13.0 Conduct of Operations

This chapter provides information relating to the preparations and plans for design, construction, and operation of South Texas Project Units 3 & 4 (STP 3 & 4). It provides assurance that STP Nuclear Operating Company (STPNOC) will establish and maintain a staff of adequate size and technical competence, and that operating plans are adequate to protect public health and safety.

13.1 Organizational Structure of Applicant

STPNOC will manage the licensing, construction, testing, and startup of STP 3 & 4, and then will have exclusive responsibility and control over the operation and maintenance of the facility just as with STP 1 & 2. STPNOC will increase its STP 3 & 4 staff as the project progresses. The plans call for developing a similar management and technical support organization for STP 3 & 4 with the design, construction, and operating responsibilities; organizational arrangements; qualifications; and authorities that have resulted in the successful operation of STP 1 & 2.

13.1.1 Management and Technical Support Organization

This subsection describes the STPNOC organization, its functions and responsibilities, and the qualifications of personnel. It is directed to activities that include facility design, design review, design approval, construction management, testing, and operation of the plant. The FSAR will be updated in accordance with 10 CFR 50.71(e) to address the number of personnel that will be provided to perform these activities.

13.1.1.1 Design, Construction and Operating Responsibilities

Houston Lighting & Power (HL&P) was the project manager for the (then) four owners of STP 1 & 2 throughout licensing and construction. HL&P operated the units from 1988 until 1997, when STPNOC was formed as an operating company comprised of HL&P operating, engineering, maintenance, and administrative personnel. Since that time STPNOC has had exclusive responsibility and control over the physical design, construction, operation, and maintenance of STP 1 & 2. These responsibilities include planning and completing major modifications, refueling outages, and plant upgrades.

13.1.1.1.1 Design and Construction Responsibilities

<u>Principal Site-Related Engineering Studies</u>

1. Meteorology

A preoperational meteorological program for STP 1 & 2 was established at the site in July 1973 to provide those meteorological factors that bear upon plant design, operation, and safety. Data collected through September 1977 was used for design and licensing purposes. The monitoring system continued to collect data until 1982, at which time it was shut down for upgrading to meet then current requirements.

In 1994, a major upgrade was made to enhance the reliability and maintainability of the data collection systems by replacing the monitoring and communication systems. The

existing primary tower was replaced, and the existing equipment shelters were refurbished for the new computer monitoring and communication systems. New instrumentation was installed at the 60-meter, 10-meter, and ground level positions on the primary tower and at the 10-meter level on the backup tower.

In 2005, additional upgrades were made on both the primary and backup towers, including new sonic probes, computers, digital recorders, LCD color monitors, uninterruptible power supplies, and wireless Ethernet equipment. The backup propane generators were also replaced in 2005.

In late 2006, new dew point instruments were installed on the primary meteorological tower 10-meter and 60-meter levels to develop the relationship between dew point and elevation. This relationship will provide an understanding of the heat exchange efficiency of the forced-draft cooling towers to be used as the ultimate heat sinks for STP 3 & 4.

Bechtel Power Corporation (Bechtel) assessed the STP 1 & 2 meteorological data collection system for use with STP 3 & 4 in the following areas:

- The ability for the existing STP 1 & 2 system to provide data needed to adequately characterize the overall site vicinity meteorology for STP 3 & 4
- The completeness of the data set for preparing the STP 3 & 4 combined license application (COLA)
- The need for additional instrumentation on the existing meteorological tower and the use of regional representative data to supplement the existing data set.

In summary, meteorological data has been collected at the STP site from July 1973 to the present, an interval of more than 33 years. STPNOC understands very well and has substantial records of the meteorological conditions at the site with the exception of dew point data. Additional details about the meteorological program are presented in Subsection 2.3.3.

2. Geology and Seismology

The geological and seismological investigations and evaluations for STP 1 & 2 were conducted by Woodward-Clyde Consultants (WCC). A major portion of the field boring and sampling program, and some specialized laboratory and field studies associated with this work were done by subcontractors under the supervision of WCC personnel. The geotechnical investigations and analysis for the main cooling reservoir (MCR) and MCR-related facilities were conducted by McClelland Engineers, Inc. McClelland also provided consultant services and laboratory testing for MCR-related earthwork during the construction of STP 1 & 2. Design and evaluation activities in the STP 1 & 2 plant and reservoir areas in connection with earthwork and foundation construction were conducted by Brown & Root.

The geological and seismological investigations and evaluations for STP 3 & 4 were conducted by or under the direction of Bechtel, including geotechnical engineering

studies for site characterization and foundation designs. Field work was initiated with the development of a Site Subsurface Investigation Boring Plan. MACTEC Engineering and Consulting (MACTEC), under the direction of Bechtel, was responsible for performance of the field investigation, which included a borehole drilling and sampling program, cone penetrometer tests, geotechnical laboratory testing, groundwater observation well installations, and specialized field and laboratory tests. Specialized testing included laboratory torsional shear and resonant column testing, downhole geophysical logging, and soil absorption distribution coefficient determinations. Geotechnical analyses for material properties, dynamic slope stability, bearing capacity, static and dynamic loading, and liquefaction were performed by Bechtel.

Hydrogeologic studies performed by Bechtel included a hydraulic gradient study to evaluate potential construction dewatering interactions with the MCR. In addition, to support the COLA, a hydrogeologic analysis was performed to evaluate the potential impacts of an accidental release of liquid effluent to ground and surface waters.

Additional studies included basic geologic and tectonic evaluations, determination of vibratory ground motion, and surface faulting evaluations. Geologic and seismic study results were incorporated into the geotechnical subsurface material and foundation evaluations, slope stability study, and embankment and dam evaluations. William Lettis & Associates provided geological investigation support to Bechtel, including data collection, review and analysis, and field reconnaissance to evaluate seismogenic and tectonic sources for determination of their potential to generate earthquakes resulting in surface fault rupture. A probabilistic seismic hazard analysis was performed by Risk Engineering, Inc. under the direction of Bechtel. This information, along with the geotechnical and geological evaluation results, was used to evaluate the site seismological conditions.

Overall direction of geological, hydrogeological, seismological, and geotechnical engineering studies was provided by Bechtel. Detailed information concerning the geological, seismological, and geotechnical engineering studies is provided in Subsection 2B.2.5. The hydrogeology studies are described in Subsection 2B.2.4.

3. Hydrology

Brown & Root initially developed the probable maximum flood from offsite areas for the site based upon hydrologic investigations of the Colorado River Basin previously made by the Fort Worth, Texas, District Office of the U.S. Army Corps of Engineers (USACE). Physical data, previous reports, and unpublished engineering studies, together with technical guidance, were made available by both the Fort Worth and Galveston District USACE offices. The resulting detailed information concerning hydrology is given in the STP 1 & 2 UFSAR Section 2.4.

Hydrologic investigations performed by Bechtel included a cooling pond study to evaluate performance of the MCR and to estimate the plant cooling water use with the addition of STP 3 & 4. In addition, the probable maximum flooding from offsite sources, potential dam failure of the MCR, and local intense precipitation were developed and

their impact evaluated for safety considerations. Other hydrologic studies, including low water considerations, ice effects, and channel diversions, were conducted to support the COLA. Detailed information on the hydrologic investigations is provided in FSAR Section 2B.2.4.

4. Demography

Brown & Root performed the initial demographic studies relative to the population distribution near the plant for STP 1 & 2. HL&P updated those studies and revised the information in UFSAR Section 2.1.3.

Bechtel/Tetra Tech NUS performed the updated demographic studies relative to population near the site to support STP 3 & 4. Refer to Subsection 2B.2.1.3 for details.

5. Environmental Effects

Environmental monitoring programs have been in effect at STP for more than 20 years and there is an ample baseline from which to determine possible impacts on the environment due to construction activities on STP 3 & 4 and to evaluate future environmental monitoring. These programs are described in COLA Part 3, Environmental Report.

An Environmental Protection Control Plan provides for periodic review of all construction activities on STP 3 & 4 to ensure those activities conform to the environmental conditions set forth in the COL. If harmful effects or evidence of irreversible damage are detected by the monitoring program, STPNOC will provide the NRC with an analysis of the problem and a plan of action to mitigate detrimental effects or damage.

Design of Plant and Ancillary Systems

The review and approval of ABWR Common Engineering design documents is controlled by procedures. Evidence of design verification is entered into the design records of the responsible design organization.

STPNOC assigned ~~GE~~Toshiba the responsibility to complete the plant-specific engineering design for STP 3 & 4 necessary for development of the COLA with STPNOC acting in a review and approval role. STPNOC contracted Toshiba to design the Ultimate Heat Sink and other systems described in~~GE subcontracted Bechtel to design a portion of the site-specific systems, such as the ultimate heat sink and other systems described in~~ Chapter 9 of the FSAR. Departures from the ABWR Design Control Document (DCD) are described in COLA Part 7. The fire protection section of the DCD was developed by GE.

Completion of the design will be the responsibility of Toshiba with the support of various subcontractors.

Review and Approval of Plant Design Features

Design control and review is performed in accordance with the Quality Assurance Program for STP 3 & 4 as described in the Quality Assurance Program Description (QAPD) for the design and construction phase and in FSAR Chapter 17. A complete discussion of human factors engineering is provided in FSAR Chapter 18.

Site Layout with Respect to Environmental Effects and Security Provisions

The specific location of STP 3 & 4 was influenced by several factors. It was desirable to locate the units far enough from the MCR to avoid additional dewatering difficulty caused by the head on the MCR tending to drive groundwater toward the new unit excavations. The best location for the STP 3 & 4 switchyard was to the north of the new units where transmission line interferences would be minimized.

Part of the considerations for the layout of the new units included evaluating the proximity of STP 1 & 2 and constructing the new units with minimal impact on the security of the operating units. At the completion of STP 3 & 4, the existing STP 1 & 2 Protected Area will subsume the construction site into one contiguous Protected Area. The layout also maximized the available acreage to assure the new contiguous Protected Area would be as far as possible from public roadways consistent with other siting requirements (e.g., soil conditions and hydrology).

Development of Safety Analysis Report

Overall responsibility for preparing the FSAR as Part 2 of the COLA rests with the STP 3 & 4 Regulatory Affairs Department. Preparation of individual sections was assigned to the cognizant technical groups within STPNOC, ~~GE~~Toshiba, or Bechtel as appropriate.

Review and Approval of Material and Component Specifications

All safety-related project specifications are reviewed in accordance with the QAPD for STP 3 & 4.

13.1.1.1.2 Pre-Operational Responsibilities

Proposed Plans for Development and Implementation of Staff Recruiting and Training

STPNOC has partnered with local community leadership, independent school district leaders, educators, colleges, business owners, and other industry in the development of a community-based and regional-based education alliance. The long-term vision is to develop a workforce pipeline that would support attrition challenges and operational expansion strategies. The education alliance has progressed to three main community and regional committees and supporting subcommittees that address education resources, marketing and outreach strategies, grow-your-own-initiatives, and funding resources. One component of community-based workforce is providing the region's middle schools and high schools with relevant science, technology, engineering, and math skills (curriculum) required for a successful career in nuclear energy industry.

Local and regional colleges are in the process of developing two- and four-year power and process technology degrees that compliment junior and high school curricula, and are directly transferable to meet the industry's present and emerging needs.

The plant staff training program is provided in Section 13.2. These plans will be substantially accomplished before preoperational testing begins.

13.1.1.1.3 Technical Support for Operations

Technical services and backup support for the operating organization will be available before the pre-operational and startup testing program begins and will continue throughout the life of the plant.

Engineering – As described in Subsection 13.1.1.2, the Engineering staff will provide technical support in the areas of nuclear, mechanical, structural, electrical, thermal-hydraulic, metallurgy and materials, and instrumentation and controls to support testing and operation of STP 3 & 4. Additional engineering contractors are available locally (e.g., Areva and Hurst Technologies) if outside contractual assistance is required.

Tokyo Electric Power (TEPCO) – TEPCO is an experienced operator of ABWRs in Japan. They have ABWR units in operation at Kashiwazaki, including the first ABWR that went into operation in 1997. STPNOC has contracted with TEPCO to provide expertise in the operation of ABWRs.

Plant Chemistry and Health Physics – Chemistry and health physics services will be shared between the four units once STP 3 & 4 are in commercial operation.

Fueling and Refueling Operations Support - The STP 1 & 2 Work Management Department has developed an "Outage Implementation and Planning Guideline" that has been used very successfully in refueling outages. The Guideline specifically and thoroughly addresses shutdown safety; outage management, preparation, scheduling, and implementation; and post-outage activities. The outage organization during an outage includes the outage director, project managers for each major maintenance area (e.g., refueling, turbine, containment), shift managers, chemistry manager, engineering duty manager, health physics manager, division manager for plant operations, and maintenance manager with a division manager for each discipline (mechanical, electrical, instrumentation & controls, air-operated/motor-operated valves). The plans for STP 3 & 4 refueling outages include the same level of personnel dedication and support as provided during STP 1 & 2 refueling outages.

Maintenance Support - The STP 1 & 2 Maintenance Department is part of the Generation Department and the Maintenance Manager reports directly to the Plant General Manager. The plans for STP 3 & 4 include the same organizational structure and same level of maintenance technical services and backup support for the operating organization as provided for STP 1 & 2.

Operations Support – The Operations Support Department (Ops Support) is the primary point of contact for the business planning effort in the Generation Department,

coordinating and facilitating meetings to support the business plan and budgeting process on an on-going basis. In addition, Ops Support provides continuous oversight for each department, providing feedback to the department managers when changes or updates are required. Ops Support performs root cause analysis and apparent cause investigations for Generation organizations and other station organizations upon request. They also maintain the Corrective Action Program Database for Maintenance, Operations, Work Control, and other departments as required. Finally, procedure development is one of an integrated set of processes for the operation, maintenance, and support of the plant. Ops Support evaluates the need for new procedures or revision of existing procedures and implements activities required to write, conduct review and approval, and validate new and revised procedures.

Quality Assurance – The Quality Assurance Program Description is provided as a separate document.

Training – As described thoroughly in Section 13.2, the training programs to be utilized for STP 3 & 4 are very similar to those used for STP 1 & 2 with the technical exceptions appropriate to the different technologies.

Safety Review – The Plant Operations Review Committee (PORC) advises the Plant General Manager on all matters related to nuclear safety at STP 1 & 2. The PORC is composed of six members, who are appointed by the Plant General Manager from senior experienced onsite individuals, at the manager level or equivalent, representing each of the following disciplines: engineering, operations (SRO), chemistry, health physics, quality, and maintenance. A separate PORC will be established for STP 3 & 4. The PORC is responsible for reviewing the following and recommending approval or disapproval to the Plant General Manager:

- All safety-related station administrative procedures and changes thereto
- Safety evaluations for (1) procedures, (2) changes to procedures, structures, components, or systems, and (3) tests or experiments completed under the provisions of 10CFR50.59 to verify that such actions did not require prior NRC approval
- Proposed (1) procedures, (2) changes to procedures, structures, components, or systems, and (3) tests or experiments completed under the provisions of 10CFR50.59 which may require prior NRC approval
- All required programs by Technical Specification and the Technical Requirements Manual and changes thereto
- All proposed changes to the Technical Specifications or the Operating License
- All reportable events
- Reports of significant operating abnormalities or deviations from normal and expected performance of plant equipment or systems that affect nuclear safety

- Reports of unanticipated deficiencies in the design or operation of structures, systems, or components that affect nuclear safety
- Security Plan and implementing procedures and changes thereto
- Emergency Plan and implementing procedures and changes thereto
- Process Control Program and implementing procedures and changes thereto
- Offsite Dose Calculation Manual and implementing procedures and changes thereto
- Special reviews, investigations, or analyses and reports thereon as requested by the Plant General Manager or the Senior Management Team (SMT)
- Reports of any accidental, unplanned, or uncontrolled radioactive release including the preparation of reports covering evaluation, recommendations, and disposition of the corrective action to prevent recurrence and the forwarding of these reports to the Plant General Manager and to the SMT
- Reports of violations of codes, regulations, orders, Technical Specifications, or Operating License requirements having nuclear safety significance or reports of abnormal degradation of systems designed to contain radioactive material
- Fire Protection Program, quality-related implementing procedures and changes thereto.

Fire Protection - STP 1 & 2 currently has a successful Fire Control Program, which will be modified to include STP 3 & 4. A trained plant fire brigade will be equipped and available at all times. Each shift fire brigade will consist of five members of the shift crew with specific personnel designated to serve as the fire brigade leader, two members with safe shutdown systems training, and two other qualified members. The Shift Supervisor/Manager cannot be the fire brigade leader.

An annual physical examination will determine whether there are medical reasons for disqualifying candidates for fire brigade membership or for removing existing members from the brigade.

Fire brigade meetings to review changes in the fire protection program and other subjects as necessary will be conducted quarterly for each shift and requalification training will be conducted such that initial fire brigade training topics are covered at least once every two years.

Fire drills will be conducted periodically to established training objectives and critiqued to determine how well the training objectives are met. If a person assigned to fire brigade duties does not attend at least two drills every twelve months, that person will be removed from fire brigade duties, except training and drills, until that person has attended a drill(s) to make up for the deficiency.

Refer to Subsection 13.1.2.2. for a description of the functions and responsibilities of the Fire Protection Coordinator.

Emergency Coordination - The Emergency Plan submitted as Part 5 of the COLA fully describes the technical services and backup support for the operating organization that will be available before preoperational and startup testing begins and will continue throughout the life of the plant in the area of emergency coordination.

13.1.1.2 Organizational Arrangement

Figure 13.1-1 is the organization chart reflecting the current STPNOC corporate structure, which provides line responsibility for operation of the company. The organization for STP 3 & 4 has been separated from STP 1 & 2 to ensure the STP 1 & 2 team is focused on the safe and reliable operation of STP 1 & 2 and the STP 3 & 4 team is focused on the design, construction, and testing of STP 3 & 4. Ultimate responsibility for design, procurement, construction, testing, quality assurance, and operation of STP 3 & 4 rests with the President and CEO, who is the only executive common to all four units and who assigns responsibilities to the organizations described below.

There are no fossil power units at STP; when STP 3 & 4 are complete, there will be four nuclear power units on the site. Therefore, there is no separation of the “nuclear-oriented” part of the organization because the entire STPNOC organization is and will continue to be “nuclear-oriented.”

The current STP 3 & 4 project organization is provided in Figures 13.1-2 through 13.1-6. As the project progresses, the STP 3 & 4 organization will grow to mirror the STP 1 & 2 organization. Modifications and additions to the organizations to reflect added functional responsibilities due to adding two nuclear plants to STPNOC’s power generation capacity will consist of expanding the STP 3 & 4 organization as necessary to support the two additional units.

The Group Vice President, Units 3 & 4 reports directly to the STPNOC President and CEO and is responsible for all STP 3 & 4 activities.

The Vice President, Engineering & Construction reports to the Group Vice President, Units 3 & 4 and is responsible for activities involved with the engineering, design, and construction of STP 3 & 4. The organization chart for Engineering & Construction is provided in Figure 13.1-3. Functional responsibilities for STP 3 & 4 will not be added to the existing STP 1 & 2 Engineering organization.

The Vice President, Oversight & Regulatory Affairs reports to the Group Vice President, Units 3 & 4 and is responsible for quality assurance, construction oversight, licensing, probabilistic risk assessment, and regulatory compliance. Refer to Figure 13.1-4. Functional responsibilities for STP 3 & 4 will not be added to the existing STP 1 & 2 Oversight organization.

The Plant General Manager reports to the Group Vice President, Units 3 & 4 and is responsible for activities related to the operation and maintenance of STP 3 & 4.

Functional responsibilities for STP 3 & 4 plant management will not be added to the existing STP 1 & 2 organization. However, it is anticipated that certain functions and responsibilities will be shared between the four units, such as operations support, chemistry, health physics, environmental support, and security.

Engineering and Design of STP 3 & 4

STPNOC selected the ABWR design certified by 10 CFR 52, Appendix A and STPNOC assigned ~~GE~~Toshiba the responsibility to complete the plant-specific engineering design with STPNOC acting in a review and approval role. ~~GE~~Toshiba has extensive experience with engineering and design for the ABWR ~~as there are four ABWRs operating in the world and two more under construction~~having participated in the design and construction of three operating ABWRs. ~~GE's~~Toshiba's experience with engineering on boiling water reactors is well documented world-wide.

STPNOC contracted Toshiba to design the Ultimate Heat Sink and other systems described in Chapter 9 of the FSAR.~~GE subcontracted Bechtel to design a portion of the site-specific systems, such as the ultimate heat sink and certain other systems described in Chapter 9 of the FSAR.~~

Technical Support for Operations

Refer to the descriptions provided in Subsection 13.1.1.1.3.

13.1.1.3 Qualifications

The qualification requirements for personnel (education, experience) providing technical support for STP 3 & 4 operations will be the same as those approved for STP 1 & 2. It is anticipated that certain functions and responsibilities might be shared between the four units, such as operations support, chemistry, health physics, environmental support, and security, albeit most of the functions will be separated initially. The FSAR will be updated in accordance with 10 CFR 50.71(e) to address the number of personnel that will provide technical support for operations.

Qualification and training of STPNOC personnel conform to the regulatory position of RG 1.8. The OQAP addresses the qualification, training, and certification of personnel.

These are the generally accepted basic qualification requirements for the classes of positions identified in Subsection 13.1.1.2:

Executive

Education: Bachelor's degree
Experience: 15 years, including 10 years of management experience

Manager

Education: Bachelor's degree or 5 years experience
Experience: 10 years experience, including 3 years of supervisory or management experience

Supervisor

Education: Bachelor's degree or 5 years experience
Experience: 8 years

Within STPNOC, the person whose job position most closely corresponds to that identified as "engineer-in-charge" is the President & Chief Executive Officer.

13.1.2 Operating Organization

The operating organization for STP 3 & 4 will meet the guidelines of RG 1.33 and RG 1.8. Additionally, onsite review and rules of practice will meet the guidelines of NEI-06-14 as addressed in Section 17.5. The STP 3 & 4 fire protection program will mirror the existing program for STP 1 & 2 and thus will meet applicable requirements. The operating organization will be consistent with one of the options in the Commission's Policy Statement on Engineering Expertise on Shift and will meet TMI Action Plan items I.A.1.1 and I.A.1.3 of NUREG-0737 for shift technical advisor and shift staffing.

The Composite Site Security Plan provided in Part 8 of the COLA meets the applicable requirements for a physical protection plan.

All operating organization positions will be filled with personnel meeting the appropriate qualifications no later than six months prior to fuel load in each unit.

13.1.2.1 Plant Organization

13.1.2.2 Plant Personnel Responsibilities and Authorities

The functions and responsibilities of various positions at STPEGS, including a specific succession to responsibility for overall operation of the plant in the event of absences, incapacitation of personnel, or other emergencies, are described in this section.

The chain of command is the line of authority responsible for the overall safe operation of the station, and the protection and safety of the public and plant personnel. The operations chain of command authority begins with President & Chief Executive Officer, Group Vice President, Units 3 & 4, then continues through successive lower levels of management: Plant General Manager, Operations Manager, Operations Division Manager, Shift Supervisor/Manager, Unit Supervisor.

It is anticipated that certain functions and responsibilities will be shared between the four units, such as operations support, chemistry, health physics, environmental support, and security.

Plant General Manager

The Plant General Manager is responsible for the safe, reliable, and efficient startup, operation, maintenance, and refueling of the units, as well as adherence to all requirements of the Operating Licenses and the Technical Specifications.

Operations Manager

The Operations Manager reports to the Plant General Manager. He is responsible for planning overall activities and work of Plant Management personnel in cooperation with other department heads to develop an integrated plant operations program with the primary objectives of reactor safety and plant reliability. He has the following authorities and responsibilities:

- Provide guidance and direction to the Training Department concerning content of initial and requalification training programs for all operating personnel in order to provide a highly qualified and efficient operating force.
- Develop, monitor and control the Plant Management budget.
- Perform other duties assigned by the Plant General Manager.
- Conduct periodic observation of operations activities in accordance with the Field Observation Program.

Operations Division Managers (SRO)

Each Unit Operations Manager reports to the Operations Manager and ensures that the units are operated in accordance with plant procedures and Operating License requirements. The Shift Operations organization required by the Technical Specifications is shown in Figure 13.1-6.

The Unit Operations Managers may issue written Night Orders each week to inform operations personnel of current and up-coming events, work priorities, management expectations, lessons learned, policy information or explanation, special data collection requirements, and any other information regarding the safe, reliable operation of the units. Night Orders are not used to amend, revise, or delete an approved procedure, however, they may include additional information not provided for in an existing procedure. Night Orders are dated and signed by the author as they are originated and the Shift Supervisor/Manager is responsible for implementing Night Orders.

The Unit Operations Managers have the following authorities and responsibilities:

- Provide guidance and direction to supervisors to ensure that the required quality of work is achieved and that approved operating procedures and practices are followed
- Professional development of the Shift Supervisor/Managers

- Ensure the plant is operated in accordance with plant procedures and operating license requirements
- Ensure that Operations personnel are adequately prepared for special testing or other complex or infrequently performed evolutions
- Approve Unit work schedules
- Perform those duties assigned by the Operations Manager
- Assist the Operations Manager in carrying out all departmental duties
- Approve the Operations shift schedule
- Function as the Operations Manager in his/her absence
- Conduct periodic observation of Operations activities in accordance with the Field Observation Program
- Maintain a Senior Reactor Operator (SRO) license
- Perform duties of the Emergency Response Organization Operations Manager

Shift Supervisor/Manager (SRO)

The Control room command function is the authority to operate the unit, including shutdown, when required. This authority includes directing operations and making decisions on all matters affecting operations (e.g., implementation of Technical Specification limiting conditions for operation, call out of personnel, emergency operations, etc.). The Shift Supervisor/Manager assigned to each unit is responsible for the Control room command function.

The Shift Supervisor/Manager reports to the respective Operations Division Manager for operational concerns and has the following general authorities and responsibilities:

- Assure that shift operations are performed in accordance with approved procedures, the Operating Licenses, and the Technical Specifications
- Maintain conservative decision-making with respect to safety of the plant and plant personnel
- Maintain an overview of plant conditions and direct operations, with reactor safety and the protection of the health and safety of the public and plant personnel being of highest priority
- Remain in the supervisory role during all plant conditions to provide effective leadership and direction to the operating crew
- Maintain an environment that supports critically assessing crew and individual performance in all aspects of training and operations

- Ensure employee conduct both in the Control room and in the field is maintained in a professional and business like manner
- Maintain the environment within the Control room and in the field, in a fashion which supports safe, efficient operation of the plant
- Limit the number of on shift evolutions in progress so that each can be safely and effectively completed
- Provide close oversight of critical operational activities
- Oversee the operating crew's training and professional development
- Provide support of Work Management Process and ensures execution of scheduled work activities
- Maintain an SRO license

The Shift Supervisor/Manager may be assigned the authority and responsibility of the Operations Manager in his absence.

Unit Supervisor (SRO)

The Unit Supervisor is responsible to the Shift Supervisor/Manager for supervising the Plant Operations personnel assigned to his unit and for directing control room activities to assure safe and efficient unit operation in accordance with the Operating Licenses, Technical Specifications, and approved procedures during his shift. He is cognizant of all work or tests which may affect the operation of the unit in accordance with administrative control procedures. He directly supervises control room activities during startup, shutdown, abnormal, and emergency conditions. The Unit Supervisor may assume the duties and responsibilities of the Shift Supervisor/Manager in the event he is unavailable.

The Unit Supervisor has the following general authorities and responsibilities:

- Coordinate the activities of the Reactor Operators and other operations and plant personnel to achieve safe, reliable and efficient unit operation
- Direct the operation of plant equipment and systems
- Direct the Reactor Operators during normal and transient conditions to ensure proper performance of their duties
- Coordinate surveillance testing and tagging operations
- Conduct periodic observation of Operations activities in accordance with the Field Observation Program
- Maintain an SRO license

Reactor Operator (RO)

The Reactor Operator reports to the Unit Supervisor of his assigned unit and is responsible for the safe and efficient operation of the control room equipment of his assigned unit in accordance with the Operating Licenses, Technical Specifications, and approved procedures during his shift. The Reactor Operator has the following duties:

- Initiate the immediate actions necessary to maintain the unit in a safe operating condition during abnormal and emergency conditions
- Perform a manual Reactor Trip or manual actuation of Emergency Safety Systems as required to mitigate consequences of transients or accidents
- Maintain required records, logs, and charts of unit data, shift events, and performance checks
- Monitor and control unit parameters and unit equipment from the control room
- Initiate requests for equipment repairs, and clears and tags equipment as directed by shift supervision
- Perform operations and surveillances in accordance with approved procedures
- Operate all equipment controlled from the main control board area
- Monitor equipment and system parameters using normal and redundant indications
- Initiate or perform operator actions required by normal, off-normal, emergency, and annunciator response procedures applicable to the main control board area
- Conduct periodic observation of Operations activities in accordance with the Field Observation Program
- Act as Field Supervisor when assigned by the Shift Supervisor/Manager:
  - Supplement Operations Day Staff personnel when assigned by the Shift Supervisor/Manager
  - Perform Emergency Plan duties such as E-Plan Communicator as required
- Maintain an RO license

Shift Technical Advisor

The Shift Technical Advisor, (when activated) reports to the Shift Supervisor/Manager and has the following responsibilities. At no time does the Shift Technical Advisor perform control board manipulations.

- Provide advisory technical support to the Shift Supervisor/Manager in the areas of thermal dynamics, reactor engineering, and plant analysis with regard to the safe operation of the unit
- Review planned activities to assess whether special considerations or precautions are warranted i.e., Reactivity Management, and make appropriate recommendations to the Shift Supervisor/Manager
- Perform the following duties upon entry into the EOPs or as directed by the Shift Supervisor/Manager:
  - Identify himself/herself as the STA to the crew
  - Monitor Critical Safety Functions (CSFs) when required
  - Monitor EOP progression to ensure transitions are correct
  - Monitor Conditional Information Page to ensure actions are taken when required
  - Immediately inform Unit Supervisor and/or Shift Supervisor/Manager upon reaching an Orange or Red path condition
  - Communicate CSF status during transition between EOPs
  - Make a qualitative assessment of plant parameters during and following plant events and transients to determine correct plant response and potential core damage
- Perform independently of the crew as follows:
  - Monitor diverse indications
  - Focus on cause of the event to establish mitigation strategy
  - Monitor for additional events, which will complicate the recovery
  - Determine if plant responds as expected
  - Evaluate procedure implementation effectiveness for terminating or mitigating the accident and make recommendations
- Maintain the “big picture” as follows:
  - Remain in the control room
  - Perform independent assessment and review
- Maintain an SRO license

Plant Operator

The Plant Operator reports to the Unit Supervisor of his assigned unit and is responsible for safe operation of systems and equipment as directed from the control room of his assigned unit:

- Monitor plant parameters as required to be aware of plant conditions, performs required operational checks
- Initiate requests for equipment repairs, clears and tags equipment as directed
- Maintain required logs, charts, and records of plant data, shift events and performance checks on his shift
- Maintain awareness of plant maintenance in progress for respective watchstation
- Maintain narrative logbook and area log readings
- Respond (if qualified) to abnormal occurrences (e.g., fire, HAZMAT spills)
- Perform duties as Emergency Plan Communicator when required
- Act as Fire Brigade Leader and/or Spill Response Coordinator if required

Administrative Aide

In accordance with NUREG – 0737, item I.A.1.3, administrative functions that detract from the management responsibility for assuring the safe operation of the plant are delegated to other Operations personnel not on duty in the control room. An Administrative Aide has been assigned to perform routine administrative duties and processes such as routing records, logs, and correspondence for the Control Room Operations staff as required.

Maintenance Manager

The Maintenance Manager reports to the Plant General Manager and is responsible for mechanical, electrical, instrument and control (I&C), and support activities. Responsibilities consist of ensuring that mechanical, electrical, and I&C systems of all plant facilities are maintained to assure their dependability, reliability and operating efficiency to comply with the requirements of the Operating License and the Technical Specifications. The Maintenance Manager is also responsible for corrective and preventive maintenance of both units and common support facilities of the plant.

Radiation Protection Manager

The Radiation Protection Manager is responsible for managing the Radiation Protection and ALARA Programs in accordance with current regulations, license requirements, and policy. Specific responsibilities include:

- Administer the site Respiratory Protection Program
- Provide technical support in the areas of ALARA and radiation protection

- Track and trend radiation work performance, recommending actions as necessary to correct adverse trends
- Review incidents involving radiation protection controls, identifying root causes, concerns, and corrective actions.
- Monitor the receipt and shipment of radioactive materials
- Assure calibration services for instrumentation used to implement the Radiation Protection Program
- Participate in the development and approval of training programs related to work in restricted areas
- Recommend radiation exposure goals to management
- Develop reports required by regulatory agencies and industry groups to present station performance with respect to Radiation Protection and ALARA
- Provide for dosimetry services including personnel dose record retention and personnel dose information management as required to support the Radiation Protection and ALARA programs
- Provide for radiological environmental monitoring

Fire Protection Coordinator

Responsibility for implementation of the Fire Protection Program has been delegated to the Fire Protection Coordinator, who is an individual knowledgeable through education, training, and/or experience in fire protection and nuclear safety. Other personnel are available to assist the Fire Protection Coordinator as necessary.

The Fire Protection Coordinator, or a person available for consultation, is a graduate of an accredited engineering or fire science curriculum and has a minimum of six years applicable experience, three of which have been in the area of fire protection. Education and/or experience acceptable to the Society of Fire Protection Engineers for full member status may be considered as equivalent qualifications.

The Fire Protection Coordinator has been delegated responsibility for development and administration of the Fire Protection Program including administrative controls, periodic fire prevention inspections, fire protection systems/equipment inspections and testing, evaluations of work activities for transient fire loads, identification of fire protection training requirements, and pre-fire planning. The Fire Protection Coordinator ensures that an annual self-assessment of the Fire Protection program be performed. Credit for the self-assessment may be taken for audits. The Fire Protection Coordinator is also responsible for the plant fire protection review of proposed work activities.

13.1.2.3 Operating Shift Crews

The minimum operating shift crew is listed in the Technical Specifications provided as Part 4 of the COLA and is depicted in Figure 13.1-6.

In addition to the operating shift crew, a Radiation Protection Technician will be onsite at all times when fuel is in either reactor to ensure that adequate radiation protection coverage is provided for station personnel. The Radiation Protection Technician will inform the Shift Supervisor/Manager of plant radiological conditions and may be shared amongst the operating units.

A site Fire Brigade of at least five personnel who may have normal shift duties, but are trained specifically in fire protection, is maintained on site and may be shared amongst the four units.

13.1.3 Qualifications of Nuclear Plant Personnel

Key personnel assigned to STP 3 & 4 have had extensive experience in steam electric stations in their respective areas of responsibility, and they will be given nuclear training where necessary to prepare them for their specific assignments at the plant. Section 13.2 discusses the nuclear training program for these personnel.

13.1.3.1 Qualification Requirements

The qualification requirements for plant supervisory, operating, technical, and maintenance support personnel at STP 3 & 4 meet or exceed the guidance given on personnel qualifications contained in RG 1.8. Plant operating personnel meet the experience requirements of Generic Letter
84-16.

13.1.3.2 Qualifications of Plant Personnel

The qualification requirements for plant supervisory, operating, technical, and maintenance support personnel at STP 3 & 4 will meet or exceed the guidance given on personnel qualifications contained in RG 1.8. Plant operating personnel meet the experience requirements of Generic Letter 84-16.

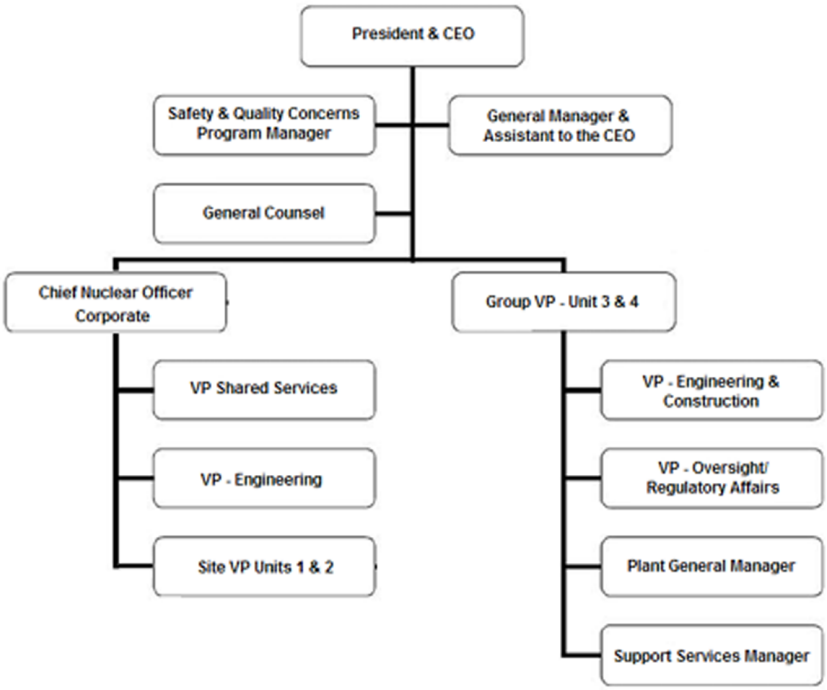

Figure 13.1-1 STPNOC Corporate Organization

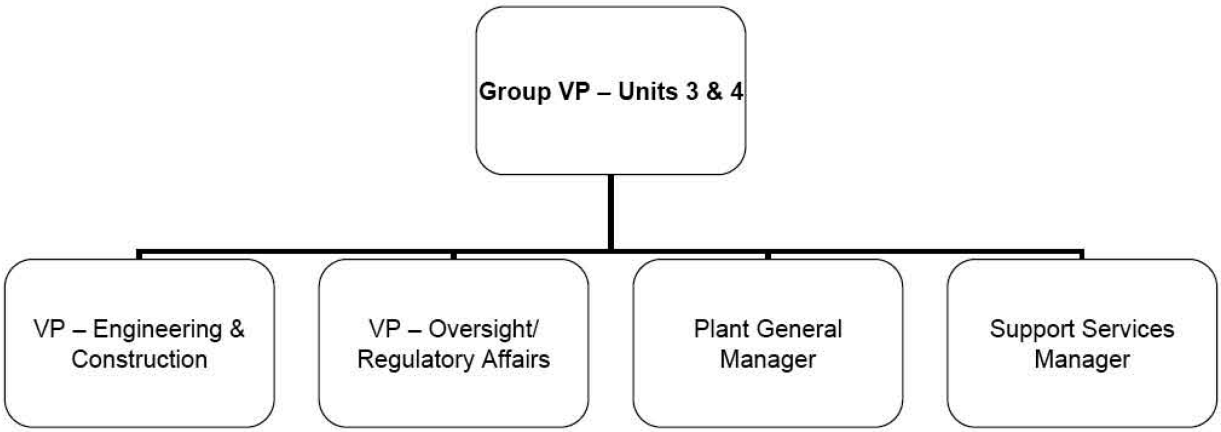

Figure 13.1-2 STP 3 & 4 Executive Organization

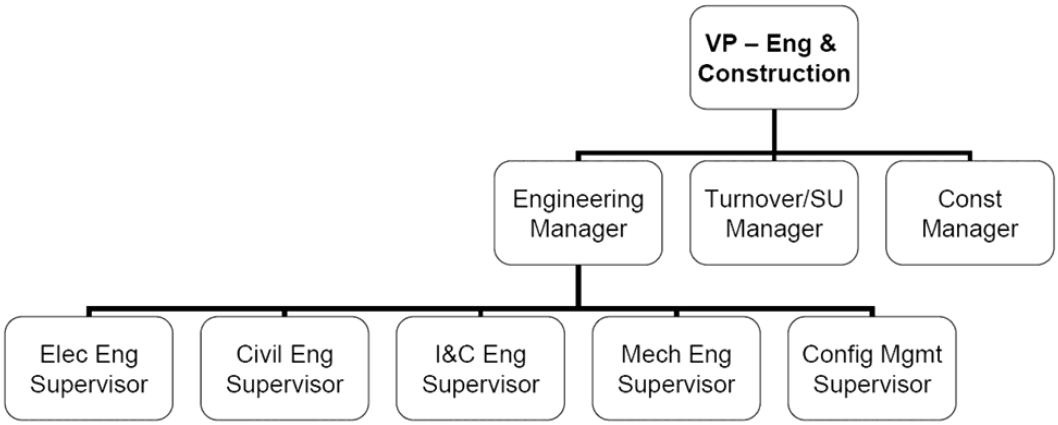

Figure 13.1-3 STP 3 & 4 Engineering & Construction Organization

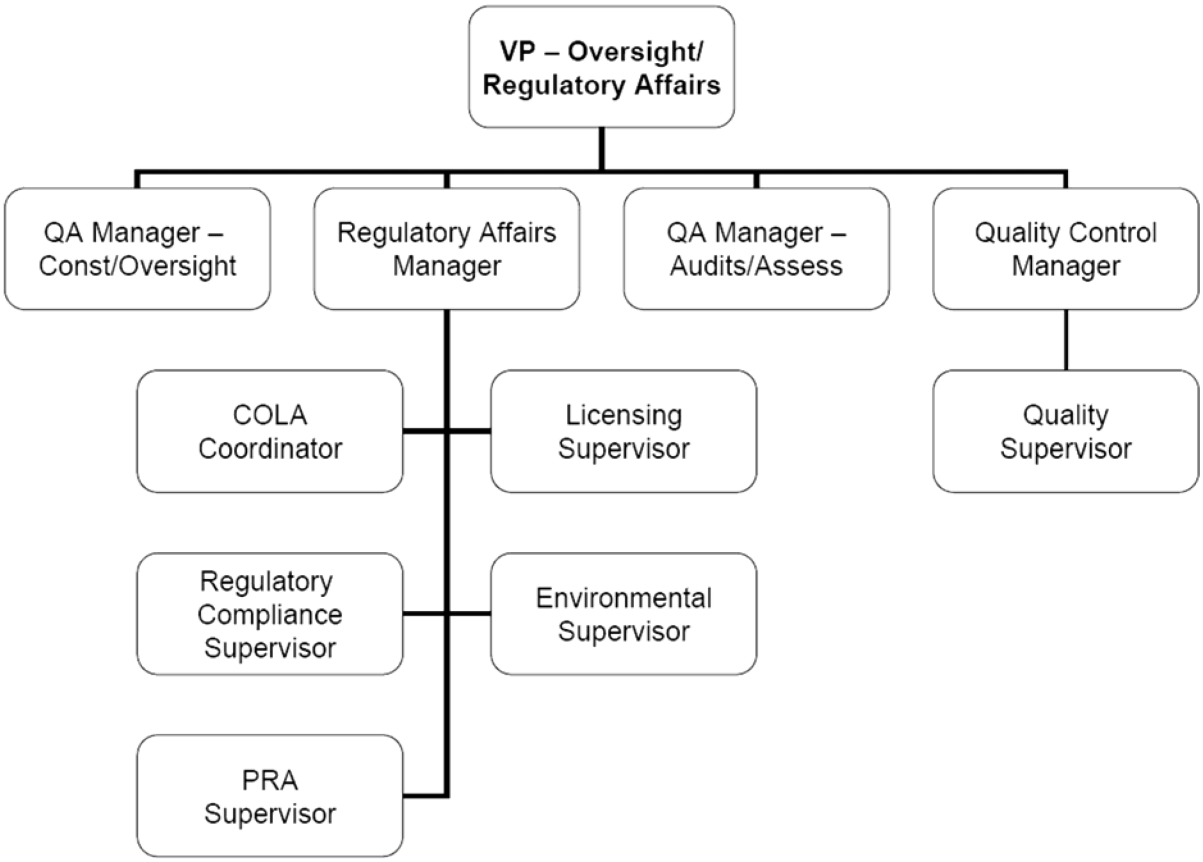

Figure 13.1-4 STP 3 & 4 Oversight/Regulatory Affairs Organization

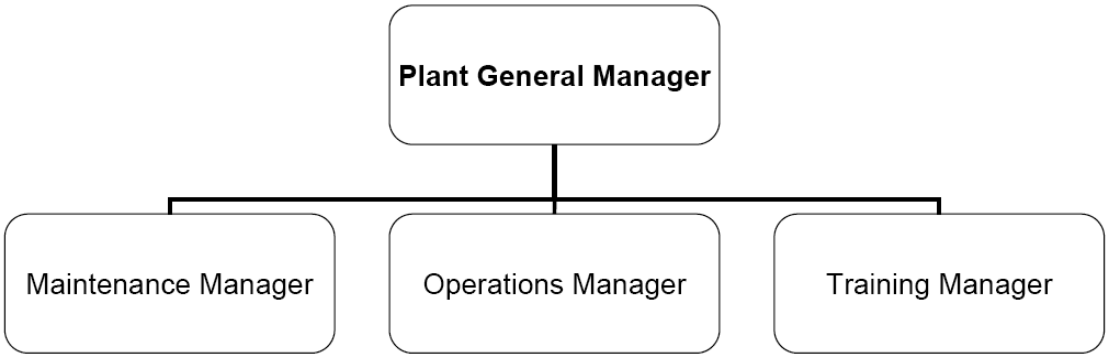

Figure 13.1-5 STP 3 & 4 Plant General Management Organization

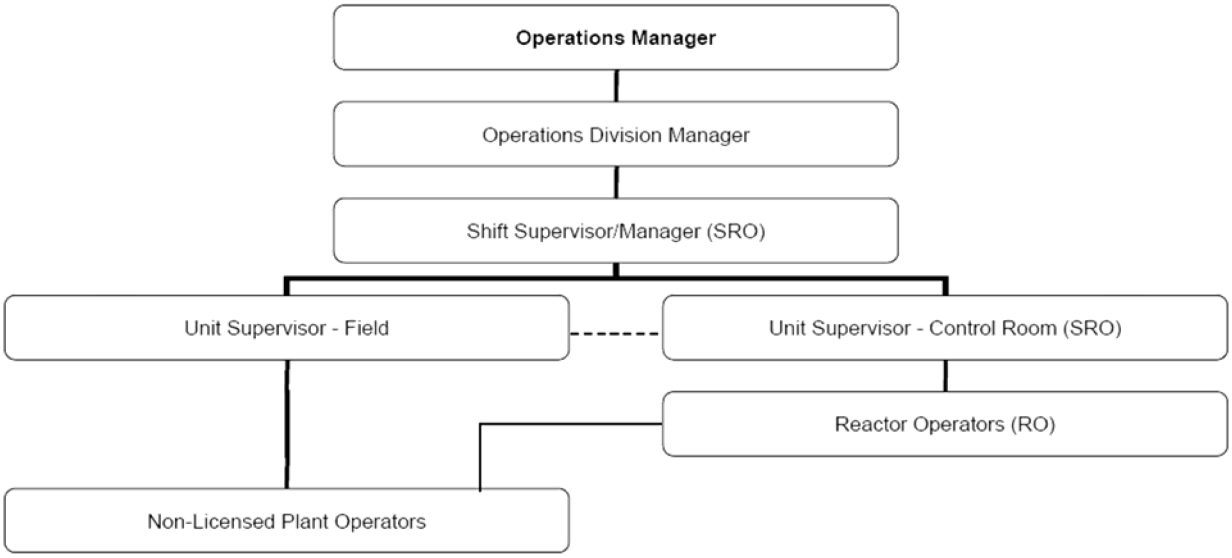

Figure 13.1-6 STP 3 & 4 Shift Staffing Organization