	9
			Supervisor – Technical Training	1	-
	Tech Staff/Maint. Instructors		Technical Training Instructor	8	4

HAR COL 18.6-1
HAR COL 13.1-1

Table 13.1-201 (Sheet 6 of 7)
Generic Position/Site-Specific Position Cross Reference

Nuclear Function	Function Position – ANSI/ANS-3.1-1993	Section Reference	Nuclear Plant Position (Site-Specific)	Expected Additional Positions Second Unit	Expected Additional Positions Third Unit
Purchasing and Contracts	Functional Manager	4.3	Superintendent – Materials & Contracts Services	1	-
Security	Functional Manager	4.3	Superintendent, Security	0	-
Planning and Scheduling	Functional Manager	4.3	Supervisor – Planning and Procedures	1	-
	Functional Manager	4.3	Manager – Outage & Scheduling	1	-
	Supervisor	4.4	Supervisor – Online Scheduling	1	-
			Supervisor – Outage Management	1	-
Quality Assurance	Functional Manager	4.3.7	Manager – Nuclear Assessment	-	-
	Supervisor	4.4.13	Supervisor – Quality Control	1	-
	QA Auditor		QA Technicians	6	2

HAR COL 18.6-1
HAR COL 13.1-1

Table 13.1-201 (Sheet 7 of 7)
Generic Position/Site-Specific Position Cross Reference

Nuclear Function	Function Position – ANSI/ANS-3.1-1993 Section Reference		Nuclear Plant Position (Site-Specific)	Expected Additional Positions Second Unit	Expected Additional Positions Third Unit
	Supervisor	4.4.13	Supervisor – QA/QC	-	-
	QC Inspector	4.4.11	QA Technicians	4	2
			QC Technicians	-	-
Startup testing	Supervisor	4.4.12	Supervisor –Plant Test & Operations Manager	1	-
			Startup Manager	1	-
	Startup Test Engineer		Startup Test Engineer	6	-
	Supervisor		Manager – Plant Test & Operations Support	1	-
	Preop. Test Engineer		Preop Test Engineer	20	-

HAR COL 13.1-1
HAR 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) 2 SRO 3 RO 4 NLO
Two Units Operating[(a)]	1 SM (SRO) 2 SRO 3 RO 4 NLO

SM – Shift Manager
SRO – Licensed Senior Reactor Operator
RO – Licensed 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, Technical Report on a Template for an Industry Training Program Description. See Table 1.6-201.

Appendix 13BB provides supplemental information to NEI 06-13A to address cold license operator training.

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.

STD COL 13.3-1

The emergency planning information is submitted to the Nuclear Regulatory Commission as a separate licensing document.

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 milestones for emergency planning implementation.

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 7)
Operational Programs Required by NRC Regulations

Item	Program Title	Program Source (Required by)	FSAR Section	Implementation Milestone	Implementation Requirement
1.	Inservice Inspection Program	10 CFR 50.55a(g)	5.2.4, 6.6	Prior to Commercial service	10 CFR 50.55a(g), ASME XI 2001 2004 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, 6.6	Completion prior to initial plant start-up	10 CFR 55a(g); ASME Code Section 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

STD COL 13.4-1

Table 13.4-201 (Sheet 2 of 7)
Operational Programs Required by NRC Regulations

Item	Program Title	Program Source (Required by)	FSAR Section	Implementation Milestone	Implementation Requirement
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 Mode 4	License Condition
8.	Fire Protection Program	10 CFR 50.48	9.5.1.8	Prior to receipt of fuel onsite Prior to initial fuel load	License Condition
9.	Process and Effluent Monitoring and Sampling Program:				
	Radiological Effluent Technical Specifications/Standard Radiological Effluent Controls	10 CFR 20.1301 and 20.1302; 10 CFR 50.34a; 10 CFR 50.36a; 10 CFR 50, Appendix I, Section II and IV	11.5	Prior to initial fuel load	License Condition

STD COL 13.4-1

Table 13.4-201 (Sheet 3 of 7)
Operational Programs Required by NRC Regulations

Item	Program Title	Program Source (Required by)	FSAR Section	Implementation Milestone	Implementation Requirement
	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
10.	Radiation Protection Program	10 CFR 20.1101	12.5	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	License Condition
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)

STD COL 13.4-1

Table 13.4-201 (Sheet 4 of 7)
Operational Programs Required by NRC Regulations

Item	Program Title	Program Source (Required by)	FSAR Section	Implementation Milestone	Implementation Requirement
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)
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)

Table 13.4-201 (Sheet 5 of 7)
Operational Programs Required by NRC Regulations

STD COL 13.4-1

Item	Program Title	Program Source (Required by)	FSAR Section	Implementation Milestone	Implementation Requirement
				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:	10 CFR 50.34(c);			
	Physical Security Program	10 CFR 73.55; 10 CFR 73.56; 10 CFR 73.57;	13.6	Prior to receipt of fuel onsite	License Condition
	Safeguards Contingency Program	10 CFR 50.34(d) 10 CFR Part 73, Appendix C	13.6	Prior to receipt of fuel onsite	License Condition
	Training and Qualification Program	10 CFR Part 73, Appendix B	13.6	Prior to receipt of fuel onsite	License Condition
	Fitness for Duty Program (Construction - Mgt. & Oversight Personnel)	10 CFR Part 26, Subparts A-H, N, and O	13.7	Prior to initiating construction	License Condition

STD COL 13.4-1

Table 13.4-201 (Sheet 6 of 7)
Operational Programs Required by NRC Regulations

Item	Program Title	Program Source (Required by)	FSAR Section	Implementation Milestone	Implementation Requirement
	Fitness for Duty Program (Construction - Workers & First Line Supv.)	10 CFR Part 26 Subpart K	13.7	Prior to initiating construction	License Condition
	Fitness for Duty Program (Operation)	10 CFR Part 26	13.7	Prior to initial fuel load	License Condition
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	30 days prior to scheduled date for the initial loading of fuel	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 7)
Operational Programs Required by NRC Regulations

Item	Program Title	Program Source (Required by)	FSAR Section	Implementation Milestone	Implementation 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 Prior to the first preoperational test for the Preoperational Test Program Prior to initial fuel load for the Startup Test Program	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.

STD DEP 1.1-1

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.

HAR COL 13.5-1

- Standing orders to shift personnel including the authority and responsibility of the Superintendent – Shift Operations, Control Room Supervisor, Control Room Operator and Shift Technical Advisor.

STD COL 13.5-1

- 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.

HAR COL 13.5-1

- Superintendent – Shift Operations administrative duties.

STD COL 13.5-1

- Verification of correct performance of operational activities.
- A vendor interface program that provides vendor information for safety related components is incorporated into plant documentation.

STD DEP 1.1-1

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.

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 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.”

Table 13.5-201
Pre-COL Phase Administrative Programs and Procedures

STD COL 13.5-1

(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.

STD COL 13.6-1

The Security Plan consists of the Physical Security Plan, the Training and 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). The Security Plan meets the requirements contained in 10 CFR Part 26 and 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.

The Physical Security Plan during construction, including control of access to the new plant construction site, is consistent with NEI 03-12, Appendix F (Reference 201), which is currently under NRC review.

Table 13.4-201 provides milestones for security program implementation.

13.6.1 REFERENCES

201. NEI 03-12, “Appendix F, Security Measures during New Reactor Construction,” Revision 2, September 2007.

STD DEP 1.1-1

DCD Section 13.7 is renumbered to 13.8 to allow for sequential numbering of the Fitness for Duty section in the FSAR.

Add the following new section after DCD Section 13.6.

13.7 FITNESS FOR DUTY

STD SUP 13.7-1

The Fitness for Duty (FFD) Program (Program) is implemented and maintained in two phases; the construction phase program and the operating phase program. The construction phase program is consistent with NEI 06-06 (Reference 201), which is currently under NRC review. The construction phase program is implemented, as identified in Table 13.4-201.

The operations phase program will be consistent with the pending revision to 10 CFR 26, when issued. The operations phase program is implemented, as identified in Table 13.4-201.

The FFD Program is based on the pending revision of Part 26 because on-site construction activities subject to Part 26 are not scheduled to occur until after the new regulations take effect. A request for an exemption from the current Part 26 regulations is discussed in Part 7 of the COLA.

13.7.1 REFERENCES

201. Nuclear Energy Institute “Fitness for Duty Program Guidance for New Nuclear Power Plant Construction Sites”, NEI 06-06, Revision 1, ADAMS Accession Number ML072670126, September 2007.

STD DEP 1.1-1

13.8 REFERENCES

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

HAR COL 13.1-1

APPENDIX 13AA CONSTRUCTION-RELATED ORGANIZATION

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.

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. An onsite meteorological measurements program is employed by station personnel to produce data for the purpose of making atmospheric dispersion estimates for postulated accidental and expected routine airborne releases of effluents. A maintenance program is established for surveillance, calibration, and repair of instruments. More information regarding the study and meteorological program is found 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 ground water 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 programs 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 are 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 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 – Engineering for review. As systems are tested and approved for turnover and operation, control of design is turned over to plant staff. The Manager – 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 – 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 Security Plan.

13AA.1.1.1.1.5 Development of Safety Analysis Reports

Information regarding the development of the Final Safety Analysis Report 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 vendor are controlled for review and approval by Section 17.5 and the Quality Assurance Program Description.

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. Oversight of the inspection

and receipt of materials process is the responsibility of the manager in charge of quality assurance.

13AA.1.1.1.1.8 Management and Review of Construction Activities

Overall management and responsibility for construction activities is assigned to the VP – Nuclear Projects and Construction. The Project Director of the engineering, procurement, and construction (EPC) contractor is accountable to the VP – Nuclear Projects and Construction for construction activities. See Organization Chart Figure 13AA-201. 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 the 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) 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.

13AA.1.1.1.2 Preoperational Activities

The Plant General Manager reports to the VP – Nuclear Projects and Construction. The Plant General Manager, with the aid of those managers that report directly to the Plant General Manager, (see Figure 13AA-201) 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 (HFE) 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 HFE program management.

Modifications to the certified design of the control room or man-machine interface described in the Design Control Document are reviewed per engineering and site

support procedures, as required by Section 18.2, to evaluate the impact to plant safety. The Manager – Engineering is responsible for the human factors engineering (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 and StartupTesting

Preoperational and startup testing is conducted by the plant test and operation (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.1.1.1.2.3 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 for safe operation of the plant as determined by HFE. See Section 18.6. These plans are developed under the direction and guidance of the VP – Nuclear Projects & Construction and the VP – HNP Site. 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 to become qualified, and licensed, if required, prior to fuel being loaded in the reactor vessel. See Figure 13.AA-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.

The following new appendix is inserted as supplemental information to NEI 06-13A which is incorporated by reference in Section 13.2.

STD COL 13.2-1 APPENDIX 13BB STANDARD SUPPLEMENT TO GENERIC TEMPLATE NEI 06-13A

Insert the following paragraphs into the text of NEI 06-13A after the paragraph numbered 1.1.2.

13BB.2.1.3 Licensed Operator Training Program Prior to Commercial Operation

Prior to initial commercial operation, licensed operator training will be conducted in the construction phase to support preoperational testing and cold and hot functional activities. Licensed operator training conducted prior to commercial operation is referred to as “cold” license operator training. Cold license operator training will be conducted as described below.

Cold licensing of operators at a new plant provides the method for operations personnel to acquire the knowledge and experience required for licensed operator duties during the unique conditions of new plant construction.

Prior to commercial operation, plant experience requirements specified in Regulatory Guide 1.8 (Revision 3) and ANS/ANSI 3.1-1993 can not be met. Therefore, during cold license operator training, the Regulatory Position C.1.b of Regulatory Guide 1.8 (Revision 2) applies: cold license operator candidates will meet the training elements defined in ANS/ANSI 3.1 but are exempt from the experience requirements defined in ANS/ANSI 3.1. Alternate methods of gaining plant experience, in addition to those referenced in Regulatory Guide 1.8 and associated ANS/ANSI standards, are described in Subsection 13BB.2.1.3.2.

Approximately 18 months prior to expected fuel load, the NRC examination will be administered for cold license operator candidates and will include a written examination, simulator examination, and in-plant job performance measures (JPMs). Sufficient operator licenses will be obtained to support operational shifts prior to first fuel load.

The cold license operator training process will terminate when the last licensed operator training class initiated during the plant construction/preoperational test phase has taken a scheduled NRC license examination or the plant becomes operational, whichever is later.

13BB.2.1.3.1 Licensed Operator Continuing Training Prior to Commercial Operation

The SAT process will be utilized to determine continuing training needs for cold license operator candidates following completion of the initial phases of their training. Structured continuing training will be provided to maintain the license candidates’ knowledge and ability and will include topics related to plant

modifications, construction, functional testing, and OE related to construction activities.

An accredited licensed operator requalification training program will be implemented within 90 days following the issuance of the first NRC operator licenses. This will facilitate maintaining the licensed operators' knowledge and ability and meet the milestone guidance related to the Reactor Operator Requalification Training Program provided in Section C.I.13.4 of Regulatory Guide 1.206.

13BB.2.1.3.2 Licensed Operator Experience Requirements Prior to Commercial Operation

Each cold license operator candidate's operational experience is assessed prior to selection for a licensed training program; however, experience requirements are not required to be fully met prior to enrolling in an operator training program. In addition, total experience requirements and one year on-site experience requirements not fully met at the time of the licensed operator application submittal shall be met prior to issuing the individual's NRC operator license. Following satisfactory completion of an NRC license examination, the licensee will notify the NRC when the candidate's experience requirements have been met.

Experience may be gained anytime prior to fuel load by participating in construction and testing activities. Operational experience on a one-for-one basis may be achieved during the construction and testing phases while performing one or more of the following tasks:

- Plant operating procedure development and verification
- Human engineering and task analysis verification
- Preoperational testing of plant systems
- Participating in the cold and hot functional testing program
- Acting as an operations classroom, simulator, or on-the-job training (OJT) instructor

The above practical work assignments provide experience and may fulfill the one year on-site experience requirement cited in Regulatory Guide 1.8 and the three month on-shift requirement cited in ANS/ANSI 3.1. On-site experience may also be gained on a one-for-one basis at a nuclear reactor site of similar design (e.g., PWR or BWR).

An RO candidate who completes a site-specific non-licensed operator training program for critical non-licensed operator tasks, and completes a site familiarization course designed on a systematic evaluation of site design features and operator site familiarization needs, satisfies the requirement of one year on-site experience and the requirement of six months as a non-licensed operator at

the facility for which the license is sought, both of which are cited in Regulatory Guide 1.8.

A non-degreed SRO candidate who completes a combined RO and SRO course and completes a site familiarization course designed on a systematic evaluation of site design features and operator site familiarization needs satisfies the one year experience requirement as a licensed RO cited in Regulatory Guide 1.8.

For a degreed SRO, performing construction and testing activities described above on a one-for-one basis satisfies the six month on-site experience requirement as a staff engineer cited in Regulatory Guide 1.8.

An SRO candidate (degreed or non-degreed) who completes a plant referenced simulator course or an observation course at an operating reactor of similar design meets the special experience requirements related to at power and startup operations described in ANS/ANSI 3.1. These courses are based on a systematic analysis of the supervisory skill, knowledge, and ability required of a SRO. A systematic process to identify the objectives associated with experience gained at an operating facility coupled with high fidelity simulation provides assurance that the requisite knowledge, skill, and ability level has been achieved.

13BB.2.1.3.3 On-the-Job Training (OJT) Prior to Commercial Operation

Until equipment installation is sufficiently complete, viable alternatives for performance of in-plant JPMs will be identified including, but not limited to, discussions, mockups, virtual presentations and part-task simulation. Time spent in OJT training may be counted as on-site and total nuclear power plant experience.

Until the plant becomes operational, viable alternatives for the main control room OJT (three months on-shift as an extra person) will be identified including, but not limited to, preoperational testing activities, simulator time focused on crew operations, or dedicated observation time in the main control room of an operating nuclear power plant.

13BB.2.1.3.4 Plant-Referenced Simulation Facilities Prior to Commercial Operation

The initial phase of licensed operator simulator training will be performed with a simulation facility modeled in accordance with the guidance of Regulatory Guide 1.149 and its associated ANSI/ANS standards as describe below. The simulation facility will be a high fidelity/quality training device and will be maintained in accordance with the criteria of ANSI-3.5 1998, Appendix D.

Simulation models are updated as information concerning plant design and performance is obtained. These updates will ensure the simulator is current with plant design and can be used as a reliable training tool.

The following provides a generic simulator training sequence indicating the use of part task/limited scope simulator and plant referenced simulator for licensed

operator training. The actual sequence may vary depending on plant construction scheduling.

- Phase 1 (approximately 40 months prior to fuel load) – The part task/limited scope simulator is used to provide licensed operator training based on standardized design simulator modeling and operating procedures.

- Phase 2 (approximately 24 months prior to fuel load) – An ANSI/ANS 3.5 1998 plant referenced simulator is used in final phase of licensed operator initial training to perform reactivity manipulations and complete required NRC license candidate training.

- Phase 3 (approximately 18 months prior to fuel load) – An ANSI/ANS 3.5 1998 plant referenced simulator is used for performance of NRC operator initial license examinations.

Prior to conducting the simulator portion of licensed operator examination, the plant-referenced simulator response will be tested and validated against plant design data to ensure the simulator meets the operational and testing criteria of 10 CFR 55.46 paragraph (c).