

Chapter 13

CONDUCT OF OPERATIONS

TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
13.1 <u>ORGANIZATION STRUCTURE</u> .....	13.1-1
13.1.1 <u>MANAGEMENT AND TECHNICAL SUPPORT ORGANIZATION</u> .....	13.1-1
13.1.1.1 <u>Technical Support for Operations</u> .....	13.1-1
13.1.1.2 <u>Organizational Arrangement</u> .....	13.1-2
13.1.1.3 <u>Qualifications</u> .....	13.1-3
13.1.2 <u>OPERATING ORGANIZATION</u> .....	13.1-3
13.1.2.1 <u>Plant Organization</u> .....	13.1-3
13.1.2.2 <u>Plant Personnel Responsibilities and Authorities</u> .....	13.1-3
13.1.2.2.1 <u>Plant Management</u> .....	13.1-3
13.1.2.2.2 <u>Operations Supervision</u> .....	13.1-4
13.1.2.2.3 <u>Operating Shift Crew Supervision</u> .....	13.1-5
13.1.2.2.4 <u>Shift Technical Advisor</u> .....	13.1-6
13.1.2.2.5 <u>Licensed Operators</u> .....	13.1-6
13.1.2.2.6 <u>Nonlicensed Operators</u> .....	13.1-6
13.1.2.2.7 <u>Engineering Management</u> .....	13.1-7
13.1.2.2.7.1 <u>System Engineering Manager</u> .....	13.1-7
13.1.2.2.7.2 <u>Design Engineering Manager</u> .....	13.1-8
13.1.2.2.7.3 <u>Reactor/Fuels Engineering Manager</u> .....	13.1-8
13.1.2.2.7.4 <u>Technical Services Manager</u> .....	13.1-9
13.1.2.2.7.5 <u>Manager, License Renewal and Projects</u> .....	13.1-9
13.1.2.2.8 <u>Nuclear Engineering Supervision</u> .....	13.1-9
13.1.2.2.9 <u>Radiological Services Supervision</u> .....	13.1-9
13.1.2.2.10 <u>Chemistry Supervision</u> .....	13.1-9
13.1.2.2.11 <u>Maintenance Supervision</u> .....	13.1-10
13.1.2.2.12 <u>Planning, Scheduling and Outage Supervision</u> .....	13.1-10
13.1.2.2.13 <u>Quality Supervision</u> .....	13.1-10
13.1.2.3 <u>Operating Shift Crews</u> .....	13.1-11
13.1.2.3.1 <u>Shift Crew Composition</u> .....	13.1-11
13.1.2.3.2 <u>Shift Responsibility for Radiation Protection</u> .....	13.1-11
13.1.2.3.3 <u>Shift Maintenance Support</u> .....	13.1-11
13.1.2.3.4 <u>Shift Fire Brigade</u> .....	13.1-12
13.1.2.3.5 <u>Shift Chemistry Support</u> .....	13.1-12
13.1.3 <u>QUALIFICATIONS OF NUCLEAR PLANT PERSONNEL</u> .....	13.1-12
13.1.3.1 <u>Plant Management</u> .....	13.1-12
13.1.3.1.1 <u>Plant General Manager</u> .....	13.1-12
13.1.3.1.2 <u>Assistant Plant General Manager</u> .....	13.1-13

Chapter 13

**CONDUCT OF OPERATIONS**

TABLE OF CONTENTS (Continued)

<u>Section</u>	<u>Page</u>
13.1.3.2 <u>Operations Department</u> .....	13.1-13
13.1.3.2.1 Operations Manager.....	13.1-13
13.1.3.2.2 Shift Manager .....	13.1-13
13.1.3.2.3 Control Room Supervisor .....	13.1-13
13.1.3.2.4 Shift Technical Advisor.....	13.1-14
13.1.3.2.5 Shift Support Supervisor .....	13.1-14
13.1.3.2.6 Reactor Operator.....	13.1-14
13.1.3.2.7 Equipment Operator.....	13.1-14
13.1.3.3 <u>Engineering</u> .....	13.1-14
13.1.3.3.1 Engineering General Manager, System Engineering Manager, Design Engineering Manager, Reactor/Fuels Engineering Manager, Technical Services Manager, and Manager, License Renewal and Projects .....	13.1-14
13.1.3.3.2 Engineering Supervisors.....	13.1-15
13.1.3.3.3 Fire Protection Engineer .....	13.1-15
13.1.3.4 <u>Maintenance</u> .....	13.1-15
13.1.3.4.1 Maintenance Managers .....	13.1-15
13.1.3.4.2 Maintenance Supervisors .....	13.1-15
13.1.3.5 <u>Radiological Services</u> .....	13.1-16
13.1.3.5.1 Radiological Services Manager .....	13.1-16
13.1.3.5.2 Radiation Protection Manager .....	13.1-16
13.1.3.5.3 Radiological Services Supervisors .....	13.1-16
13.1.3.6 <u>Chemistry</u> .....	13.1-16
13.1.3.6.1 Chemistry Manager .....	13.1-16
13.1.3.6.2 Chemistry Supervisors.....	13.1-17
13.1.3.7 <u>Quality</u> .....	13.1-17
13.2 <u>TRAINING</u> .....	13.2-1
13.2.1 PLANT STAFF TRAINING PROGRAM .....	13.2-1
13.2.2 INITIAL AND CONTINUING TRAINING .....	13.2-2
13.2.2.1 <u>Licensed Operators</u> .....	13.2-2
13.2.2.1.1 Initial Training .....	13.2-2
13.2.2.1.2 Continuing Training.....	13.2-3
13.2.2.2 <u>Nonlicensed Operator Training</u> .....	13.2-3
13.2.2.2.1 Initial Training .....	13.2-3
13.2.2.2.2 Continuing Training Program .....	13.2-4

Chapter 13

**CONDUCT OF OPERATIONS**

TABLE OF CONTENTS (Continued)

<u>Section</u>	<u>Page</u>
13.2.2.3 <u>Shift Technical Advisor Training</u> .....	13.2-4
13.2.2.3.1 Initial Training .....	13.2-4
13.2.2.3.2 Continuing Training .....	13.2-4
13.2.2.4 <u>Other Plant Personnel (Maintenance, Health Physics, Chemistry)</u> .....	13.2-5
13.2.2.4.1 Initial Training .....	13.2-5
13.2.2.4.2 Continuing Training .....	13.2-5
13.2.2.5 <u>Fire Brigade</u> .....	13.2-5
13.2.2.5.1 Initial and Continuing Training .....	13.2-5
13.2.2.5.2 Offsite Fire Department .....	13.2-6
13.2.3 TRAINING PROGRAM EFFECTIVENESS.....	13.2-7
13.2.4 PLANT TRAINING RECORDS .....	13.2-7
13.2.5 OTHER TRAINING DOCUMENTS .....	13.2-7
13.3 <u>EMERGENCY PLANNING</u> .....	13.3-1
13.4 <u>REVIEW AND AUDIT</u> .....	13.4-1
13.4.1 ONSITE REVIEW .....	13.4-1
13.4.2 INDEPENDENT REVIEW.....	13.4-1
13.4.3 AUDIT PROGRAM .....	13.4-2
13.5 <u>PLANT PROCEDURES</u> .....	13.5-1
13.5.1 ADMINISTRATIVE PROCEDURES .....	13.5-1
13.5.1.1 <u>Conformance With Regulatory Guide 1.33, Revision 2</u> .....	13.5-1
13.5.1.2 <u>Preparation of Procedures</u> .....	13.5-1
13.5.1.3 <u>Procedures</u> .....	13.5-1
13.5.2 OPERATING AND MAINTENANCE PROCEDURES.....	13.5-2
13.5.2.1 <u>Control Room Operating Procedures</u> .....	13.5-2
13.5.2.2 <u>Other Procedures</u> .....	13.5-3
13.6 <u>INDUSTRIAL SECURITY</u> .....	13.6-1

Chapter 13

CONDUCT OF OPERATIONS

LIST OF TABLES

<u>Number</u>	<u>Title</u>	<u>Page</u>
13.1-1	Minimum Shift Crew Composition .....	13.1-19

Chapter 13

**CONDUCT OF OPERATIONS**

LIST OF FIGURES

<u>Number</u>	<u>Title</u>
13.1-1	Energy Northwest Organization
13.1-2	Nuclear Generation Organization
13.1-3	Plant General Manager Organization
13.1-4	Operational Support Organization
13.1-5	Training Organization
13.1-6	Vice President Engineering Organization
13.1-7	Quality Organization
13.1-8	Engineering Organization
13.1-9	Operations Organization
13.1-10	Operations Crew
13.1-11	Radiological Services Organization
13.1-12	Chemistry Organization
13.1-13	Plant Maintenance Organization

## Chapter 13

### CONDUCT OF OPERATIONS

#### 13.1 ORGANIZATION STRUCTURE

The organizational structure of Energy Northwest and the line of responsibility for the operation of Columbia Generating Station (CGS) is in accordance with established administrative and quality standards that apply to this operation. The applicable organization charts are shown in **Figures 13.1-1** through **13.1-13**.

##### 13.1.1 MANAGEMENT AND TECHNICAL SUPPORT ORGANIZATION

Energy Northwest is a municipal corporation and a joint operating agency of the State of Washington. The management and control of Energy Northwest is vested in the Executive Board.

The Executive Board consists of five members of the Energy Northwest Board of Directors and six outside directors. Three outside directors are selected by the Board of Directors, and three directors are appointed by the Governor of the State of Washington.

The full Board of Directors has members representing each of Energy Northwest's member utilities, and has the authority to select the inside members of the Executive Board and to terminate existing projects or authorize new projects.

Certain responsibilities for day-to-day management of Energy Northwest have been delegated to the Chief Executive Officer (the chief administrative officer).

The staff of Energy Northwest includes senior management level positions (Vice Presidents), which are responsible to the Chief Executive Officer for performance of specialized work by their respective groups. The Vice President Nuclear Generation holds the title of Chief Nuclear Officer. See **Figure 13.1-1** for an organization chart. However, as specified in Technical Specifications, Section 5.2.1, the Chief Executive Officer retains corporate responsibility for overall plant nuclear safety.

##### 13.1.1.1 Technical Support for Operations

Technical support for the nuclear organization is the responsibility of the Vice President, Nuclear Generation (VPNG), Plant General Manager, Vice President, Engineering, and Vice President, Operations.

The Plant General Manager is responsible for the safe, reliable, and efficient operation and maintenance of CGS and for providing major services which support plant operation.

Reporting to the VPNG includes the Vice President, Operations, Vice President, Engineering, and the Quality Manager. The Plant General Manager reports to the Vice President, Operations.

Reporting to the Vice President, Nuclear Generation are departments that provide support to CGS in the areas of Operations, Engineering, Employee Concerns, Quality, and Organizational Effectiveness (see [Figure 13.1-2](#)).

The Training Manager reports to the Vice President, Operations. The responsibilities of the Training Organization are described in Section [13.2](#). An organization chart is shown in [Figure 13.1-5](#).

Reporting to the Vice President, Engineering are departments which provide technical support in the areas of reactor fuels, construction and project management, and engineering (see [Figure 13.1-6](#)).

Reporting to the Vice President, Operations, in addition to the Plant General Manager are departments in the areas of security, emergency preparedness, training, and regulatory affairs (see [Figure 13.1-4](#)).

The Quality Manager's responsibilities are described in the Energy Northwest Operational Quality Assurance Program Description (OQAPD), EN-QA-004. An organization chart is provided in [Figure 13.1-7](#).

The Vice President, Engineering is responsible for design control of all authorized plant modifications, technical expertise in the fundamental engineering disciplines such as mechanical, electrical, civil, chemical, fuels, as well as specialty areas such as materials, welding, and inservice inspection engineering. In addition, the Vice President, Engineering is responsible for providing technical support in the area of system engineering. An organization chart for Engineering is shown in [Figure 13.1-8](#).

Support and refueling operations are provided by personnel from all of the support organizations and are directed by the plant staff.

#### 13.1.1.2 Organizational Arrangement

[Figures 13.1-1](#) through [13.1-8](#) provide the current corporate structure as applicable to CGS support organizations. The number of personnel to be assigned to each of the working level organizations will be determined based on workload and need for pertinent expertise. If the need arises, qualified outside contractors will be used to support the Energy Northwest staff.

### 13.1.1.3 Qualifications

Qualification requirements for key technical support personnel who fulfill the responsibilities identified in Section 13.1.1.1 shall meet the criteria of Regulatory Guide 1.8, Revision 1, 1977 (see the OQAPD). The personnel qualification and training programs are under continuing review and modification to reflect the changes following the TMI accident. The Engineering General Manager meets the definition and qualifications of “Engineer in Charge.”

Any Vice President or Manager listed in Section 13.1.1.1 may authorize deviations from the qualification requirements for subordinate positions when, in their judgment, the combined education, experience, and managerial competency of a particular individual are sufficient to ensure adequate performance of assigned responsibilities. Such exceptions will be documented in writing and will not be used as a means to degrade the overall qualifications of the support staff. Deviations are not authorized for those positions whose qualifications are described in the Technical Specifications and the OQAPD.

## 13.1.2 OPERATING ORGANIZATION

### 13.1.2.1 Plant Organization

This section describes the structure, functions, and responsibilities of the onsite organization established to operate and maintain CGS. Figures 13.1-9 through 13.1-13 show the plant organizations that directly operate and maintain CGS. The principal departments that function directly under the supervision of the Plant General Manager are: Operations, Maintenance, Radiological Services, and Chemistry (see Figure 13.1-3).

The Security Force Lieutenant is responsible to the Plant General Manager for day-to-day operation of the Plant Security Program and receives functional supervision from Operations Support management.

Position titles, NRC licenses required, and lines of functional reporting, as well as direct lines of communications, are indicated on the organization charts.

### 13.1.2.2 Plant Personnel Responsibilities and Authorities

#### 13.1.2.2.1 Plant Management

The Plant General Manager has direct responsibility and authority for all plant activities. The Plant General Manager reports directly to the Vice President, Operations.

The Plant General Manager has the responsibility for management of the following plant departments: Operations, Chemistry, Radiological Services, Planning, Scheduling and Outage, and Maintenance.



A Security Force Lieutenant exercises supervision and authority over the onsite security personnel. The Security Force Lieutenant reports to the Plant General Manager or the designated representative on day shifts and to the Shift Manager during other than normal working hours (i.e., backshifts, weekends, and holidays).

In the event of incapacitation of key plant personnel or unexpected contingencies of a temporary nature, the line of succession of authority and responsibility for all plant activities is as follows:

- a. Plant General Manager,
- b. Assistant Plant General Manager,
- c. Operations Manager,
- d. Either the Operations Production Manager or the Operations Support Manager,  
and
- e. Duty Shift Manager.

#### 13.1.2.2.2 Operations Supervision

Operations is under the direction of the Operations Manager. The Operations Manager is responsible for overall plant operation. The Operations Manager directs and manages the activities of operations to ensure safe plant operation and control of plant systems in compliance with licensing documents.

The Operations Manager is responsible for being cognizant of and complying with the OQAPD.

The Operations Manager is responsible for the day-to-day routine as well as the abnormal or emergency operating situations that may arise. The Operations Manager is responsible to see that all operations are carried out in a safe, efficient manner and that the plant is operated in strict conformance to the Operating License, Technical Specifications, and in accordance with approved written procedures. Additionally, the Operations Manager is responsible for operating personnel schedules, development, and periodic review of plant operating procedures and instructions, and the preparation of operating records and reports.

The Operations Crew and Support Managers (delineated as the Assistant Operations Manager in Technical Specification 5.2.2.e) support and assist the Operations Manager in the performance of these duties. The Operations Crew Manager is responsible to the Operations Manager for the immediate supervision of the Operations staff that supports work team and outage activities, and as such, he receives direction from the Operations Manager for the day-to-day routine and supervises implementation. The Operations Support Manager is responsible to the Operations Manager for the immediate supervision of the Operations staff that supplies miscellaneous support to the Operations Department. Either one or both of these

individuals may be required to maintain a current Senior Reactor Operator (SRO) license. During periods of transition such as promotion, the individual with a current SRO, either the Operations Manager, the Operations Crew Manager, or the Operations Support Manager will have the responsibility for immediate supervision of the Operations staff. In either case, the individual with the SRO may only be relieved by another individual possessing a current SRO. The Operations Manager will designate one of the assistants to assume total responsibility for the Operations Manager's duties (as described in this section) during periods when the Operations Manager is temporarily absent from the plant. See [Figure 13.1-9](#) for an organization chart of the Operations Department.

The plant Fire Marshall assists the Operations Manager in the implementation of the Fire Protection Program. Responsibilities include ensuring that the fire protection systems and components are maintained and that the Fire Brigade is adequately trained and staffed. More detailed information is contained in Section [13.2.2.5.2](#).

#### 13.1.2.2.3 Operating Shift Crew Supervision

Within the Operations Department are a minimum of five shift crews during normal operations. In some situations, such as refueling outages, these may be reduced to four shift crews. Plant management and technical support will be present or on call at all times to provide advice to the shift personnel.

The Shift Manager holds an SRO license and is directly responsible to the Operations Manager (see [Figure 13.1-10](#) for typical Operations Crew organization chart). The Shift Manager is in charge of all plant operations on shift and is directly in charge of and responsible for the shift crew assigned to his specific shift. The Shift Manager has the authority to institute immediate action in any given situation to shut the plant down, or eliminate difficulties to preclude violation of the Operating License or Technical Specifications, or to avert possible injury or undue radiation exposure of personnel. Additionally, the Shift Manager may at times direct the activities of other personnel during tasks such as backshift maintenance, radiation protection, chemistry control, and security implementation. The Shift Manager also keeps plant management apprised of situations that may affect plant safety and/or constitute a hazard to the general public. During other than normal working hours, the Shift Manager assumes responsibility for all plant operations in the absence of senior plant management personnel.

The Control Room Supervisor holds an SRO license and assists the Shift Manager in the performance of duties and assumes those duties during periods when the Shift Manager is unavailable. The Control Room Supervisor is responsible for supervising the activities of the Control Room Reactor Operators and other assigned personnel (i.e., equipment operators and maintenance support personnel) required to operate the plant safely and efficiently. The Control Room Supervisor is directly responsible to the Shift Manager.

If stationed, the Shift Support Supervisor assists the Shift Manager in the performance of his duties. The Shift Support Supervisor is responsible for the supervision and direction of personnel assigned to perform balance-of-plant (BOP) operating functions such as operations of makeup water treatment system, radwaste processing systems, and other plant support systems. The individual is responsible for performing administrative duties as assigned.

All core alterations are observed and directly supervised by either a licensed SRO, or licensed SRO limited to fuel handling, who has no concurrent responsibilities during the performance of the core alterations.

#### 13.1.2.2.4 Shift Technical Advisor

A Shift Technical Advisor (STA) qualified individual provides engineering expertise on shift pursuant to safe and efficient operation of the plant. The STA function may be staffed by a dedicated individual (licensed or non-licensed), or by an individual filling a dual role as the Control Room Supervisor, Shift Manager or Shift Support Supervisor. The STA qualified individual monitors reactor core operations, and core management and reactivity controls. The STA normally reports to the Shift Manager.

#### 13.1.2.2.5 Licensed Operators

In addition to the licensed supervisors listed above, there are a minimum of two reactor operators on each shift. The reactor operator (RO) holds a reactor operator or senior reactor operator license and is responsible to the Control Room Supervisor for the safe and efficient operation of the plant from the main control room. The RO follows approved procedures in performing work and is responsible for taking the immediate action required to maintain or bring the plant to a safe condition during abnormal and/or emergency conditions. However, if a particular situation is not covered by a procedure, the individual may seek advice from the Control Room Supervisor, or if the situation is critical, may use his or her own judgment to prevent damage to equipment, injury to personnel, or undue radiation exposure of plant personnel and the general public. The RO directs and supports the activities of other operators in the performance of their duties and works cooperatively with all plant service groups that interface with plant operation.

#### 13.1.2.2.6 Nonlicensed Operators

The equipment operators (EO) are responsible to the Control Room Supervisor or Shift Support Supervisor for assisting in the plant operation and performing work assignments from local control stations and all other defined areas outside of the central control room. The EO follows approved procedures in doing work and does not deviate from those procedures except as authorized. The EO performs assigned routine inspections and manipulates equipment without close supervision. The EO also performs special assignments as directed.

#### 13.1.2.2.7 Engineering Management

Reporting to the Vice President, Engineering is the Engineering General Manager, Construction and Projects Management Manager, Reactor Fuels Manager, and the Design Engineering Manager (see [Figure 13.1-6](#) for organization chart).

Reporting to the Engineering General Manager are the System Engineering Manager, the Technical Services Manager, and the Plant Support Engineering Manager (see [Figure 13.1-8](#) for organization chart).

They are responsible for developing and implementing plant programs and procedures which provide proper management control in the above areas and thus ensure compliance with the conditions of the operating license and proper plant safety. They interface with other support organizations to support plant operations.

The engineering organizations are responsible for being cognizant of and complying with the Operational Quality Assurance Program Description.

**13.1.2.2.7.1 System Engineering Manager.** The System Engineering Manager is responsible for long-term management of and the health and reliability of systems and components, overall direction of the system engineering program in support of plant operation, maintenance, and chemistry, and developing long range plans for system improvement and performance in the areas of NSSS systems, control/electrical systems, and BOP systems.

The System Engineering Manager is responsible for the development, implementation, and execution of programs to monitor system performance, to conduct inspections, and to perform specialized testing. The objective is to identify potential component degradation, minimize threats to successful operation of systems and the plant, and to identify opportunities for improvement.

The System Engineering Manager is the primary interface with the Design Engineering Manager, Plant Support Engineering Manager, and Technical Services Manager in support of maintaining plant compliance with design and licensing requirements.

The System Engineering Manager is responsible for implementing performance monitoring of plant systems and critical plant programmatic processes. This includes providing recommendations to plant management for implementation of new program requirements, performing periodic assessments of existing programs, and recommending component or system improvements. The System Engineering Manager is responsible for daily plant support, responding to emergent issues, operability assessments, and providing troubleshooting expertise to operations and maintenance.

Reporting to the System Engineering Manager are the System Engineering Supervisors for nuclear steam supply systems (NSSS), BOP systems, electrical systems, and instrument and control systems. System Engineering Supervisors direct the activities of the System Engineering staff in support of plant operation in the functional areas of mechanical engineering, instrumentation and control engineering, and electrical engineering. Activities include initiating engineering design changes, making recommendations for improved operation, and providing operating and maintenance support for instrumentation and control systems, mechanical systems, electrical systems, plant water systems, and waste handling systems. The System Engineering staff represents the plant in assigned licensing areas with all state and federal licensing authorities (through responsible corporate organizations). They evaluate, interpret, or prepare licensing documents (e.g., FSAR).

13.1.2.2.7.2 Design Engineering Manager. The Design Engineering Manager is responsible to assist System Engineering for daily plant support, responding to emerging issues, and operability assessments. The Design Engineering Manager is responsible for maintenance of the plant design basis, performance of plant design changes, and design and drafting. This includes non-modification design related activities.

Reporting to the Design Engineering Manager are the Mechanical/Civil/Stress Design Supervisor, the Electrical/Instrumentation & Control Design Supervisor, and the Design/Drafting Supervisor.

13.1.2.2.7.3 Reactor Fuels Manager. The Reactor Fuels Manager is responsible for fuel design, overall management of the reactor core, and monitoring of core parameters.

The Reactor Fuels Manager is responsible for providing technical support to Operations in management of refueling floor activities, support to Maintenance in resolving refueling equipment problems, providing technical resources for resolution of vessel hardware problems and concerns with interfacing systems which influence or monitor core reactivity, for maintaining involvement in applicable industry initiatives affecting core reactivity issues and new developments in core operation, providing recommendations to plant management on operating strategies in support of normal and off-normal operating situations, and planned shutdown and startup activities.

The Reactor Fuels Manager ensures sound fuel design philosophy is followed, fuel designs provide no unreasonable challenges to safe plant operation, and probabilistic safety assessments (PSA) are performed for CGS.

Reporting to the Reactor Fuels Manager are the Fuel Design/Reactor Engineering Supervisor, and the Safety Analysis/PSA Supervisor.

The Fuel Design/Reactor Engineering Supervisor and staff are responsible for performing periodic core physics evaluations to monitor the operation, burnup, and thermal/hydraulic

performance of the reactor core. They provide and maintain plant operating curves and reactivity data for use by shift operation personnel and are responsible for the onsite accountability of nuclear fuel and special nuclear materials. The Fuel Design/Reactor Engineering Supervisor and staff are responsible for core design, fuel planning, licensing support (e.g., COLR, accident/transient analysis), and analytical work necessary to support cycle operation (e.g., control rod pattern recommendations).

The Safety Analysis/PSA Supervisor and staff provide probabilistic safety assessments for CGS. They provide analytical support for radiation dose analysis, shielding, equipment qualification, ODCM, emergency procedures and primary and secondary containment analyses.

13.1.2.2.7.4 Technical Services Manager is responsible for plant, code, component programs. Reporting to the Technical Services Manager are Plant Programs Supervisor, Code Programs Supervisor, and Plant Components Supervisor. The Plant Programs personnel are responsible for Equipment Qualification (EQ), Fire Protection (FP), In Service Test (IST), Maintenance Rule (MRULE) and Thermal Performance (TP) programs. Code Programs personnel are responsible for NDE services/activities, ASME Section XI, ISI, BWRVIP, oil analysis, and welding programs. Components Programs personnel are responsible for Appendix J Local Leak Rate Testing (LLRT), pumps, valves (AOVs, MOVs, and reliefs), large motors, circuit breakers, relays, and Component Condition Monitoring programs which includes vibration, oil analysis, and thermography.

13.1.2.2.7.5 Plant Support Engineering Manager is responsible supporting the System Engineering Manager and the plant in responding to emergent issues, operability assessments, and providing troubleshooting expertise to operations and maintenance. Reporting to the Plant Support Engineering Manager are the engineering fix-it-now (EFIN) and Minor Modifications Supervisors.

13.1.2.2.8 Nuclear Engineering Supervision

See Section [13.1.2.2.7.3](#).

13.1.2.2.9 Radiological Services Supervision

See Section [12.5.1](#) for a description of duties, responsibilities, and reporting relationships. See [Figure 13.1-11](#) for an organization chart.

13.1.2.2.10 Chemistry Supervision

Chemistry is under the direction of the Chemistry Manager, who reports to the Plant General Manager. The group provides plant oversight for system chemistry optimization and control, gaseous, and liquid effluent releases, radwaste processing and chemical control, the Offsite

Dose Calculation Manual, the Radiological Environmental Monitoring Program (REMP), and Radiological Effluent Report. See [Figure 13.1-12](#) for an organization chart.

#### 13.1.2.2.11 Maintenance Supervision

Maintenance is under the direction of the Maintenance Manager. The Maintenance Manager is responsible for the Maintenance Program and for the development and implementation of maintenance processes and procedures which will ensure the safe and reliable operation of plant equipment. The Maintenance Manager is responsible for primary component level troubleshooting. The Maintenance Manager reports to the Plant General Manager. The organization is shown in [Figure 13.1-13](#).

The Maintenance Manager manages the activities of the following: Site Support Contractor Manager, Maintenance Fix-It-Now (FIN) Team Manager, Maintenance Services Manager, Maintenance Production Manager, and other teams that are formed to address specific maintenance or business needs. Shops and/or teams may be combined as long as supervisory qualifications are maintained as described in [Section 13.1.3.4](#).

All plant modifications are accomplished through this department either directly or through the actions of the Site Support Services contractor. Engineering, Training, and Support Services, as discussed in [Section 13.1.1.1](#), provide support for this department. Other support is provided when needed in the form of vendor representatives for technical guidance on maintenance of major components of the plant.

Maintenance Supervisors are responsible for the day-to-day implementation of the Maintenance Program. They are responsible for maintaining plant electrical, instrumentation, and mechanical systems through preventive and corrective maintenance and surveillance programs.

#### 13.1.2.2.12 Planning, Scheduling and Outage Supervision

This organization is responsible for managing the work process and ensuring work schedule consistency. It is also responsible for the development and oversight of outage preparation and implementation and coordination of outage work.

#### 13.1.2.2.13 Quality Supervision

A description of duties and responsibilities for the Quality organization is contained in the OQAPD.

### 13.1.2.3 Operating Shift Crews

#### 13.1.2.3.1 Shift Crew Composition

Shift coverage is provided by using a rotating shift schedule depending on operating needs. The schedules are based on a nominal 40-hr work week and shifts are normally of 8 or 12 hr duration (excluding shift turnover time).

During normal operations, a minimum of five crews provide 24 hr/day, 7 day/week coverage. **Table 13.1-1**, as well as the Technical Specifications and the Emergency Plan, identify the minimum number and type of licensed and unlicensed personnel required to be onsite.

For those operations that involve core alterations, direct supervision of all fuel movements is provided by an individual holding an SRO license. This person has no other concurrent responsibilities during this assignment.

It is CGS's policy to maintain an adequate number of personnel in the Shift Manager, Control Room Supervisor, Shift Support Supervisor, STA (if required), Control Room Reactor Operator, and Equipment Operator positions such that the use of overtime is not routinely required to compensate for inadequate staffing.

#### 13.1.2.3.2 Shift Responsibility for Radiation Protection

A minimum of one Health Physics Technician is assigned to each operating shift to provide radiological surveillance/control (see **Table 13.1-1**).

All shift personnel are instructed in the fundamentals of health physics such as implementing radiation protection procedures, radiation and contamination surveys, use of protective barriers and signs, use of protective clothing and breathing apparatus, radiation monitoring, and accumulated dose.

Shift personnel are responsible for immediately informing the on-duty Shift Manager if conditions develop that exceed or are likely to exceed preestablished radiation levels or exposure limits or if they believe that unsafe or hazardous conditions exist. The Shift Manager will evaluate the situation and if a radiological condition exists that warrants attention and investigation, the appropriate Health Physics personnel will be called for assistance.

#### 13.1.2.3.3 Shift Maintenance Support

Craftsmen and technicians, as required, are available to provide maintenance support and surveillance testing in the areas of instrumentation and controls and mechanical and electrical equipment.



#### 13.1.2.3.4 Shift Fire Brigade

A Shift Fire Brigade, consisting of a minimum of five members of the nominal shift complement, shall have advanced fire training and be equipped for fire fighting. This select group on each operating shift will have primary response capabilities and will respond to emergencies involving fire and/or emergencies where life threatening danger exists.

The brigade shall not include the minimum shift crew complement required to safely shut down the unit. At a minimum the brigade leader and two brigade members shall have sufficient knowledge of plant fire safe shutdown systems. The balance of the fire brigade shall be composed of Fire Brigade trained support personnel. See Section 13.2.2.5 for the qualification requirements for fire brigade members.

#### 13.1.2.3.5 Shift Chemistry Support

At least one qualified chemistry technician is assigned to each operating shift for the purpose of providing chemistry support in the area of chemical surveillances while the plant is in Modes 1, 2, or 3.

### 13.1.3 QUALIFICATIONS OF NUCLEAR PLANT PERSONNEL

The minimum educational and experience qualifications for the onsite plant personnel are based on Regulatory Guide 1.8, Revision 1-R, 1977. If an individual who does not meet the minimum qualification criteria is placed in a discipline, it will be specifically pointed out and justification or explanation provided. See Section 13.1.1.3. Personnel qualification and training programs are under continual review and modification to reflect the changes following TMI. The minimum qualification requirements identified in Section 13.1.3.1 will be revised accordingly. The licensed ROs and SROs meet or exceed the minimum qualifications of the supplemental requirements specified in Sections A and C of Enclosure 1 of the March 28, 1980, NRC letter to all licensees, as modified by NUREG-0737, November 1980, "Clarification of TMI Action Plan Requirements," Enclosure 1, Section 1.A.2.1, "Immediate Upgrading of Reactor Operator and Senior Reactor Operator Training and Qualifications."

#### 13.1.3.1 Plant Management

##### 13.1.3.1.1 Plant General Manager

The Plant General Manager shall have 10 years of responsible power plant experience of which a minimum of 3 years shall be nuclear power plant experience. A maximum of 4 years of the remaining 7 years of experience may be fulfilled by academic training on a one-for-one time basis. This academic training shall be in an engineering or scientific field generally associated with power production. The Plant General Manager shall have acquired the experience and training normally required for examination by the NRC for an SRO license, whether or not the

examination is taken. The Plant General Manager should have a recognized baccalaureate or higher degree in an engineering or scientific field generally associated with power production.

#### 13.1.3.1.2 Assistant Plant General Manager

The Assistant Plant General Manager will have similar experience to that of the Plant General Manager.

#### 13.1.3.2 Operations Department

##### 13.1.3.2.1 Operations Manager

The Operations Manager shall have a minimum of 8 years of responsible power plant experience of which a minimum of 3 years shall be nuclear power plant experience.

A maximum of 2 years of the remaining 5 years of power plant experience may be fulfilled by satisfactory completion of academic or related technical training on a one-for-one time basis. The Operations Crew Manager (delineated as the Assistant Operations Manager in Technical Specification 5.2.2.e) shall have qualifications similar to those of the Operations Manager. The Operations Manager or Operations Crew Manager shall hold an SRO license.

##### 13.1.3.2.2 Shift Manager

The Shift Manager shall have a minimum of a high school diploma or equivalent and 4 years of responsible power plant experience of which a minimum of 1 year shall be nuclear power plant experience. At least 6 months of nuclear plant experience will be at CGS. A maximum of 2 years of power plant experience may be fulfilled by academic or related technical training on a one-for-one time basis. The Shift Manager shall hold an SRO license. For NRC license eligibility guidelines (experience, training, and education) for an SRO license, see NUREG-1021, section ES-202.

##### 13.1.3.2.3 Control Room Supervisor

The Control Room Supervisor shall have a minimum of a high school diploma or equivalent and 4 years of responsible power plant experience, of which a minimum of 1 year shall be nuclear power plant experience. At least 6 months of nuclear plant experience will be at CGS. A maximum of 2 years of power plant experience may be fulfilled by academic or related technical training on a one-for-one time basis. The Control Room Supervisor shall hold an SRO license. For NRC license eligibility guidelines (experience, training, and education) for an SRO license, see NUREG-1021, section ES-202.

13.1.3.2.4 Shift Technical Advisor

The STA possesses a bachelor's degree in engineering or science with sufficient courses to provide a sound background for understanding the design and operation of a BWR power plant. The STA shall have a minimum of 2 years of power plant experience with at least 6 months of nuclear plant experience at CGS.

13.1.3.2.5 Shift Support Supervisor

The Shift Support Supervisor shall have a high school diploma or equivalent. The individual shall have 4 years of power plant experience of which 1 year shall be nuclear power plant experience. This position does not require an RO license.

13.1.3.2.6 Reactor Operator

The RO shall have a minimum of a high school diploma or equivalent and two years of power plant experience of which a minimum of 1 year shall be nuclear power plant experience. At least 6 months of the nuclear experience shall be at CGS unless the incumbent has an equal amount of nuclear experience acquired on a similar unit. The individual shall hold an RO license. For NRC license eligibility guidelines (experience, training, and education) for an RO license, see NUREG-1021, section ES-202.

13.1.3.2.7 Equipment Operator

Before assuming the full responsibilities of the position in the plant, the Equipment Operator shall have a minimum of a high school diploma or equivalent and shall have completed the Energy Northwest training program for Equipment Operators. This position does not require an RO license.

13.1.3.3 Engineering

13.1.3.3.1 Engineering General Manager, System Engineering Manager, Design Engineering Manager, Reactor Fuels Manager, Technical Services Manager, and Plant Support Engineering Manager

The Engineering General Manager, System Engineering Manager, Design Engineering Manager, Technical Services Manager, and Reactor Fuels Manager shall have a minimum of 8 years of related technical experience of which 1 year should be nuclear power plant experience. A maximum of 4 years of the remaining 7 years may be fulfilled by satisfactory completion of academic training. A bachelor of science degree in engineering or physical sciences suitable to the nuclear power field is required. The Reactor Fuels Manager shall have a minimum of 2 years of experience in areas such as reactor/core physics, measurements, heat transfer, and physics testing. The "Engineer in Charge" described in Section 13.1.1.3 shall

have (in addition to any applicable requirements listed above) a minimum of a Bachelor's Degree in Engineering or the Physical Sciences and have a minimum of three years of professional level experience in nuclear services, nuclear plant operation, or nuclear engineering, and the necessary overall nuclear background to determine when to call consultants and contractors for dealing with complex problems beyond the scope of owner-organization expertise.

#### 13.1.3.3.2 Engineering Supervisors

The Engineering Supervisors in System Engineering, Design Engineering, Reactor Fuels, and Technical Services shall have a minimum of 8 years of related technical experience of which 1 year shall be nuclear power plant experience. A maximum of 4 years of the remaining 7 years may be fulfilled by satisfactory completion of academic training. A bachelor of science degree in engineering or physical sciences or the equivalent is required. The Reactor Fuels Supervisors shall have a minimum of 2 years experience in areas such as reactor/core physics, measurements, heat transfer, and physics testing.

#### 13.1.3.3.3 Fire Protection Engineer

The qualified Fire Protection Engineer meets the qualifications of member grade in the Society of Fire Protection Engineers or is a registered Fire Protection Engineer.

#### 13.1.3.4 Maintenance

##### 13.1.3.4.1 Maintenance Managers

The Maintenance Manager shall have a minimum of 7 years of responsible power plant experience or applicable industrial experience, a minimum of 1 year of which shall be nuclear power plant experience. A maximum of 2 years of the remaining 6 years of power plant or industrial experience may be fulfilled by satisfactory completion of academic or related technical training on a one-for-one time basis. He further should have nondestructive testing familiarity, craft knowledge, and an understanding of electrical, pressure vessel, and piping codes.

##### 13.1.3.4.2 Maintenance Supervisors

Maintenance Supervisors shall each have a high school diploma or equivalent and should have a minimum of 4 years experience in the craft or discipline that they supervise in accordance with ANSI 18.1, 1971. In cases where a supervisor does not have a minimum of 4 years of experience in the discipline of the craft being supervised, technical direction for the craft will be given by a qualified supervisor.

### 13.1.3.5 Radiological Services

#### 13.1.3.5.1 Radiological Services Manager

The Radiological Services Manager shall meet the qualification requirements of ANSI N18.1-1971, section 4.2.4. This includes a minimum of 8 years of responsible positions, of which a minimum of 1 year shall be nuclear power plant experience. A maximum of 4 years of the remaining 7 years of experience should be fulfilled by satisfactory completion of academic training.

#### 13.1.3.5.2 Radiation Protection Manager

The Radiological Services Manager functions as the Radiation Protection Manager and shall, at a minimum, meet the qualifications defined in Regulatory Guide 1.8, Revision 1-R, May 1977. This individual shall have a bachelor's degree or the equivalent in a science or engineering subject including some formal training in radiation protection. The Radiation Protection Manager shall have at least 5 years of professional experience in applied radiation protection. A master's degree may be considered equivalent to 1 year of professional experience and a doctor's degree may be considered equivalent to 2 years of professional experience where course work related to radiation protection is involved. At least 3 years of this professional experience shall be in applied radiation protection work in a nuclear facility dealing with radiological problems similar to those encountered in nuclear power stations, preferably in an actual nuclear power station. The Radiation Protection Manager is an assigned duty and not a defined position in the organization (see Section 12.5.1).

#### 13.1.3.5.3 Radiological Services Supervisors

Radiological Services Supervisors shall, in accordance with ANSI 18.1-1971, have a high school diploma or equivalent and a minimum of 4 years of related experience.

### 13.1.3.6 Chemistry

#### 13.1.3.6.1 Chemistry Manager

The Chemistry Manager shall, in accordance with ANSI N18.1-1971, have a minimum of 8 years in responsible positions, of which 1 year shall be nuclear power plant experience. A maximum of 4 years of the remaining seven years of experience should be fulfilled by satisfactory completion of academic training.

13.1.3.6.2 Chemistry Supervisors

Chemistry Supervisors who are responsible for directing the actions of technicians shall, in accordance with ANSI N18.1-1971, have a minimum of 5 years experience in chemistry of which a minimum of 1 year shall be in radiochemistry. A minimum of 2 years of this five years experience should be related technical training. Related technical or academic training may fulfill a maximum of 4 years of this five years experience.

13.1.3.7 Quality

See the OQAPD for a description of qualification requirements.

Table 13.1-1

Minimum Shift Crew Composition

Position Title <sup>b</sup>	Type of License	Minimum Number of Personnel per Position per Shift	
		Modes 1, 2, and 3 <sup>c</sup>	Modes 4 and 5 <sup>c</sup>
SM	SRO	1	1
CRS	SRO	1	None
RO	RO	2	1
EO	None	2	1
STA	None	1 <sup>d,e</sup>	Note <sup>f</sup>
HP	None	1	1

<sup>a</sup> This table represents the minimum number of personnel required to fill any particular position. It does not provide a total staffing level for an operating shift. Additional staff for safe shutdown and fire brigade must also be satisfied.

Technical Specifications paragraph 5.3.2 was added in LAR 182 to clarify compliance with 10 CFR 55.53 requirements. Energy Northwest may take credit for more than the minimum number of watchstanders required by 10 CFR 50.54(m). However, fulfillment of 10 CFR 55.53(e) and (f) requirements of active performance of operator or senior operator functions requires that Energy Northwest implement administrative controls to assure functions and duties are divided and rotated in a manner which provides each watchstander meaningful and significant opportunity to maintain proficiency in the performance of the functions of an RO and/or SRO.

<sup>b</sup> Position title abbreviations are as follows:

- SM Shift Manager with SRO on Columbia Generating Station
- CRS Control Room Supervisor with SRO on Columbia Generating Station
- RO Reactor Operator with RO or SRO on Columbia Generating Station
- EO Equipment Operator
- STA Shift Technical Advisor
- HP Health Physics Technician

Table 13.1-1

Minimum Shift Crew Composition (Continued)

<sup>c</sup> Modes

1. Power operation
2. Startup
3. Hot shutdown
4. Cold shutdown
5. Refueling

<sup>d</sup> An STA qualified individual shall be on-shift in Modes 1, 2 and 3. The STA qualified individual may be a dedicated individual (licensed or non-licensed) or an individual filling a dual role position as the Control Room Supervisor, Shift Manager or Shift Support Supervisor.

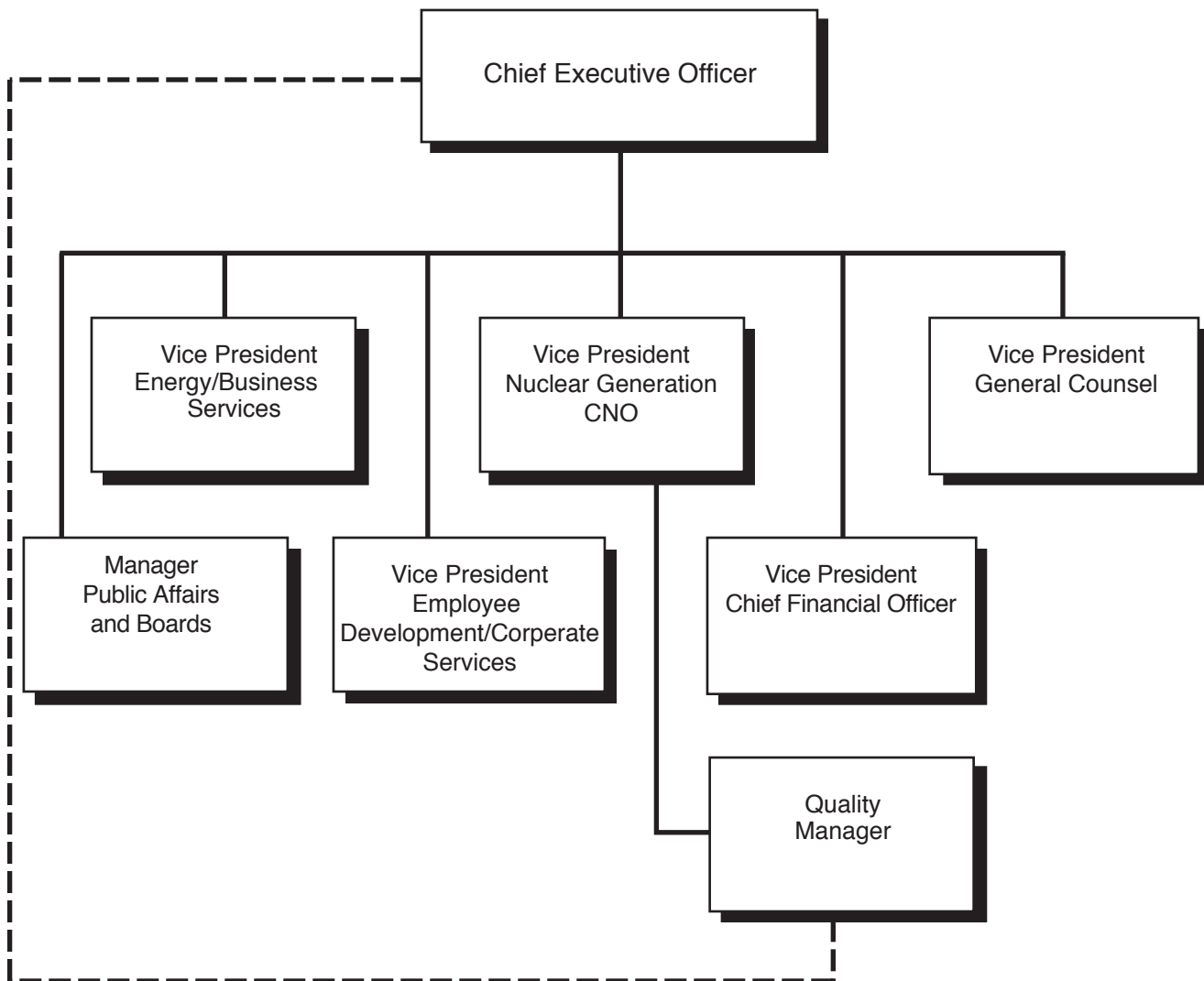
<sup>e</sup> When the STA qualified individual is filling a dual role as the Control Room Supervisor or Shift Manager, another SRO is required to be on-shift to provide independent oversight and emergency response support to the Shift Manager.

<sup>f</sup> Refer to the Emergency Plan for emergency response staffing requirements in Modes 4, 5.

The shift crew composition may be one less than the minimum requirements for a period not to exceed 2 hr to accommodate unexpected absence of on-duty shift crew members provided immediate action is taken to restore the shift crew composition to within the minimum requirements. This provision does not permit any shift crew position to be unmanned on shift change due to an oncoming shift crewman being late or absent.

During any absence of the Shift Manager from the control room while the unit is in Operational Condition 1, 2, or 3, an Operations Department individual with a valid SRO license shall be designated to assume the control room command function. During any absence of the Shift Manager from the control room while the unit is in Operational Condition 4 or 5, an individual with a valid SRO license or RO license shall be designated to assume the control room command function.





**Legend:**

- Administrative and Functional Reporting
- - - - Communications Lines

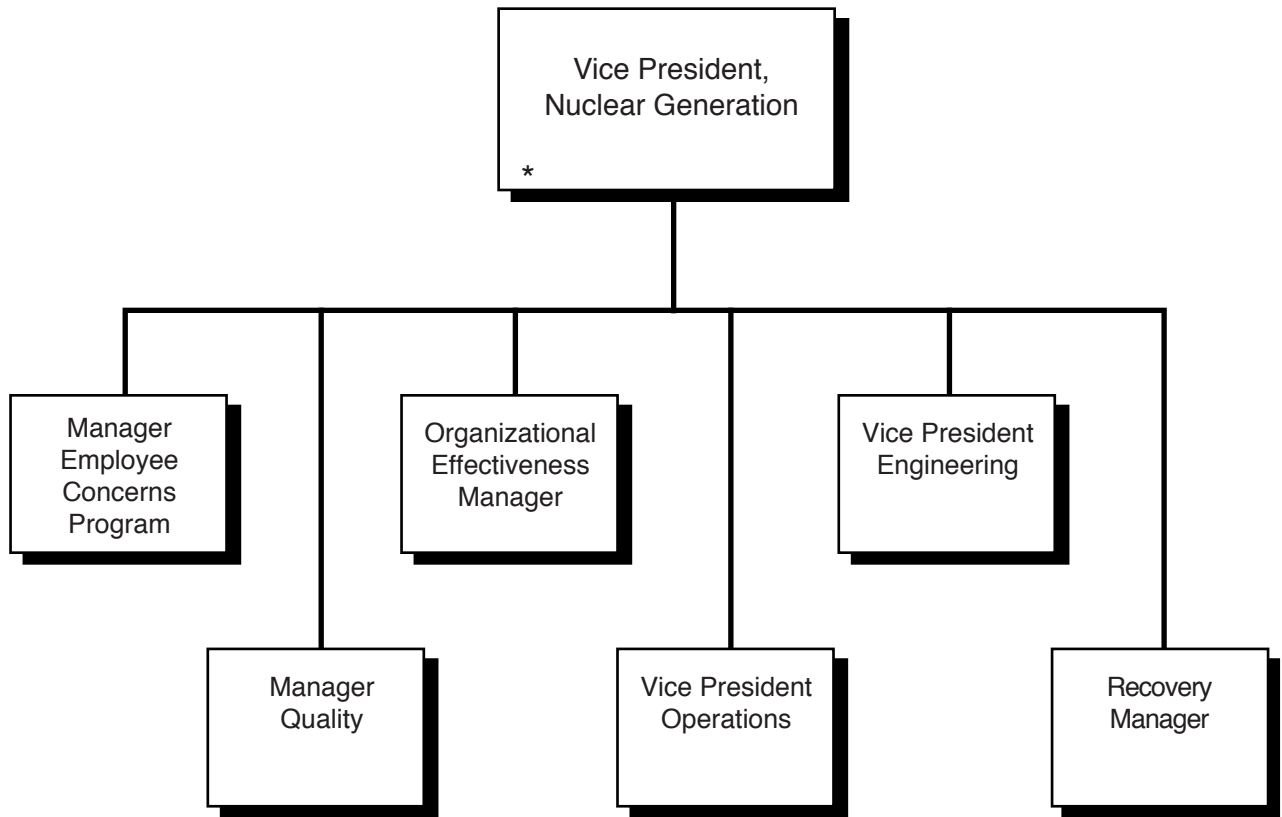
**Columbia Generating Station  
Final Safety Analysis Report**

**Energy Northwest Organization**

Draw. No. 970187.02

Rev. 1

Figure 13.1-1



\* Chief Nuclear Officer

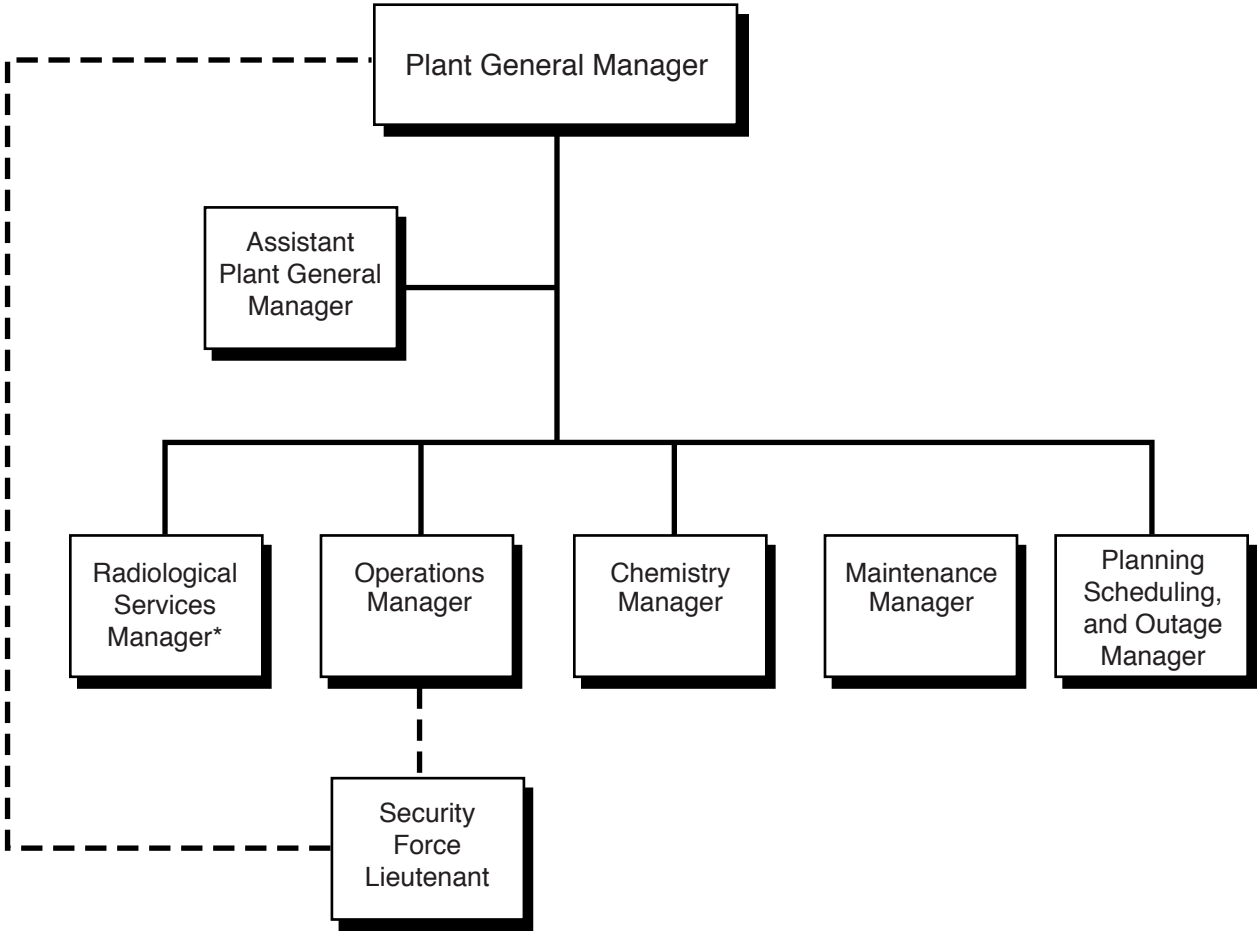
**Columbia Generating Station  
Final Safety Analysis Report**

**Nuclear Generation Organization**

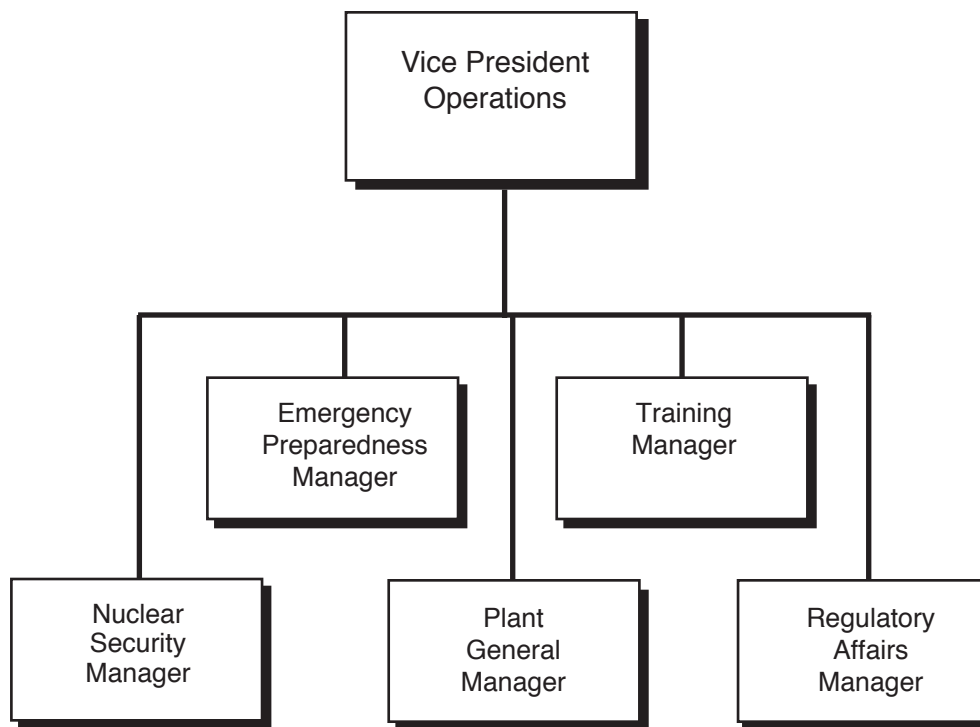
Draw. No. 970187.03

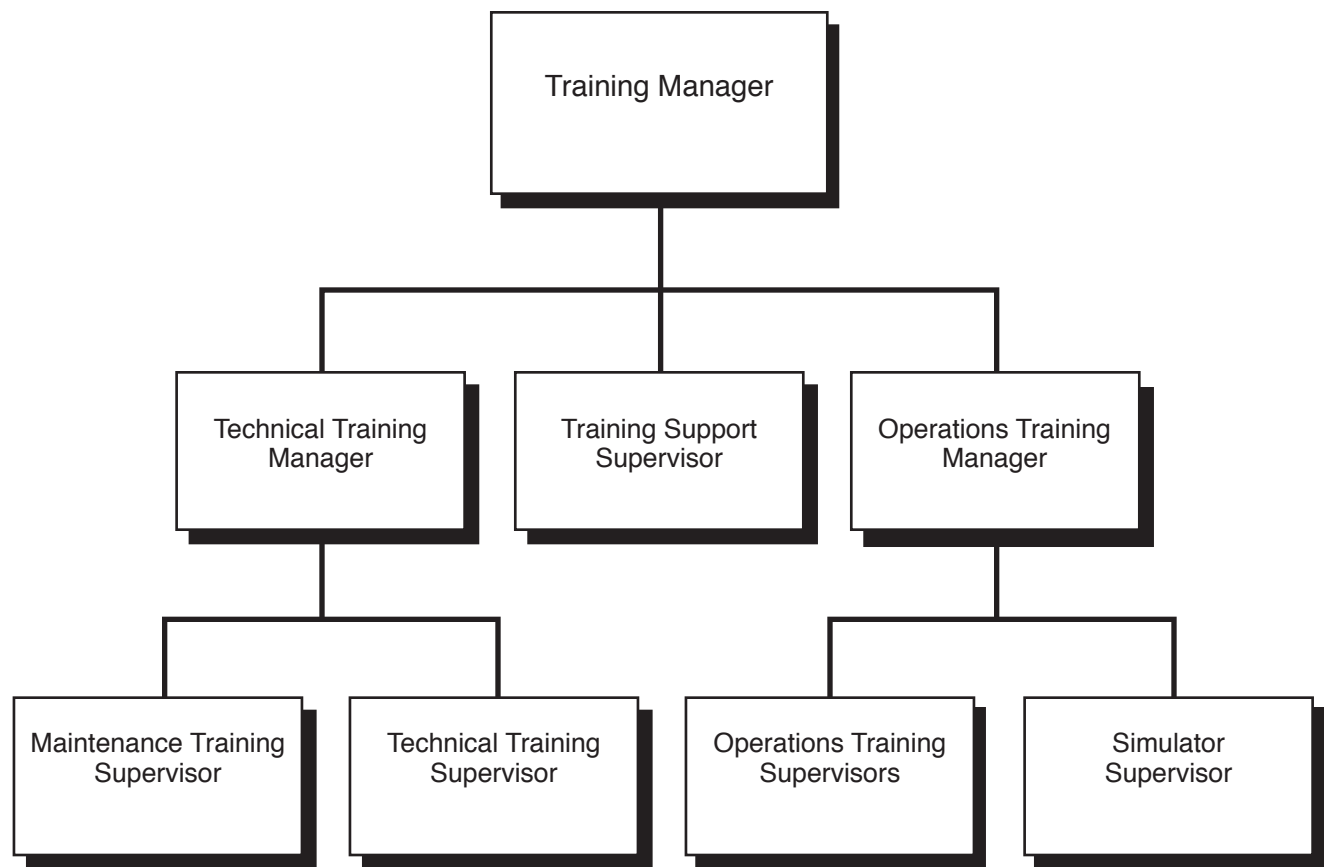
Rev. 1

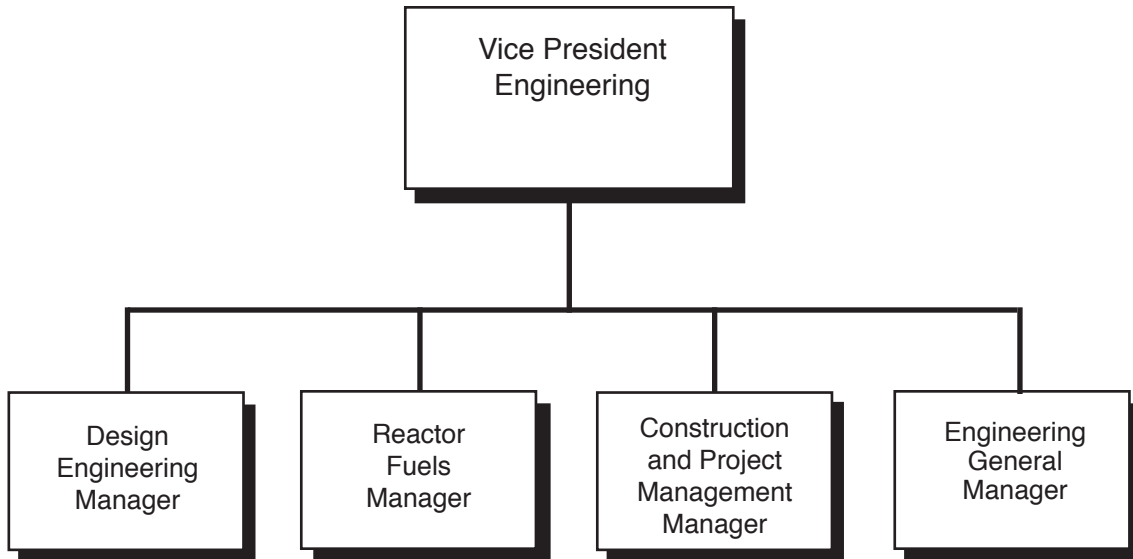
Figure 13.1-2



\* Also fulfills Radiation Protection Manager function







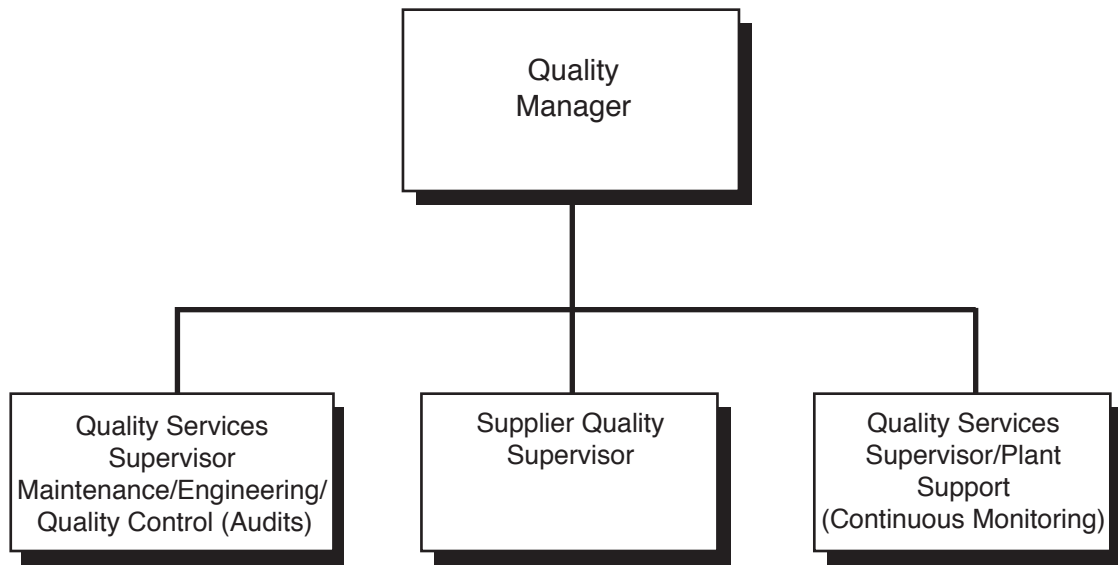
**Columbia Generating Station  
Final Safety Analysis Report**

**Vice President Engineering Organization**

Draw. No. **970187.07**

Rev.

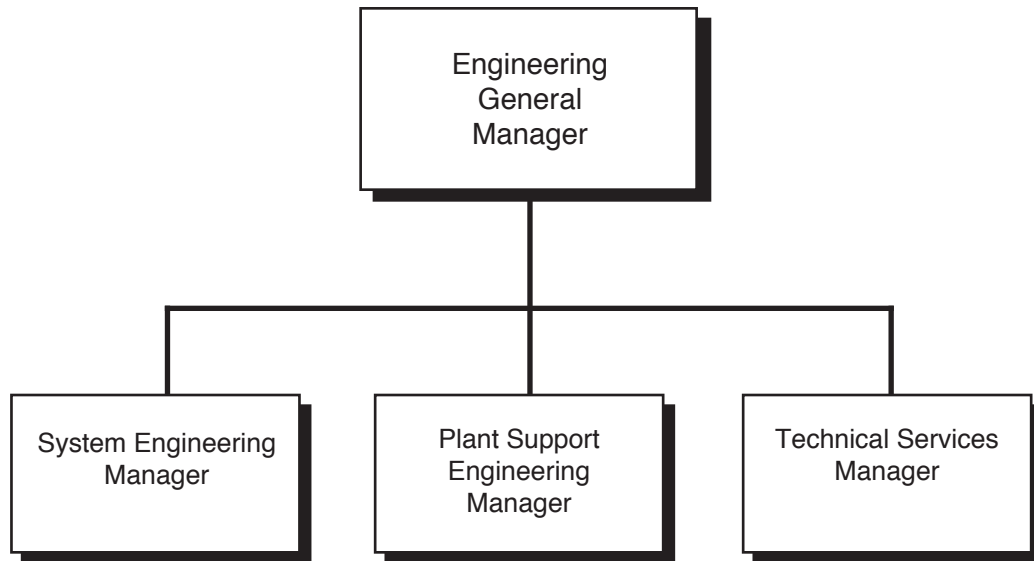
Figure **13.1-6**



**Columbia Generating Station  
Final Safety Analysis Report**

**Quality Organization**

Draw. No. 970187.08      Rev. 1      Figure 13.1-7



**Columbia Generating Station  
Final Safety Analysis Report**

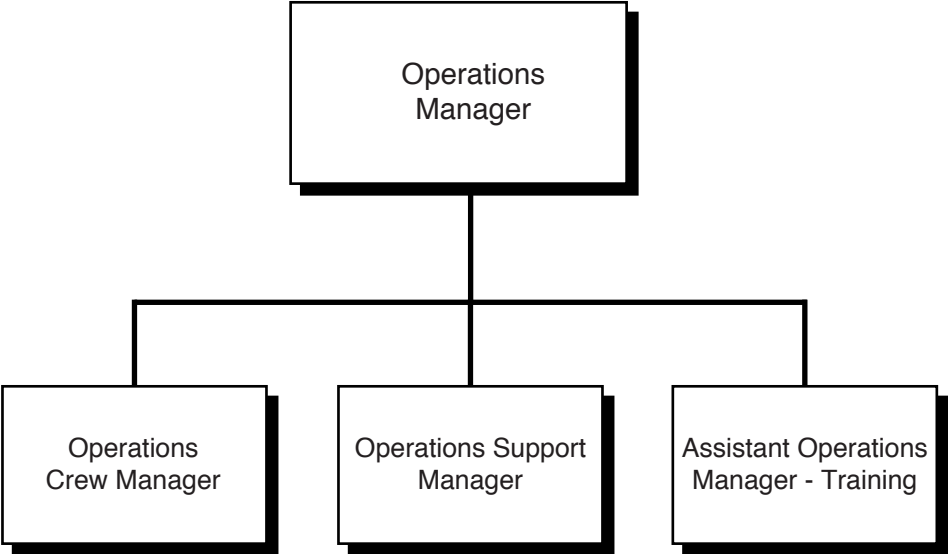
**Engineering Organization**

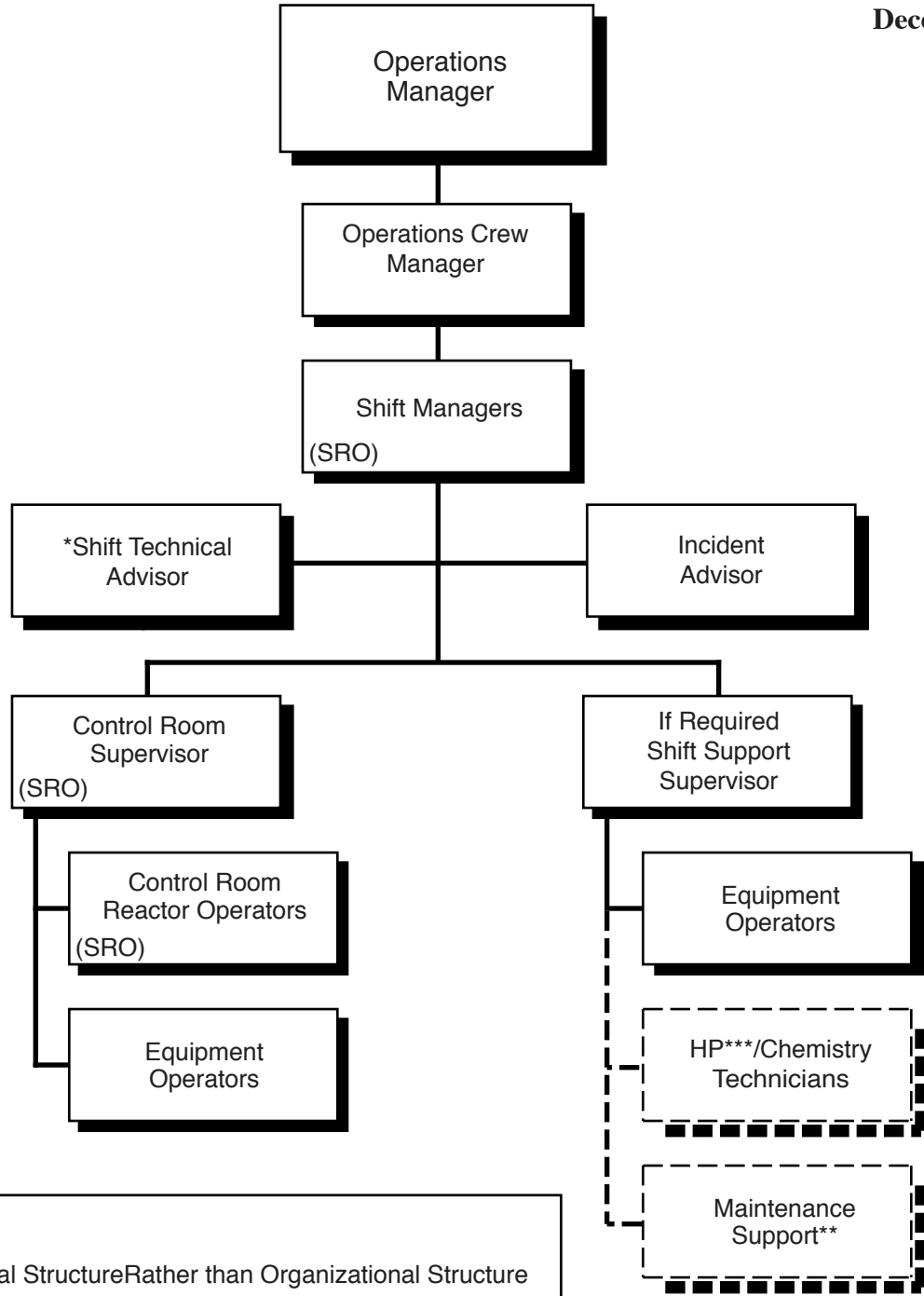
Draw. No. 970187.04

Rev. 1

Figure 13.1-8





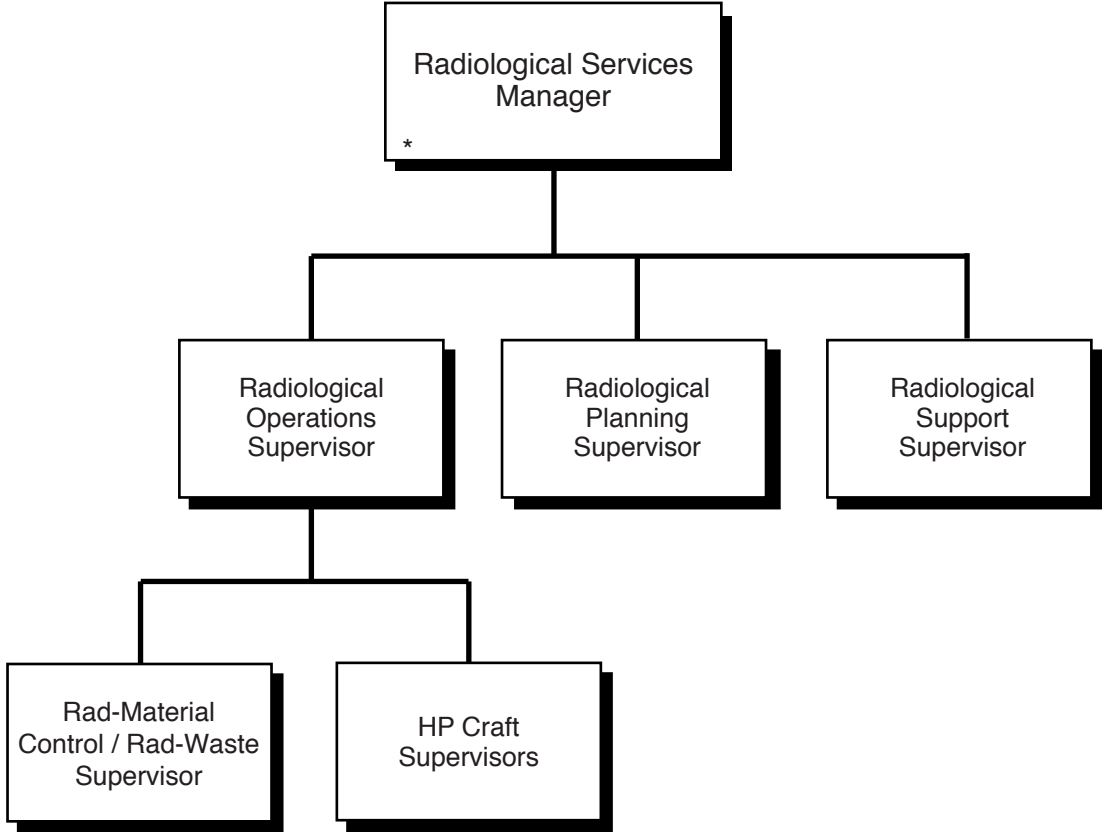


**Legend:**

--- Functional Structure Rather than Organizational Structure

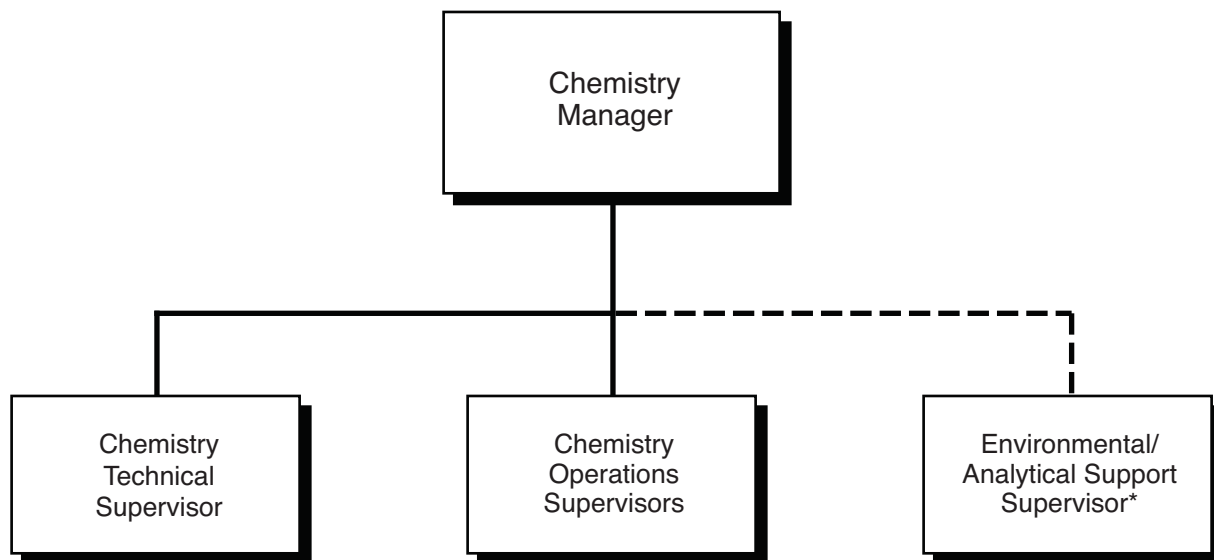
NRC License Required Position (SRO)

- \* An assigned duty, not an organizational title
- \*\* To be provided from Maintenance Department as required
- \*\*\* To be provided from HP/Chemistry Department as required



\*Also fulfills Radiation Protection Manager function

<b>Columbia Generating Station Final Safety Analysis Report</b>	<b>Radiological Services Organization</b>		
	Draw. No. 970187.11	Rev. 1	Figure 13.1-11



\* Dashed line indicates a functional rather than an organizational structure.

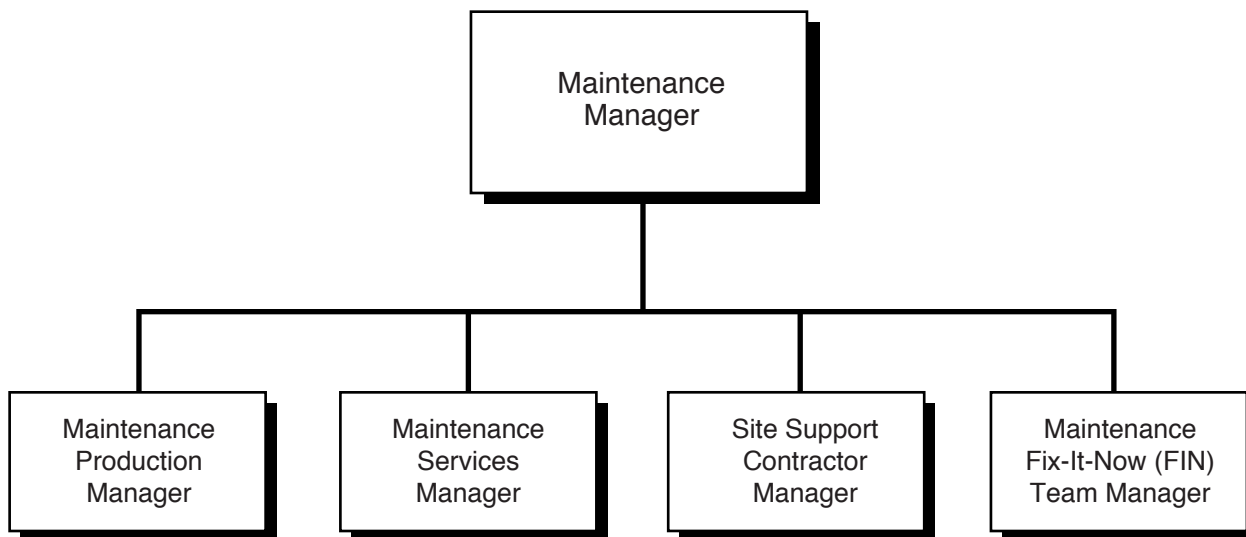
**Columbia Generating Station  
Final Safety Analysis Report**

**Chemistry Organization**

Draw. No. 970187.12

Rev.

Figure 13.1-12



## 13.2 TRAINING

### 13.2.1 PLANT STAFF TRAINING PROGRAM

In accordance with applicable federal guidelines, the Columbia Generating Station (CGS) training program has been designed to provide plant personnel with sufficient knowledge, training, and experience to enable them to safely and efficiently operate and maintain the plant and to protect the health and safety of the public.

The overall training program has been developed and coordinated by Energy Northwest, utilizing courses and programs produced by the nuclear steam supply system (NSSS) supplier, training consultant organizations, the training staff, and other employees of Energy Northwest possessing expertise in related disciplines.

The training program will provide sufficient qualified reactor operators, senior reactor operators, equipment operators, shift technical advisors, maintenance, health physics, chemistry, and engineering support personnel to fully staff CGS.

Initial training programs provide qualified replacement personnel and continuing training programs provide ongoing training for all plant staff commensurate with their area of responsibility and knowledge level.

The Vice President, Nuclear Generation is responsible for overall conduct and administration of the CGS training program. The development and implementation of that program may be delegated to the Training Organization or other members of the plant staff.

#### a. General Employee Training - Program Description

All personnel granted unescorted access to the station will be trained in the following areas:

1. Appropriate plant security and emergency procedures,
2. General radiological protection,
3. Industrial safety,
4. Fire protection, and
5. Quality assurance program.

Written or oral exams will be required for selected classes to determine successful completion.

b. General Employee Training - Fire Protection Program

1. Plant employees

Employees receiving an unescorted security clearance will be provided training to include orientation to the fire protection plans, evacuation signals and procedures, and the procedure for reporting a fire.

2. Contractor personnel

Training will be provided to contractors as part of their access status--escorted or unescorted.

c. Security Personnel Training - Fire Protection Program

Training will be provided to plant security personnel that addresses

1. Entry procedures for offsite fire department,
2. Personnel control during emergency evacuation, and
3. Basic fire hazard recognition.

13.2.2 INITIAL AND CONTINUING TRAINING

13.2.2.1 Licensed Operators

13.2.2.1.1 Initial Training

Under the normal progression of an individual through the various levels of operator qualification, much of the material and experience will have been previously obtained, and hence, the licensed operator replacement training program will emphasize topics pertinent to the control room operator job function and requirements necessary for fulfilling the NRC operator licensing qualifications. Replacement for licensed operators normally come from the ranks of "qualified" nonlicensed operators; however, personnel from other departments or from outside the utility may be trained as control room operators if they meet all requirements for the position.

The CGS Operations Training Manager shall have the responsibility for establishing, supervising, and scheduling the initial licensed operator training program.

In accordance with 10 CFR 55.31(a)(4) the CGS licensed operator initial training program has been reviewed and approved by the Commission and was developed using a systems approach to training.

The licensed operator initial training program has been accredited by the National Academy for Nuclear Training. The accreditation is renewed every 4 years. Accreditation is maintained in accordance with Institute of Nuclear Power Operation (INPO) Guidelines 02-001, "The Objectives and Criteria for Accreditation of Training in the Nuclear Power Industry," and 02-002, "The Process for Accreditation of Training in the Nuclear Power Industry."

#### 13.2.2.1.2 Continuing Training

A requalification training program implementing the requirements of 10 CFR 55.59, will be conducted to maintain the knowledge level and operating proficiency of licensed personnel. The retraining program will be based on a 2-year cycle.

The CGS Operations Training Manager shall have the responsibility for establishing, supervising, and scheduling the retraining program.

In accordance with 10 CFR 55.59(c) the CGS licensed operator requalification training program has been reviewed and approved by the NRC and was developed using a systems approach to training.

The requalification program has been accredited by the National Academy for Nuclear Training. The accreditation is maintained in accordance with INPO Guidelines 02-001, "The Objectives and Criteria for Accreditation of Training in the Nuclear Power Industry," and 02-002, "The Process for Accreditation of Training in the Nuclear Power Industry."

The retraining and replacement program for the unit staff meets the requirements of Section 5.5 of ANSI/ANS N18.1-1971, Appendix A of 10 CFR Part 55, and the supplemental requirements specified in Sections A and C of Enclosure 1 of the March 28, 1980, NRC letter to all licensees, and includes familiarization with relevant industry operational experience.

#### 13.2.2.2 Nonlicensed Operator Training

##### 13.2.2.2.1 Initial Training

Normally replacements will be required to complete the following training prior to being placed into the equipment operator qualification sequence:

- a. Basic fundamentals,
- b. Basic boiling water reactor (BWR) systems,
- c. Reactor plant equipment and component theory, and
- d. Administrative procedures.

The training will emphasize topics pertinent to the equipment operator job function and requirements necessary for qualification.



#### 13.2.2.2.2 Continuing Training Program

Continuing training of nonlicensed operators may be conducted in conjunction with the licensed operator requalification program. Nonlicensed operators shall be required to attend specific lecture topics that pertain to their job level requirements. At a minimum, nonlicensed operators shall participate in periodic reviews of systems and operating procedures for which continuous familiarization is important for safe and efficient operation of the plant. Specifically, the equipment operator retraining program consists of

- a. Preplanned lecture series,
- b. Update lecture series,
- c. Normal/abnormal procedure review, and
- d. Examinations/evaluations.

The CGS Operations Training Manager has the responsibility for establishing, supervising, and scheduling the equipment operator training program.

The equipment operator training program has been accredited by the National Academy for Nuclear Training. The accreditation is renewed every 4 years. Accreditation is maintained in accordance with INPO Guidelines 02-001, "The Objectives and Criteria for Accreditation of Training in the Nuclear Power Industry," and 02-002, "The Process of Accreditation of Training in the Nuclear Power Industry."

#### 13.2.2.3 Shift Technical Advisor Training

##### 13.2.2.3.1 Initial Training

The initial shift technical advisor (STA) training program content will normally include training and qualification in the following subject areas:

- a. Completion of the SRO replacement operator training program or equivalent
- b. Plant transient/accident analysis, and
- c. STA job specific training.

##### 13.2.2.3.2 Continuing Training

Continuing training of the STAs is normally conducted in conjunction with the licensed operator requalification training program. The STAs shall be required to attend specific lecture topics that pertain to their job level requirements. At a minimum, STAs shall participate in periodic reviews of systems and operating procedures for which continuous

familiarization is important for safe and efficient operation of the plant. Specifically, the STA retraining program consists of

- a. Preplanned lecture series,
- b. Update lecture series,
- c. Normal/abnormal procedure review, and
- d. Examinations/evaluations.

The CGS Operations Training Manager has the responsibility for establishing, supervising, and scheduling the STA training program.

The STA training program has been accredited by the National Academy for Nuclear Training. The accreditation is renewed every 4 years. Accreditation is maintained in accordance with INPO Guidelines 02-001, "The Objectives and Criteria for Accreditation of Training in the Nuclear Power Industry," and 02-002, "The Process for Accreditation of Training in the Nuclear Power Industry."

#### 13.2.2.4 Other Plant Personnel (Maintenance, Health Physics, Chemistry)

##### 13.2.2.4.1 Initial Training

Replacement personnel, when hired, will be given training commensurate with their job responsibilities as determined necessary by the respective Department Manager and the appropriate Training Supervisor after a review of past experience and training.

##### 13.2.2.4.2 Continuing Training

Continuing training is conducted on a regular basis and consists of pertinent operating experience and designated requalification topics. The continuing training will be commensurate with their assigned job responsibilities as determined necessary by their respective Department Manager and Training Coordinator.

#### 13.2.2.5 Fire Brigade

##### 13.2.2.5.1 Initial and Continuing Training

Each assigned member of the Fire Brigade will complete initial and continuing Fire Brigade training courses to provide the knowledge and skills necessary to accomplish the expected fire fighting activities. The scope of this training will be described and implemented by plant procedures.

One assigned member will be designated as the Fire Brigade leader to direct the actual fire fighting forces. This individual will receive the training necessary to effectively carry out this function.

The Fire Brigade leader and two additional members will be knowledgeable of plant fire safe shutdown equipment.

a. Planned meetings

Regular planned meetings for each Fire Brigade member will be held each quarter to review changes in the program and other subjects, as necessary.

During these planned meetings, the initial training program content will be reviewed for all Fire Brigade members over a 2-year period.

b. Practice sessions

Practice sessions will be held for each Fire Brigade member annually on the proper methods of fighting the various types of fires that could occur in a nuclear power plant.

c. Drills

Planned drills will be conducted for practice in responding as a team to areas of the plant site where the Fire Brigade may be required to respond. Each Fire Brigade member will be required to participate in at least two drills per year. Each shift Fire Brigade will be required to participate in quarterly fire drills.

One drill for each shift Fire Brigade per year will be unannounced and one drill for each shift Fire Brigade per year will be on a back shift. The back shift and unannounced drill requirements can be satisfied concurrently for each shift.

#### 13.2.2.5.2 Offsite Fire Department

The offsite fire department that supplements the Fire Brigade will attend familiarization training associated with the CGS plant layout, operational precautions, radiation protection, and special hazards associated with fires at a nuclear power plant. This offsite fire department will participate in at least one fire drill each year.

### 13.2.3 TRAINING PROGRAM EFFECTIVENESS

The effectiveness of the Training Program will be evaluated by the following methods:

- a. Satisfactory job performance as determined by periodic line management evaluations and observations,
- b. Satisfactory performance of plant personnel on various oral and or written examinations administered by Energy Northwest or NRC, and
- c. Periodic reviews of instructors, programs, and training material as conducted by the Training Department.

### 13.2.4 PLANT TRAINING RECORDS

The Training Manager maintains complete qualification records on each member of the plant staff.

All records necessary to support requests for NRC reactor operator and senior reactor operator licenses are included in these files. Records to be maintained are as follows:

- a. Lecture series attendance,
- b. Lecture examinations and answers by the licensees,
- c. Annual examinations and answers by the licensees,
- d. Simulator performance evaluation results,
- e. Control Manipulations Tracking System Form, and
- f. Additional training for deficiencies.

### 13.2.5 OTHER TRAINING DOCUMENTS

For compliance with other applicable documents see Sections 1.8 and 12.5.3.8.

13.3 EMERGENCY PLANNING

The detailed emergency plan is included as a separate volume in the Columbia Generating Station Emergency Plan.

## 13.4 REVIEW AND AUDIT

The following sections describe the conduct of reviews and audits of operating activities that are important to safety. The review and audit program is consistent with the requirements of ANSI N18.7-1976, "Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants."

Periodic reviews of plant operations are performed by the plant operating staff. In addition, Energy Northwest uses a formal onsite committee (see Section 13.4.1) and an independent group (see Section 13.4.2) for review.

The Quality staff has formulated and executed an audit program for the plant activities as defined in the Operational Quality Assurance Program Description (OQAPD).

The organization for review and audit and its relationship to other organizations is shown in Figures 13.1-1, 13.1-4, and 13.1-7.

### 13.4.1 ONSITE REVIEW

Onsite reviews are consistent with Regulatory Guide 1.33 (see Section 1.8). The plant operating staff provides, as part of the normal duties of plant supervisory personnel, timely and continuing monitoring of operating activities to assist the Plant General Manager in keeping abreast of general plant conditions and to verify that the day-to-day operating activities are conducted safely and in accordance with applicable administrative controls. These continuing monitoring activities are an integral part of the routine supervisory function and are important to the safety of plant operation.

### 13.4.2 INDEPENDENT REVIEW

In accordance with the OQAPD, the Plant Operations Committee (POC) serves as a review and advisory organization to the Plant General Manager on all matters related to nuclear and radiological safety. A specific function of the POC is to implement an independent review program as it relates to all proposed Technical Specification changes, License Amendment Requests, and Emergency Plan changes.

A written administrative procedure describes the responsibility and authority of the POC. The POC activities and review are described in the OQAPD. The results of POC review activities are documented.

Additionally, in accordance with the OQAPD, the Corporate Nuclear Safety Review Board (CNSRB) is responsible for oversight of the POC, which entails evaluating the effectiveness of POC reviews with regard to nuclear and radiological safety. The CNSRB reports to and

advises the Chief Executive Officer on the adequacy and implementation of Energy Northwest nuclear and radiological safety policies and programs.

Documentation defining CNSRB membership, responsibilities, authority, and method of operation is contained in a Site Wide Procedure. Significant organizational features and review responsibilities are also described in the OQAPD. Conclusions of the independent reviews are transmitted to the appropriate members of management.

Independent technical reviews are performed by Quality in accordance with the OQAPD.

The objectivity of Quality is maintained based on a charter and reporting relationship independent of plant line management, without precluding participation in plant activities and tasks.

#### 13.4.3 AUDIT PROGRAM

A comprehensive program of audits is carried out to verify compliance to the OQAPD. These audits are performed by or under the direct cognizance of the Quality staff. Written reports of such audits are reviewed by the CNSRB, Plant General Manager, and other management as appropriate. Timely resolution of any deficiencies noted during audits is required by those organizations having responsibility for the area audited. Details of those areas to be audited are described in the OQAPD.

## 13.5 PLANT PROCEDURES

The administrative controls and quality assurance program for plant operation are carried out in accordance with approved written procedures. All activities affecting nuclear safety are conducted by written and approved procedures of a type appropriate to the circumstances, and these activities are accomplished in accordance with these procedures.

### 13.5.1 ADMINISTRATIVE PROCEDURES

#### 13.5.1.1 Conformance With Regulatory Guide 1.33, Revision 2

ANSI N18.7-1976 and Regulatory Guide 1.33 including Appendix A are followed in accordance with the Energy Northwest position discussed in the Operational Quality Assurance Program Description (OQAPD).

#### 13.5.1.2 Preparation of Procedures

The Site Wide Procedures (SWP) Program provides the administrative controls necessary to prepare, review, and approve the procedures required for plant operating activities.

The Chief Nuclear Officer has the overall responsibility for the procedures program and its implementing procedures. The Plant General Manager is responsible for the procedures that are required by ANSI N18.7-1976 and Regulatory Guide 1.33 and Appendix A. The preparation and review of the procedures are the responsibility of various plant staff personnel. All procedures are approved according to the SWP Program and the OQAPD.

#### 13.5.1.3 Procedures

The SWP Program for Administrative Procedures defines the responsibility, methods used, and procedural action required to help ensure that the plant will be managed in a safe and dependable manner.

Administrative Procedures establish rules and instructions pertaining to activities such as procedure preparation, records management, plant reporting requirements, plant personnel responsibilities and authorities, plant modification, corrective and preventive maintenance, clearance orders, temporary changes to approved procedures, reviews of plant documents, surveillance testing and inservice inspection, equipment control, and material control.

Administrative Procedures governing standing orders to shift operations include the reactor operator's authority and responsibilities; the senior reactor operator's authority and responsibilities; the logbook use and control; issuance and updating of special orders; and the plans for meeting the requirements of 10 CFR 50.54(i), (j), (k), (l), and (m). This includes a diagram of the control room that illustrates the area designated as "at the controls."



## 13.5.2 OPERATING AND MAINTENANCE PROCEDURES

### 13.5.2.1 Control Room Operating Procedures

Detailed procedures used by the control room operators ensure plant safety and reliability. These procedures are categorized and described as follows:

#### System Operating Procedures

The System Operating Procedures provide instructions pertinent to the various normal operating modes of startup, operation, and shutdown of each system or subsystem. Checkoff lists are included, where appropriate, with each procedure to delineate the proper equipment lineup that is required.

#### General Operating Procedures

General Operating Procedures provide the instructions for the integrated operation of plant systems during startup, shutdown, power operations, and power changes. Checkoff lists, as appropriate, are included to ensure that necessary prerequisites to integrated operation have been completed. Checklists may also be used to confirm completion of major steps in the proper sequence.

#### Abnormal Condition Procedures

Abnormal Condition Procedures specify operator actions for restoring selected equipment or systems to their normal controlled status on a failure or to restore normal operating conditions following a perturbation. These procedures are not emergency procedures but are written to aid the operator in determining if a true emergency exists.

Abnormal Condition Procedures also contain response instructions for annunciator alarms and for abnormal conditions within the major systems covered in System Operating Procedures. Each safety-related annunciator is addressed in a written procedure which contains (1) meaning of annunciator, (2) the source of the signal, (3) the immediate action that is to occur automatically, (4) immediate operator actions, and (5) subsequent operator actions. Those procedures that require the Immediate Operator Action steps to be memorized are given adequate identification.

#### Emergency Operating Procedures/Severe Accident Guidelines

Emergency Operating Procedures/Severe Accident Guidelines are provided to guide operations during potential emergencies. These procedures specify actions, including manipulation of

controls, to avoid further degradation of abnormal conditions or to reduce the consequences of an accident or hazardous condition that has already occurred.

#### 13.5.2.2 Other Procedures

Other safety-related activities conducted in accordance with approved procedures are categorized and described as follows (radioactive waste system operating procedures are covered by System Operating Procedures and the other aspects of radioactive waste management are covered by Health Physics and Chemistry Procedures).

##### Fuel Handling and Refueling Activities Procedures

Fuel Handling and Refueling Activities Procedures provide instructions for fuel and core component accountability, new fuel handling, refueling operations, defective fuel handling, reactor core component handling, and irradiated fuel shipment.

##### Surveillance Procedures (both Operational Surveillance and Instrument and Electrical Surveillance)

Surveillance Procedures provide instructions for performing periodic tests to verify and document that safety-related structures, systems, and components continue to function properly to remain in a state of readiness to perform their intended safety functions. Surveillance Procedures cover systems operability tests, logic system functional tests, and instrument and/or electrical functional tests and calibrations for the various surveillance requirements listed in the Technical Specifications.

##### Operating and Engineering Test Procedures

Operating and Engineering Test Procedures provide instructions for performing special tests on both safety and non-safety-related systems and components. These procedures contain tests such as power ascension, turbine efficiency, system hydrostatic tests, and reactor steam quality.

##### Nuclear Performance Evaluation Procedures

The Nuclear Performance Evaluation Procedures provide instructions for Engineering and Operations in the performance of the following types of evaluations: core thermal power evaluations, core thermal-hydraulic evaluations, intermediate range monitor, local power range monitor, and average power range monitor calibration and criticality predictions.

### Maintenance Programs and Procedures

Maintenance Procedures provide instructions for performance of maintenance on safety-related equipment or systems and selected non-safety-related equipment and systems. Maintenance procedures cover mechanical, electrical, instrument and control, coatings, and refueling activities.

### Health Physics Procedures

Health Physics Procedures establish the administrative and technical controls for the Radiation Protection Program and the implementing procedures for accomplishing the program. Descriptions of the activities covered by these procedures are included in [Chapter 12](#).

### Chemistry Procedures

Chemistry Procedures establish the administrative and technical controls for water quality analysis. Chemical and radiochemical determination procedures and associated instrument operation and calibration procedures are provided.

### Emergency Plan Implementing Procedures

Detailed procedures prescribe the appropriate course of action necessary to limit or mitigate the consequences for each classification of incidents described in the Emergency Plan. An index of the Emergency Plan Implementing Procedures is included in Appendix II to the Emergency Plan.

### Security Programs Implementing Procedures

Detailed security procedures prescribe the course of action necessary for compliance with the policies of the Security Plan. The Security Plan and associated implementing procedures that contain safeguards information are withheld from public disclosure (see Section [13.6](#)).

### Fire Protection Procedures

Fire Protection Procedures provide instructions for performing tests, inspections, and scheduled maintenance on fire protection equipment and systems and actions required for degraded systems.

### ODCM Implementing Procedures

The ODCM Implementing Procedures prescribe the action necessary to implement the requirements of the Offsite Dose Calculation Manual (ODCM), including effluent monitoring, instrument calibration, and reporting requirements.

Environmental Compliance Procedures

Environmental Compliance Procedures establish the administrative and technical controls for environmental compliance. These procedures provide instructions for the management of solid wastes, pollution prevention and waste minimization, chemical storage and use, and hazardous substance spills and cleanup.

13.6 INDUSTRIAL SECURITY

The Columbia Generating Station Physical Security Plan contains a description of the physical protection program for the facility as required by 10 CFR 50.54(p) and 10 CFR 73.55. The contents of this plan are safeguards information and are withheld from public disclosure pursuant to Section 2.790(a)(3) of 10 CFR Part 2.