Table of Contents

List of Tables

List of Figures

13.0 CONDUCT OF OPERATIONS

This chapter of the U.S. EPR Final Safety Analysis Report (FSAR) is incorporated by reference with supplements as identified in the following sections.

13.1 ORGANIZATIONAL STRUCTURE OF APPLICANT

This section of the U. S. EPR FSAR is incorporated by reference with the following supplements.

The U.S. EPR FSAR includes the following COL Item in Section 13.1:

> A COL applicant that references the U.S. EPR design certification will provide site-specific information for management, technical support and operating organizations. The operating organization describes the structure, functions and responsibilities established to operate and maintain the plant.

This COL Item is addressed as follows:

The organizational structure, functional responsibilities, and levels of authority and interfaces are described in the following sections including the offsite and onsite functions.

Implementing documents assign more specific responsibilities and duties, and define the organizational interfaces involved in conducting activities and duties.

The organizational structure is consistent with the Human System Interface (HSI) design assumptions used in the design of the U. S. EPR as described in the U. S. EPR FSAR Chapter 18.

Sections 13.1.1 through 13.1.4 are added as a supplement to the U.S. EPR FSAR.

13.1.1 MANAGEMENT AND TECHNICAL SUPPORT ORGANIZATION

Section 17.5 and the {AmerenUE Quality Assurance Program Description} describe the authority and lines of communication for the {AmerenUE Organization} that will support the siting, design, licensing, engineering, procurement, fabrication, construction, startup and operation of {Callaway Plant Unit 2} facilities.

{The organizations include, but are not limited to, Nuclear Generation Development, Regulatory Affairs, Engineering Services, Plant Engineering, Maintenance, Training, Operations, Quality & Performance Improvement and Business Operations. An estimate of the number of persons to be assigned to various groups, and the schedule for filling key organization positions are provided in Table 13.1-1.}

13.1.1.1 Design, Construction and Operating Responsibilities

{AmerenUE has overall responsibility for siting, design, licensing, engineering, procurement, fabrication, construction and technical support of Callaway Plant Unit 2 with support from selected Architect Engineering, Construction Firms and associated suppliers.

AmerenUE, the COL applicant, is the owner and operator for Callaway Plant Unit 1. Callaway Plant Unit 1 has a strong operational record and has established a consistent record of safe operation throughout its 23-year operating history.

The application for Callaway Plant Unit 2 is submitted via 10 CFR Part 52 which favors standardization in application and plant designs. Callaway Plant Unit 1 was licensed in 1984 using similar concepts. Kansas City Power & Light Company, Kansas Gas and Electric Company and Union Electric Company (AmerenUE) joined together to design, purchase, and license a nuclear block for a generating station acceptable at any of several sites, under the acronym of SNUPPS, Standardized Nuclear Unit Power Plant System.

AmerenUE will participate in the process for standardized engineering, procurement and construction for Callaway Plant Unit 2 and will operate Unit 2 in accordance with policies and procedures established and maintained by UniStar Nuclear Operating Services, LLC (UNOS) as approved by AmerenUE. In association with UNOS, AmerenUE will benefit from being part of a fleet of nuclear plants which maintain strict standardization with regard to the U.S. EPR design certification, as well as licensing, engineering, construction, operation, maintenance, modification and procurement for the U.S. EPR.

The organization reflected in this section of the FSAR was established to design, construct, and operate Callaway Plant Unit 2. The organization is depicted on Figure 13.1-1. }

13.1.1.1.1 Design and Construction Responsibilities

{The President and Chief Executive Officer, AmerenUE, has overall responsibility for functions involving design and construction. Line responsibilities for those functions are assigned to the Senior Vice President and Chief Nuclear Officer. The Chief Nuclear Officer maintains control of nuclear plant activities through the executives in charge of nuclear support and nuclear operations. Lines of authority, decision making, and communication are established to enable the understanding of the various project members, including contractors, that AmerenUE management is in charge and directs the project.

The Vice President, Engineering is responsible for managing the siting, fabrication, construction, startup, including pre-operational testing, procurement, and information technology during these phases. The siting, design, fabrication, and construction activities, preparation of design and construction documents, and construction itself are contracted to qualified contractors, which are responsible to this position.

As described in Section 1.1, AREVA NP Inc.'s U.S. EPR has been selected as the plant design for Callaway Plant Unit 2. AREVA, the owner of the reactor design, will prepare the design for the facility. AREVA NP is an AREVA and Siemens company. AREVA NP and its predecessor companies have designed light water reactors for over 40 years. As such, AREVA NP has extensive nuclear design experience in addition to maintaining fabrication facilities for fuel and major components in Europe and the United States. The application for design certification for the U. S. EPR was submitted to the NRC on December 11, 2007.

Bechtel has been selected to further specify balance-of-plant structures and systems. Bechtel has designed or constructed more than half of the nuclear power plants in the United States, and is currently providing services to many of those plants and others as well. Bechtel has served more than 150 nuclear units throughout the world.

Consulting companies have been contracted to perform the site characterization, and to support development of the license application, including the Environmental Report, Emergency Plan and Physical Security Plan.}

Other design and construction activities will be contracted to qualified suppliers of such services. Implementation or delegation of design and construction responsibilities is described in the sections below. Quality Assurance aspects are described in Chapter 17.

13.1.1.1.1.1 Principal Site-Related Engineering Work

{Principal site-related engineering studies of the meteorology, geology, seismology, hydrology, demography, and environmental effects are performed under the direction of AmerenUE with expertise, support, and technical review provided by AREVA NP, Paul C. Rizzo & Associates, Black & Veatch, Bechtel, UniStar Nuclear Energy Services, and other qualified consulting organizations as assigned and appropriate for the activity.}

13.1.1.1.1.2 Design of Plant and Ancillary Systems

{Design of power block systems is performed by AREVA NP and other qualified organizations, and is provided as a part of the scope of the U.S. EPR as supplied by AREVA NP.

Design and construction of systems outside the power block such as circulating water, Essential Service Water Emergency Makeup Water, switchyard, and secondary fire protection systems are performed under the direction of AmerenUE with expertise, support, and technical review provided by AREVA NP, UniStar Nuclear Energy Services, Bechtel, Black & Veatch, Burns & McDonnell, and other qualified consulting organizations as assigned and appropriate for the activity.}

13.1.1.1.1.3 Review and Approval of Plant Design Features

{Design engineering review and approval is performed in accordance with Chapter 17 and the QAPD. AREVA NP is responsible for design control of the power block. AmerenUE is responsible for design control of systems outside the power block which is contracted to qualified suppliers. See the QAPD for reporting relationships.}

13.1.1.1.1.4 Environmental Effects

{Management of the effects on the surrounding environment from construction and operating activities are performed under the direction of AmerenUE with expertise, support, and technical review provided by AREVA NP, Bechtel and other qualified consulting organizations as assigned and appropriate for the activity.}

13.1.1.1.1.5 Security Provisions

{Management of the design and implementation of security measures are performed under the direction of AmerenUE with expertise, support, and technical review provided by AREVA NP, and other qualified consulting organizations as assigned and appropriate for the activity. }

13.1.1.1.1.6 Development of Safety Analysis Reports

Information regarding the development of the FSAR is found in Chapter 1.

13.1.1.1.1.7 Review and Approval of Material and Component Specifications

{Safety-related material and component specifications of SSCs designed by the reactor vendor are reviewed and approved in accordance with the reactor vendor quality assurance program and Section 17.1. Review and approval of items not designed by the reactor vendor are controlled under the direction of AmerenUE with expertise, support, and technical review provided by AREVA NP, UniStar Nuclear Energy Services, Bechtel, and other qualified consulting organizations as assigned and appropriate for the activity.

13.1.1.1.1.8 Procurement of Materials and Equipment

{Procurement of materials during construction phase is the responsibility of the reactor vendor and constructor. The process is controlled by the QAPD. Oversight of the inspection and receipt of materials process is the responsibility of the Management Position Responsible for Quality and Performance Improvement.}

13.1.1.1.1.9 Management and Review of Construction Activities

{Management and responsibility for construction activities is assigned to the Management Position Responsible for New Plant Project Management. Monitoring and review of construction activities by utility personnel is a continuous process at the plant site. Contractor performance is monitored to provide objective data to utility management in order to identify problems early and develop solutions. Monitoring of construction activities verifies that the contractors are in compliance with contractual obligations for quality, schedule, and cost. Monitoring and review of construction activities is divided functionally across the various disciplines of the utility construction staff, i.e. electrical, mechanical, instrument and control, etc., and tracked by schedule based on system and major plant components/areas.

After each system is turned over to plant staff, the construction organization relinquishes responsibility for that system. At that time, the construction organization will be responsible for completion of construction activities as directed by plant staff.}

13.1.1.2 Pre-Operational Responsibilities

Towards the end of construction, the focus of the organization will shift from design and construction to initial start-up and operation of the facility. As the facility nears completion, AmerenUEwill staff the Operating Organization to ensure smooth transition from construction activities to operation activities.

An estimate of the number of persons to be assigned to various groups, and the schedule for filling the corporate and operating organization positions are provided in Table 13.1-1. To support these personnel in the performance of their duties and responsibilities, AmerenUE will develop and implement the appropriate training programs in a timely manner such that personnel receive the required training prior to performing their assigned duties. The training program is described in Section 13.2.

{AREVA NP, Inc., Bechtel and other necessary vendor support staff personnel} will be integrated into the onsite organization to provide technical support during startup of the facility and transition into the operational phase. As the construction of systems is completed, the systems will undergo acceptance testing as required by procedure, followed by turnover from the construction organization to the operations organization by means of a project acceptance plan. The turnover will include the physical systems and corresponding design information and records.

Following turnover, the operating organization will be responsible for system maintenance and configuration management. The design basis for the facility is maintained during the transition from construction to operations.

13.1.1.3 Technical Support for Operations

{The management positions responsible for Engineering Services, Plant Engineering, and Regulatory Affairs have the responsibility to furnish technical services and backup support.

Technical support for the operating organization will be available during startup and operation of the unit.

These technical support departments have personnel who are competent in technical matters related to plant safety. This expertise includes many engineering and scientific disciplines. The expertise within AmerenUE will expand as the project transitions through license application, detailed design, construction, and operations. These functions include the following:

a. Nuclear, mechanical, structural, electrical, thermal-hydraulic, metallurgy and materials, and instrumentation and control engineering;

b. Plant chemistry;

c. Radiation Protection and environmental support;

d. Fueling and refueling operations support;

e. Maintenance support;

f. Operations support;

g. Quality assurance;

h. Training;

i. Safety review;

j. Fire protection; and

k. Emergency coordination.

The services of qualified individuals from other functions within AmerenUE or an outside consultant or contractor may be used to provide or supplement these areas of expertise as needed. For example, the siting, design, fabrication, and construction activities, preparation of design and construction documents, and construction itself will be contracted to qualified contractors.}

13.1.1.4 Organizational Arrangement

13.1.1.4.1 Corporate Organization

{The authority and lines of communication for the Corporate Organization that will support the siting, design, licensing, engineering, procurement, fabrication, construction, startup and operation of the unit are presented in Section 17.5 and the QAPD {AmerenUE}, 2008.

During the design and construction phases, preparation of design and construction documents and construction itself are contracted to qualified contractors. Contractor QA Programs are approved by the Quality and Performance Improvement Department before work can start as described in the AmerenUE QAPD. QA procedures will be developed to implement this QAPD.

The following sections describe the reporting relationships, functional responsibilities and authorities for organizations implementing and supporting the AmerenUE QA Program.

Organizations are responsible to develop and implement procedures described in the AmerenUE QAPD for which they are responsible.

Positions listed below include those which describe a responsible functional management position and not necessarily the title of the individual responsible for the described area. Regardless of position title, a management position is assigned responsibility for functions listed below as applicable to new plant construction and operation. Figure 13.1-1 shows the organizational reporting relationships.

Management and supervisory personnel have the authority to delegate tasks to another qualified individual within their organization provided the designated individual possesses the required qualifications and these qualifications are documented. All delegations shall be in writing. The responsible manager or supervisor retains the ultimate responsibility and accountability for implementing the applicable requirements.

The key positions are:

13.1.1.4.1.1 Chairman and Chief Executive Officer, Ameren Corporation (offsite)

This is the highest level position in Ameren Corporation and is responsible for the Corporation. The Chairman and Chief Executive Officer of Ameren is responsible to the Ameren Board of Directors and directs officers in AmerenUE.

13.1.1.4.1.2 President and Chief Executive Officer, AmerenUE (offsite)

This position reports to the Chairman and Chief Executive Officer and is responsible for AmerenUE. The President and Chief Executive Officer, AmerenUE, directs the Senior Vice President and Chief Nuclear Officer.

13.1.1.4.1.3 Senior Vice President and Chief Nuclear Officer (CNO)

This position reports to the President and Chief Executive Officer, AmerenUE, and is responsible for overall corporate policy, overall responsibility for the implementation of the quality assurance program and provides executive direction and guidance as well as promulgates corporate policy through the Company's senior management staff.

The position has overall responsibility for the siting, design, fabrication, construction, and safe reliable operation of the AmerenUE nuclear stations, including management oversight and support of the day-to-day operations. This is the senior executive responsible for setting and implementing policies, objectives, expectations, and priorities to ensure activities are performed in accordance with the quality assurance program and other requirements.

The Senior Vice President and CNO is also responsible for all technical and administrative support activities performed by AmerenUE and contractors. The Senior Vice President and CNO directs the Vice President Engineering, Vice President Nuclear Operations, and the Management Position Responsible for Quality and Performance Improvement. During the operations phase, the Independent Review Committee (IRC) reports to the Senior Vice President and CNO.

13.1.1.4.1.4 Vice President, Nuclear Operations

This position is responsible for overall plant nuclear safety, operation, maintenance, training, including business operations areas of document control and records management. This position reports to the Senior Vice President and CNO and is responsible for the station's

compliance with the Operating License, governmental regulations, and ASME Code requirements.

13.1.1.4.1.5 Vice President, Engineering

This position reports to the Senior Vice President and CNO and has overall responsibility for all engineering activities. This includes responsibility for the siting, fabrication, construction, preoperational and startup testing, procurement, licensing, and Information Technology during these phases. The siting, design, fabrication, and construction activities, preparation of design and construction documents, and construction itself are contracted to qualified contractors, which are responsible to this position.

During the Operations phase, the position is responsible for plant engineering, engineering services including responsibility for the implementation of large projects for the nuclear facilities, nuclear fuel services and regulatory affairs.

13.1.1.4.1.6 Manager, Nuclear Fuel Cycle Management

This position reports to the Vice President, Engineering and is responsible for providing nuclear fuel and related business and technical support consistent with the operational needs of the unit. Activities include: the scheduling and procurement of uranium concentrates, conversion, enrichment, and fabrication services, preparation of fuel cycle economic studies, fuel cost and amortization analysis, fuel performance support, fuel inventory accountability and management, and market analysis and strategic development.

In addition, Nuclear Fuel Services provides corporate expertise and support for high-level waste disposal management, including administration of the spent fuel disposal contract.

13.1.1.4.1.7 Manager, Nuclear Generation Development

This position reports to the Vice President, Engineering and is responsible for managing the siting, fabrication, construction, preoperational and startup testing, procurement, and Information Technology during these phases for new plant development. This includes preparation of design and construction documents, and construction itself which is contracted to qualified contractors. Prior to the operations phase, assistant managers responsible for new plant licensing and new plant project management report to this position.

13.1.1.4.1.8 Manager, New Plant Operations and Maintenance Training

Prior to the operations phase, this position reports to the Vice President, Engineering and is responsible for development of training to support operations and maintenance for new plant facilities.

13.1.1.4.1.9 Manager, Engineering Services

During the operations phase, this position reports to the Vice President, Engineering. The Manager, Engineering Services, provides direction for the Configuration Management group, Design Engineering groups (Mechanical/Civil design, I&C design, and Electrical design), and the Major Modifications group. Design Engineering groups provide on-site development of design related to plant modifications

The Manager, Engineering Services directs a staff of assistant managers, supervisors, engineers and other technical personnel whose primary function is to provide technical support to the operation of Callaway Plant Unit 2.

13.1.1.4.1.10 Manager, Plant Engineering

During the operations phase, this position reports to the Vice President, Engineering. The Manager, Plant Engineering provides direction for Systems, Reactor and Technical Support Engineering groups. This includes system and equipment performance, reliability, testing, technical programs administration, analysis of reactor flux data and refueling operations, incore fuel management and maintaining special nuclear material accountability.

The Manager, Plant Engineering directs a staff of assistant managers, supervisors, engineers and other technical personnel whose primary function is to provide technical support to the operation of Callaway Plant Unit 2.

13.1.1.4.1.11 Manager, Regulatory Affairs

This position reports to the Vice President, Engineering. The Manager, Regulatory Affairs has overall responsibility for coordination of Regulatory Affairs and Licensing, Nuclear Safety Analysis and Probabilistic Risk Assessment, Security and Emergency Preparedness. Responsibilities include developing policies and standardized processes and procedures for the maintenance of the licensing basis, the preparation of submittals to the NRC and other regulatory organizations. This position is also responsible for security, emergency preparedness and probabilistic risk assessment (PRA) departments. Responsibilities for nuclear security include facility physical security and fitness for duty programs.

Regulatory Affairs personnel include an assistant manager, superintendents, supervisors, engineers, and other technical personnel whose primary function is to provide technical support to the operation of Callaway Plant. The Emergency Preparedness staff has overall responsibility for the development and maintenance of the Emergency Preparedness Program. This includes onsite and offsite emergency preparedness, coordination of the Plant Radiological Emergency Response Plan with State and local emergency plans, and the planning and execution of emergency drills and emergency plan exercises. The Security staff has overall responsibility for development, maintenance, and implementation of the Security Plan.

13.1.1.4.1.12 Manager, Quality and Performance Improvement

During all phases, this position reports to the Senior Vice President and CNO and is responsible for independently planning and performing activities to verify the development and effective implementation of the AmerenUE QAPD including, but not limited to, siting, design, fabrication, construction, engineering, licensing, document control, records, corrective action program, procurement, and operations. Further details of the quality assurance organization and responsibilities are described in Section 13.1.2.2.4.1.

13.1.1.5 Qualifications

The qualifications of managers and supervisors of the technical support organization meet the qualification requirements in education and experience for those described in ANSI/ANS-3.1-1993 (ANSI, 1993), as endorsed and amended by Regulatory Guide 1.8, Revision 3 (NRC, 2000).}

13.1.2 OPERATING ORGANIZATION

{Figures incorporated into Section 17.5 show the authority and lines of communication for the Callaway Plant Unit 2 Organization. It includes operations, maintenance, radiological protection and chemistry, work management, engineering, training, and quality and performance improvement. The onsite organization will meet the guidelines of Regulatory Guide 1.8, (NRC, 2000) and Regulatory Guide 1.33 (NRC, 1978). Additionally, onsite review will meet the

guidelines as addressed in Section 17.5. The fire protection program will meet applicable regulatory requirements (see Section 9.5.) 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 Plans Items I.A.1.1 and I.A.1.3 of NUREG-0737 (NRC, 1980) for shift technical advisor and shift staffing. The Callaway Plant Unit 2 Physical Security Plan provided in Part 8 of the COL Application meets the applicable requirements for a physical protection plan.

An estimate of the number of persons to be assigned to various groups is provided in Table 13.1-1.

13.1.2.1 Plant Organization

The onsite facility organization is responsible for operations and maintenance of the plant, quality inspection activities of on-site work, and controlling interfaces between Callaway Plant Units 1 and 2. The succession of responsibility for overall plant operations is provided in Section 13.1.2.2.

Responsible management and supervisory personnel have the authority to delegate tasks to another qualified individual within their organization provided the designated individual possesses the required qualifications and these qualifications are documented. The delegations shall be in writing. The responsible manager or supervisor retains the ultimate responsibility and accountability for implementing the applicable requirements.

13.1.2.2 Plant Personnel Responsibilities and Authorities

13.1.2.2.1 Management

13.1.2.2.1.1 Vice President, Nuclear Operations

This position reports to the Senior Vice President & CNO and is responsible for overall plant nuclear safety and implementation of the QAPD. This position is responsible for the station's compliance with its NRC Combined Operating License, governmental regulations, and ASME Code requirements. Areas of responsibility also include Operations, Maintenance, Radiation Protection, Work Management, Training & Business Operations.

13.1.2.2.1.2 Plant Director

This position reports to the Vice President, Nuclear Operations and is responsible for plant operations, maintenance and Radiation Protection. This position assures the safe, reliable, and efficient operation of the plant within the constraints of applicable regulatory requirements, Operating License, the quality assurance program, and provides day-to-day direction and management oversight of onsite activities. The Plant Director, in carrying out the responsibility for overall safety of plant operations, is responsible for timely referral of appropriate plant matters to management and independent reviewers. Areas of responsibility also include chemistry activities, radiological protection, operations and support, work management, maintenance and production planning, and related procedures and programs.

13.1.2.2.1.3 Operations Manager

This position reports to the Plant Director and is responsible for the day-to-day operation of all equipment associated with the generation of power including Chemistry and Radwaste. This position assures the safe, reliable, and efficient operation of the plant within the constraints of applicable regulatory requirements, operating license and the quality assurance program. This position has the authority to remove equipment from service, if the equipment is judged to be

unsafe to operate. This individual coordinates the maintenance of adequate records to historically record the operation of the unit.

The Operations Manager is also responsible for the Fire Protection Program. The reporting relationships and organization of the Fire Protection program is described in Section 9.5.

13.1.2.2.1.4 Maintenance Manager

This position reports to the Plant Director and is responsible for all maintenance efforts for the units. This individual establishes the necessary manpower levels and equipment required to perform both routine and emergency type maintenance activities, seeking the services of others in performing work beyond the capabilities of the on-site maintenance group.

13.1.2.2.1.5 Manager, Planning, Scheduling & Outages

The Manager, Planning, Scheduling, and Outages (Manager, PS&O) reports directly to the Plant Director and is responsible for planning and implementation of outages and planning and scheduling of work activities. The Manager, PS&O controls outage activities through an Outage Manager and an Assistant Outage Manager. Other outage personnel include general supervisors and supervisors. Planning and scheduling activities are controlled through the Superintendent, Work Management.

13.1.2.2.1.6 Training Manager

This position reports to the Vice President, Operations and is responsible during the operational phase for the training of personnel who operate or support the nuclear facilities. Training responsibilities include determining the need for training based on information provided by the various groups, developing performance-based training programs, implementing training programs to support employee and facility needs, and evaluating training programs. Certain functional groups may be assigned responsibility for the development and conduct of their own training programs provided these groups are not required to have a systems approach to training under 10 CFR 50.120.

During the operational phase, this position is responsible for administration of the corrective action, nonconformance, self-assessment, performance improvement and industry operating experience programs.

13.1.2.2.1.7 Business Operations Manager

The Business Operations Manager reports to the Vice President, Nuclear Operations. Under the direction of the Manager, Business Operations, the Business Operations Department provides organization support, administration, document control, records management, strategic planning, cost forecasting, status reporting and budget matters. Callaway Materials management activities are provided by a Materials Department under the oversight of the Manager, Business Operations. The Business Operations staff includes superintendents, general supervisors, supervisors, and other Business Operations staff.

13.1.2.2.1.8 Radiation Protection Manager

This position reports to the Plant Director and is responsible for the radiation protection function.

The radiation protection responsibilities include scheduling and conducting radiological surveys, ALARA program, contamination sample collection, determining contamination levels, assigning work restrictions through radiation work permits, administering the personnel

monitoring program, and maintaining required records in accordance with federal and state codes.

13.1.2.2.2 Operations Shift Personnel

13.1.2.2.2.1 Shift Manager

A staff of personnel with the title of Shift Manager reports to the Operations Manager. Shift Managers shall have an SRO license. The Shift Manager has on-shift management responsibility for safe operation of the unit. The Shift Manager supervises Operational shift personnel. During off-normal hours, the on-shift Shift Manager assumes responsibility for all plant functions as described in Section 13.1.2.2.6.

13.1.2.2.2.2 Control Room Supervisor

A staff of personnel with the title of Control Room Supervisor report to the Operations Manager. Control Room Supervisors shall have an SRO license. The Control Room Supervisor assists the Shift Manager, and is the SRO who normally is in charge of the Reactor Operators on shift. Normally, the Control Room Supervisor stands watch in the control room; however, the Control Room Supervisor may leave the control room provided the requirements for control room manning are met.

13.1.2.2.2.3 Shift Technical Advisor

In accordance with the NRC's Policy Statement on Engineering Expertise on Shift (NRC, 1986), the Shift Technical Advisor (STA) role will be met by an individual serving in a dual SRO/STA position.

The STA provides advisory technical support to the operations shift crew in the areas of thermal hydraulics, reactor engineering, and plant analysis with regard to the safe operation of the unit.

13.1.2.2.2.4 Reactor Operator

A staff of personnel with the title of Reactor Operator or Senior Reactor Operator report to a Control Room Supervisor and Shift Manager. They are licensed operators, who are responsible for routine plant operations and performance of major evolutions at the direction of the Control Room Supervisor or Shift Manager.

13.1.2.2.2.5 Equipment Operator

A staff of personnel with the title of Equipment Operator serves at the direction of the Reactor Operator, Senior Reactor Operator, Control Room Supervisor, and Shift Manager. They are roving operators whose duties include manually or remotely changing equipment operating conditions, placing equipment in service, or securing equipment from service. In addition, this position is intended to serve as preparation for Reactor Operator training.

13.1.2.2.3 Supervisory Personnel

13.1.2.2.3.1 Assistant Operations Manager

This individual reports to the Operations Manager, and is responsible for the management of programs and policies for Operations Department activities.

13.1.2.2.3.2 Engineering Supervision

The individuals in this position report to the appropriate Engineering Department Manager, and are responsible for supervising a technical staff of engineers and other engineering specialists. These individuals coordinate their work with that of other groups. They are responsible for such areas as balance of plant, electrical, mechanical, instrumentation and control and reactor systems and focus on day to day equipment and operational issues. These individuals assist in planning programs for the plant to improve equipment performance, reliability or work practices, and assist in conducting the operational test phase and analyzing the results.

One of these individuals will be responsible for coordinating the activities associated with Reactor Engineering. This individual will interface with the Nuclear Fuel Cycle group.

13.1.2.2.3.3 Maintenance Shift Supervisors

The individuals serving in this position report to the Maintenance Manager, they are responsible for supervising maintenance activities, assisting in the planning of future maintenance efforts, guiding the efforts of mechanics, electricians, and instrumentation and controls technicians, and performing the planning and scheduling of preventive and corrective maintenance and surveillance testing. In addition, they supervise the activities of the craft personnel.

13.1.2.2.3.4 Chemistry Supervisor

This position reports to the Operations Manager, and is responsible for development, implementation, direction and coordination of the Chemistry Program. This area includes overall operation of any laboratories and all non-radiological environmental monitoring. This individual is responsible for the development, administration and implementation of procedures and programs to assure effective compliance with environmental regulation.

13.1.2.2.3.5 Radiation Protection Supervisor

The individuals in these positions report to the Radiation Protection Manager, and are responsible for health physics operations that include, but are not limited to contamination control, radiation work permits, radiological surveys and surveillance activities, respiratory protection for radiological and industrial safety, ALARA program, fixed and portable health physics instrumentation calibration, health physics job coverage, personnel external dosimetry program, personnel internal dosimetry program, gamma spectroscopy, gross alpha/beta, and liquid scintillation counting equipment, radioactive effluent release monitoring, and radiological environmental monitoring activities. This position serves as the Radiation Protection Manager, when designated.

13.1.2.2.3.6 Training Supervisor

The individuals in these positions report to the Training Manager and are responsible for coordinating and supervising the development and administration of training programs for personnel who operate or support the Callaway Plant Unit 2.

The individual serving as the Operator Training Supervisor is responsible for ensuring the licensed operator training program is in compliance with the latest revision of applicable regulations or codes, and ensuring the program reflects the latest changes to plant design and procedures.

13.1.2.2.3.7 Startup Manager

This position reports to the Vice President, Engineering and is responsible for the overall preoperational and startup test program. This individual is responsible for the development of preoperational and startup test procedures, providing technical advice to people conducting the tests, briefing personnel responsible for operation of the plant during the tests, ensuring that the tests are performed in accordance with the applicable procedures, and generating test reports.}

13.1.2.2.4 Quality Assurance Organization

13.1.2.2.4.1 {Management Position Responsible for Quality and Performance Improvement

The AmerenUE QA organization during the design, construction, and operations phases will be headed by this position. The staffing of the QA organization will be commensurate with its duties and functions. This position reports directly to the Senior Vice President and CNO. This position is:

- Vested with the authority and organizational freedom to ensure that the requirements of the QAPD are properly implemented, including the imposition of "stop work." The decision to "stop work" is not influenced by costs or schedule.
- Responsible for the overall responsibility for development, management and implementation of the AmerenUE QA Program during all phases of the facility and referring appropriate matters to senior management in a timely manner.
- Responsible for performance of an annual assessment of the adequacy of the QA program's implementation.
- In the AmerenUE organization such that it has effective lines of communication with persons in other senior management positions.

Additional responsibilities include:

- QA Technical Support
  - Maintain the QAPD
  - Maintain QA procedures
  - QA technical reviews of procurement documents
  - Administer the Corrective Action and Nonconformance Processes during construction
  - Maintain the Qualified Suppliers List (QSL)
  - Administer the Auditor and Lead Auditor Certification Process
  - Approve contractor QA Programs
  - Oversee contractor QA Programs Implementation

- Oversee the quality of design and construction.
- Management of the Training and Qualification Program for Inspection and Test Personnel

- Oversee document and records control
- QA Verification
  - Audits, surveillances, and assessments
  - Contractor/supplier evaluations
  - Equipment/vendor shop inspections
  - Witness vendor acceptance testing}

13.1.2.2.4.2 Quality Assurance and Control Personnel

A staff of Quality Assurance and Control personnel report to the Management Position responsible for Quality & Performance Improvement and are responsible for planning, implementing, and maintaining the QAPD, and conducting inspections, tests, and audits for ensuring that quality-related activities have been correctly performed, identifying any quality problems and verifying implementation of appropriate solutions to quality problems.}

13.1.2.2.5 Other Personnel

13.1.2.2.5.1 System Engineers

{A staff of System Engineers reports to the Engineering Supervisors. This group is responsible for balance of plant, electrical, mechanical, instrumentation and control, reactor systems, and reactor engineering, and focusing on day to day equipment and operational issues. They assist in planning programs for the plant to improve equipment performance, reliability or work practices, and conducting the operational test phase and analyzing the results. They are responsible for identifying plant spare parts for their applicable systems.

13.1.2.2.5.2 Technicians (Radiation Protection/Chemical/DCS/Instrumentation and Control/Electrical/Mechanical/Component/Programs)

The Technicians are assigned on a permanent basis to the Radiation Protection, Chemistry, and Maintenance departments. They report directly to the Radiation Protection, Chemistry, Maintenance Shift Supervisors and are responsible for performing activities within the scope of their respective group. Technicians inspect, repair, maintain, calibrate, and modify plant equipment and perform other work as directed.

13.1.2.2.5.3 Instructors

A staff of instructors reports to the Training Manager. These individuals have full-time duties and responsibilities for development and conduct of training regarding personnel who operate or support the unit.

13.1.2.2.5.4 Independent Review Committee

By the start of fuel load, an Independent Review Committee (IRC), will be established, reporting to the Senior Vice President and Chief Nuclear Officer} and will perform the following:

- Reviews proposed changes to the facility as described in the SAR. The committee review verifies that such changes do not adversely affect safety and whether a technical specification change or NRC review is required.

- Reviews proposed tests and experiments not described in the SAR. These tests and experiments are reviewed prior to implementation. The committee also verifies that tests or experiments do not require a technical specification change or NRC review.

- Reviews proposed technical specification changes and license amendments relating to nuclear safety prior to implementation, except in those cases where the change is identical to a previously approved change.

- Reviews reports of violations, deviations, and reportable events that are required to be reported to the NRC in writing within 24 hours. This review includes the results of investigations and recommendations resulting from such investigations to prevent or reduce the probability of recurrence of the event.

- Reviews any matter related to nuclear safety that is requested by the Senior Management team of the station.

- Reviews corrective actions for significant conditions adverse to quality.

- Determine the adequacy of the audit program every two years.

The IRC serves in an advisory capacity to the Senior Vice President & Chief Nuclear Officer on all matters related to nuclear safety for the Callaway Plant Unit 2.

The IRC shall be composed of a minimum of five members. No more than a minority of members may be from the onsite operating organization. A minimum of the chairman or alternative chairman and two members must be present for all meetings. The Senior Vice President and Chief Nuclear Officer shall appoint, in writing, the members of the IRC, including the IRC Chairman and the Alternate Chairman drawn from the IRC members.

Consultants and contractors shall be used for the review of complex problems beyond the expertise of the IRC.

Alternate members shall be appointed in writing by the IRC Chairperson to serve on a temporary basis. Each alternate shall meet the minimum qualifications described above for IRC, and shall have the same area of expertise as the member being replaced.

13.1.2.2.6 Succession of Responsibility for Overall Plant Operation

The succession of responsibility for overall plant instructions, standing orders, or special orders, in the event of absences, incapacitation of personnel, or other emergencies, is as follows, unless otherwise designated in writing:

- Plant Director

- Operations Manager

- Assistant Operations Manager

In the absence of all of the above, the Shift Manager will be responsible for all site activities.

13.1.2.2.6.1 Interfaces with Organizations Operating Other Facilities

AmerenUE personnel may be requested to provide support for either Callaway Plant Unit 1 or Unit 2 activities.

AmerenUE will participate in the process for standardized engineering, procurement and construction for Callaway Plant Unit 2 and will operate Unit 2 in accordance with policies and procedures established and maintained by UniStar Nuclear Operating Services LLC (UNOS). In association with UNOS, AmerenUE will benefit from being part of a fleet of nuclear plants which maintain strict standardization with regard to the U.S. EPR design certification as well as engineering, construction, operation, maintenance, modification and procurement for the U.S. EPR.

13.1.2.3 Operating Shift Crews

The shift manning for the unit will be a five or six shift rotation, with one shift dedicated to training at any given time. Table 13.1-2 defines the position titles, license requirements and minimum shift manning for various modes of operation. The operating shift staffing meets or exceeds the requirements of NUREG-0737, Action Plan Items I.A.1.1 and I.A.1.3 (NRC, 1980), 10 CFR 50.54(m) (CFR, 2008), and the NRC's "Policy Statement on Engineering Expertise on Shift" (NRC, 1986)

In addition, radiation protection coverage is provided by a qualified Radiation Protection Technician assigned to the shift and fire protection coverage is provided by the Fire Brigade Team members. }

13.1.3 QUALIFICATIONS OF NUCLEAR PLANT PERSONNEL

13.1.3.1 Qualification Requirements

Table 13.1-1 identifies the specific positions identified in ANSI/ANS-3.1-1993 (ANSI, 1993), the corresponding plant specific title, and the corresponding titles from the plant-specific organization. Plant personnel meet the minimum qualification requirements for education and experience as described in ANSI/ANS-3.1-1993 as endorsed by Regulatory Guide 1.8, Revision 3 (NRC, 2000), except for the following clarifications or differences.

Licensed operators shall comply with the requirements of 10 CFR 55.

- For a non-licensed applicant (an instant candidate) for a Senior Reactor Operator (SRO) license, Regulatory Guide 1.8, Revision 3, requires at least six months of the responsible nuclear power plant experience to be at the plant for which the instant candidate seeks a license. {The candidates for an SRO license may not meet this requirement.} The basis for this exception is provided in Section 13.2.

- For an applicant for a Reactor Operator license, Regulatory Guide 1.8, Revision 3, requires at least one year of the power plant experience be at the plant for which an applicant seeks a license. The Callaway Plant Unit 2 candidates for a Reactor Operator license may not meet this requirement. The basis for this exception is provided in Section 13.2.

- For an applicant for a Reactor Operator license, ANSI/ANS-3.1-1993 requires that the individual have 3 months experience as an extra person on shift in training before being assigned Reactor Operator duties. The individuals that will serve for the first cycle

of plant operation may not possess this experience prior to being assigned Reactor Operator duties. The basis for this exception is provided in Section 13.2.

- ANSI/ANS-3.1-1993 endorsed ASME NQA-1-1989 (ASME, 1989) for the qualifications criteria for Quality Control personnel, while Regulatory Guide 1.8, Revision 3, endorsed Supplement 2S-1, "Supplementary Requirements for the Qualification of Inspection and Test Personnel," of ASME NQA-1-1983 (ASME, 1983). The Quality Control personnel for {Callaway Plant Unit 2} will meet the education and experience requirements of Supplement 2S-1 of ASME NQA-1-1994 (ASME, 1994).

- ANSI/ANS-3.1-1993 endorsed ASME NQA-1-1989 for the qualifications criteria for Quality Assurance personnel, while Regulatory Guide 1.8, Revision 3 endorsed Supplement 2S-3, "Supplementary Requirements for the Qualification of Inspection and Test Personnel," of ASME NQA-1-1983. The Quality Assurance personnel for {Callaway Plant Unit 2} will meet the education and experience requirements of Supplement 2S-3 of ASME NQA-1-1994, with the exception of the lead auditors. They will be qualified as described in Section S of the QAPD.

- Regulatory Guide 1.8, Revision 3, provides an alternative for the formal educational and experience requirements for Quality Assurance positions. It permits other factors to be utilized to provide sufficient demonstration of their abilities. These factors are to be evaluated on a case-by-case basis and approved and documented by the plant manager. {AmerenUE} will utilize this alternative; however, the incumbent's manager, versus the plant manager, will approve the use of the alternative.

13.1.3.2 Qualification of Plant Personnel

Resumes and other documentation and experience of initial appointees to management and supervisory positions are available for review.

13.1.4 REFERENCES

{ANSI, 1993. American National Standard for Selection, Qualification, and Training of Personnel for Nuclear Power Plants, ANSI/ANS-3.1-1993, approved April 23, 1993.

ASME, 1994. ASME NQA-1-1994, Supplement 2S-1, "Supplementary Requirements for the Qualification of Inspection and Test Personnel," and Supplement 2S-3, "Supplementary Requirements for the Qualification of Quality Assurance Program Audit Personnel."

CFR, 2008. Conditions of Licenses, Title 10, Code of Federal Regulations, Section 50.54, U.S. Nuclear Regulatory Commission, 2008.

NRC, 1978. Quality Assurance Program Requirements (Operation), Regulatory Guide 1.33, Revision 2, U.S. Nuclear Regulatory Commission, February 1978.

NRC, 1980. Clarification of TMI Action Plan Requirements, NUREG-0737, U.S. Nuclear Regulatory Commission, November 1980.

NRC, 1985. Policy Statement on Engineering Expertise on Shift, 50 FR 43621, U.S. Nuclear Regulatory Commission, October, 28, 1985.

NRC, 1986. Policy Statement on Engineering Expertise on Shift, Generic Letter 86-04, U.S. Nuclear Regulatory Commission, February 1986.

NRC, 2000. Qualification and Training of Personnel for Nuclear Power Plants, Regulatory Guide 1.8, Revision 3, U.S. Nuclear Regulatory Commission, May 2000.

AmerenUE, 2008. "Quality Assurance Program Description, AmerenUE QAPD, Revision 1".}

Table 13.1-1—{Generic Position/Site Specific Position Cross Reference}

(Page 1 of 2)

Nuclear Function	Function Position (ANS-3.1-1993 section)	Nuclear Plant Position (Site-Specific)	Estimated Numbers of Full Time Equivalents			
			Design Review Phase	Construction phase	Pre-op Phase	Operational Phase
Executive Management	Chief Executive Officer (n/a)	President & CEO, AmerenUE	1	1	1	1
	Chief Nuclear Officer (n/a)	Senior Vice President & Chief Nuclear Officer	1	1	1	1
Nuclear Support	Executive, Operations Support (n/a)	Vice President, Nuclear Operations	1	1	1	1
	Executive, Engineering and Technical Services (n/a)	Vice President, Engineering	1	1	1	1
Plant Management	Plant Manager (4.2.1)	Plant Director	-	-	1	1
Operations	Manager (4.2.2)	Operations Manager	-	-	1	1
Operations, admin	Functional Manager (4.3.8)	Assistant Operations Manager	-	-	1	1
Operations, (on-shift)	Functional Manager (4.4.1)	Shift Manager			5	5
	Supervisor (4.4.2)	Control Room Supervisor			5	5
	Supervisor (4.6.2)	Shift Technical Advisor			5	5
	Licensed Operator (4.5.1)	Reactor Operator/ Senior Reactor Operator			10	10
	Non-Licensed Operator (4.5.2)	Equipment Operator			10	10
Engineering	Manager (4.2.4)	Plant Engineering, Engineering Services, Reg Affairs Managers		3	3	3
System Engineering	Functional Manager (4.3.9)	Engineering Supervisors		-	4	4
	System Engineer (4.6.1)	System Engineer, Program & Component Engineers		4	25	25
Chemistry	Functional Manager (4.3.3)	Operations Manager		1	1	1
	Supervisor (4.4.6)	Chemistry Supervisor		1	1	2
	Technician (4.5.3.1)	Chemistry Technician		2	6	10
Radiation Protection	Functional Manager (4.3.3)	Radiation Protection Manager		1	1	1
	Supervisor (4.4.6)	Radiation Protection Supervisor		2	6	6
	Technician (4.5.3.2)	Radiation Protection Technician		4	12	28

Table 13.1-1—{Generic Position/Site Specific Position Cross Reference}

(Page 2 of 2)

Nuclear Function	Function Position (ANS-3.1-1993 section)	Nuclear Plant Position (Site-Specific)	Estimated Numbers of Full Time Equivalents			
			Design Review Phase	Construction phase	Pre-op Phase	Operational Phase
Maintenance	Manager (4.2.3)	Maintenance Manager		1	1	1
Instrumentation and Control	Supervisor (4.4.7)	Digital Controls Supervisor		1	1	1
	Technician (4.5.3.3)	DCS Technician		4	15	15
Mechanical	Supervisor (4.4.9)	Maintenance Shift Supervisor		1	5	5
	Technician (4.5.7.2)	Plant Technicians		4	50	50
Electrical	Supervisor (4.4.8)	Components Supervisor Programs		1	2	2
	Technician (4.5.7.1)	Component & Program Maintenance Technicians		4	12	12
Quality Assurance	Manager (QAPD)	Quality and Performance Improvement Manager			1	1
	Quality Verification and Inspection & Performance Assessment (QAPD)	Quality Assurance and Control Personnel			12	12
Training	Functional Manager (4.3.1)	Training Manager		1	1	1
	Supervisor Training (4.4.4)	Training Supervisor		1	1	1
	Operations Training Instructor (4.5.4)	Instructor		10	10	10
	Technical Staff/Maintenance Instructor (4.5.4)	Instructor		7	7	7
Nuclear Fuel Services	Manager (4.2.4)	Manager, Nuclear Fuel Services			1	1
Fire Protection	Supervisor (4.4)	Fire Protection Engineer		1	1	1
Emergency Preparedness	Functional Manager (4.3)	Regulatory Affairs Manager		1	1	1
Security	Functional Manager (4.3)	Regulatory Affairs Manager		1	1	1
	First Line Supervisor (4.4)	Security Supervisor		10	10	10
	Security Officer (n/a)	Security Officer		Withheld from Public Disclosure		
Preoperational and Startup Testing	Manager (n/a)	Startup Manager		1	1	1
	Preoperational Test Engineer (4.4.11)	Preoperational Test Engineer		10	10	
	Startup Testing Engineer (4.4.12)	Startup Engineer		5	13	5

Table 13.1-2—{Minimum Shift Crew Composition [5][6]}

	Position	Number [1]
Unit Shutdown	Shift Manager (SRO License)	1
	Control Room Supervisor (SRO License)[2]	0
	Shift Technical Advisor	0
	Reactor Operator (RO License) or Senior Reactor Operator (SRO License)	1
	Equipment Operator	1
Unit Operating [3]	Shift Manager	1
	Control Room Supervisor (SRO License)	1
	Shift Technical Advisor [4]	1
	Reactor Operator (RO License) or Senior Reactor Operator (SRO License)	2
	Equipment Operator	2

Notes:

(1) Temporary deviations from the numbers required by this table shall be in accordance with criteria established in the Technical Specifications.

(2) During alteration of the core of a nuclear power unit (including fuel loading or transfer), a person holding an SRO license or an SRO license limited to fuel handling for the unit shall be present to directly supervise the activity. During this time, this person shall not be assigned any other duties.

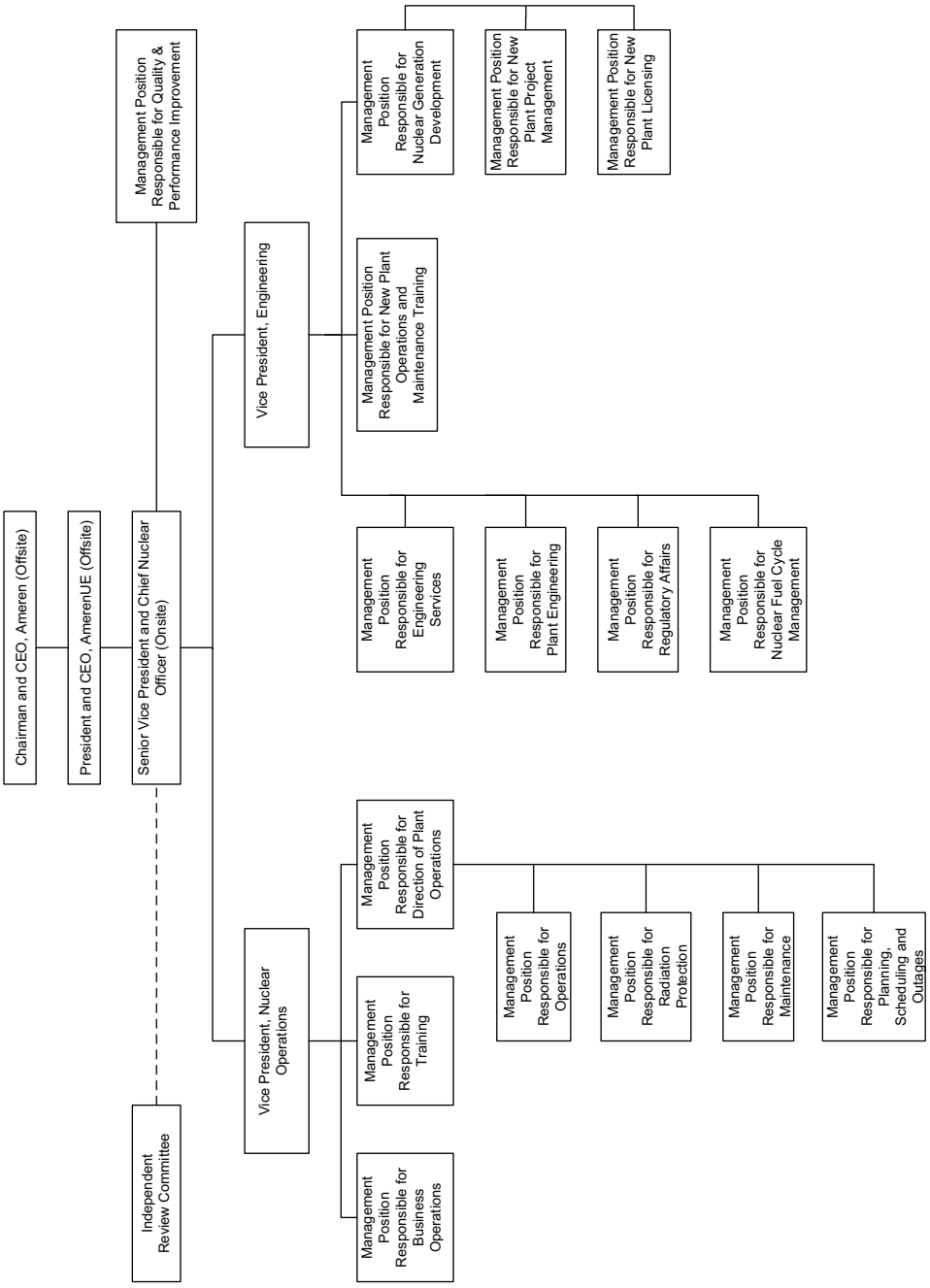
(3) For the purpose of this table, a nuclear power unit is considered to be operating when it is in a mode other than cold shutdown or refueling as defined by the Technical Specifications.

(4) The STA role may be filled by an additional SRO serving in a dual SRO/STA role. If this option is used for a shift, then the separate STA position may be eliminated for that shift.

(5) A site Fire Brigade of at least five members (may be less than the minimum requirements for a period of time not to exceed 2 hours in order to accommodate unexpected absence provided immediate action is taken to fill the required positions.) shall be maintained onsite at all times. The Fire Brigade shall not include the Shift Manager, and the other members of the minimum shift crew necessary for safe shutdown of the unit and any personnel required for other essential functions during a fire emergency.

(6) Additional staffing requirements are discussed in the Callaway Plant Unit 2 Emergency Response Plan and Technical Specification 5.2.2.

Figure 13.1-1—{Organization Chart}



13.2 TRAINING

This section of the U. S. EPR FSAR is incorporated by reference with the following supplements.

The U.S. EPR FSAR includes the following COL item in Section 13.2:

A COL applicant that references the U.S. EPR design certification will provide site-specific information for training programs for plant personnel.

This COL Item is addressed as follows:

This COL item is addressed by NEI 06-13A (NEI, 2007), "Template for an Industry Training Program Description." NEI 06-13A is incorporated by reference with the following supplements.

The milestone schedule for licensed and non-licensed plant staff training is provided in Table 13.4-1.

Sections 13.2.1 through 13.2.4 are added as supplements to the U.S. EPR FSAR.

13.2.1 INSERT TO SECTION 1 OF NEI 06-13A

Section 1, "Training Program Description," of NEI 06-13A (NEI, 2007) is supplemented to include the following paragraph:

The application of the systematic approach to training (SAT) developed and implemented as part of Verification & Validation (V&V) of the Human System Interface (HSI) design is described in Section 5.4.10 of ANP-10279 (AREVA, 2007). The V&V process includes verification that plant specific training conforms to the design that resulted from the HSI design process. Documentation of the V&V process is generated throughout the HSI design process and is used as input to the training program.

13.2.2 INSERT TO SECTION 1.1 OF NEI 06-13A

Section 1.1, "Licensed Operator Training," of NEI 06-13A (NEI, 2007) is supplemented to include the following sections. (Section numbers in parenthesis are the corresponding location in NEI 06-13A.)

(1.1.3) Licensed Operator Training Program Prior to Commercial Operation

Prior to initial commercial operation, licensed operator training will be conducted early in the construction phase to support preoperational testing and cold and hot functional activities. Licensed operator training conducted prior to commercial operation is referred to as "cold" licensed operator training. Cold licensed operator training will be conducted as described in Section 1.1 of NEI 06-13A (NEI, 2007).

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

Prior to commercial operation, plant experience requirements specified in Regulatory Guide 1.8 (Revision 3) and ANSI/ANS 3.1-1993 cannot be met. Therefore, during cold license operator training, the Regulatory Position C.1.b of Regulatory Guide 1.8 (Revision 2) applies: cold license operator candidates will meet the training elements defined in ANSI/ANS 3.1 but are exempt from the experience requirements defined in ANSI/ANS 3.1. Alternate

methods of gaining plant experience, in addition to those referenced in Regulatory Guide 1.8 and associated ANSI/ANS standards, are described in Section 1.1.3.2 of NEI 06-13A (NEI, 2007).

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

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

(1.1.3.1) Licensed Operator Continuing Training Prior to Commercial Operation

The SAT process will be utilized to determine continuing training needs for cold license operator candidates following completion of the initial phases of their training. Structured continuing training will be provided to maintain the license candidates' knowledge and ability and will include topics related to plant modifications, construction, functional testing, and OE related to construction activities.

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

(1.1.3.2) Licensed Operator Experience Requirements Prior To Commercial Operation

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

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

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

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

An RO candidate who completes a site-specific non-licensed operator training program for critical non-licensed operator tasks and completes a site familiarization course designed on a systematic evaluation of site design features and operator site familiarization needs satisfies the one year on-site experience and six months as a non-licensed operator at the facility for which the license is sought requirements cited in Regulatory Guide 1.8.

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

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

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

(1.1.3.3) On-the-Job Training (OJT) Prior to Commercial Operation

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

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

(1.1.3.4) Plant-Referenced Simulation Facilities Prior to Commercial Operation

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

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

The following provides a generic simulator training sequence indicating the use of part task/limited scope simulator and plant referenced simulator for licensed operator training. The actual sequence may vary depending on plant construction scheduling.

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

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

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

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

13.2.3 INSERT TO SECTION 1.6 OF NEI 06-13A

Section 1.6, "References," of NEI 06-13A (NEI, 2007) is supplemented to include a reference to ANP-10279, Revision 0 (AREVA, 2007).

13.2.4 REFERENCES

{**AREVA, 2007**. U.S. EPR Human Factors Engineering Program, ANP-10279, Revision 0, AREVA NP Inc., January 2007.

NEI, 2007. NEI 06-13A, Template for an Industry Training Program Description, Rev. 0, Nuclear Energy Institute, October 2007.}

13.3 EMERGENCY PLANNING

This section of the U. S. EPR FSAR is incorporated by reference with the following supplements.

The U.S. EPR FSAR includes the following COL Item in Section 13.3:

> A COL applicant that references the U.S. EPR design certification will provide a site specific emergency plan in accordance with 10 CFR 50.47 and 10 CFR 50 Appendix E.

This COL Item is addressed as follows:

A comprehensive Emergency Plan is provided in COLA Part 5. The schedule for emergency planning implementation is provided in Table 13.4-1 and COLA Part 5.

13.3.1 {CALLAWAY PLANT UNIT 2 EMERGENCY PLAN DEPARTURES FROM THE U.S. EPR

As stated in the U.S. EPR FSAR Section 13.3, Emergency Planning, the standard U.S. EPR design includes facilities suitable for a Technical Support Center (TSC) and an Operational Support Center (OSC). Both facilities comply with Revision 1 of NUREG-0654/FEMA REP-1.

AmerenUE will take a departure from the U.S. EPR standard design related to the TSC and OSC facilities. Instead, the existing Callaway Plant Unit 1 emergency response facilities will be utilized to support the emergency response preparedness needs of Callaway Plant Units 1 and 2.

The existing Callaway Plant Unit 1 TSC contains adequate space to also house the OSC. This arrangement, which combines TSC and OSC functions into a single facility, has proven effective in demonstrating effective communication between team members and in dispatching Emergency Teams in a timely fashion. The existing TSC facility for Callaway Plant Unit 1 is of sufficient size to accommodate the TSC and OSC emergency response needs for both units. Modification of the existing TSC to accommodate the communication and assessment infrastructure needs for the Callaway Plant Unit 2 emergency response plan will ultimately result in a more effective Emergency Response Organization than if separate facilities were maintained.

A more detailed description of the proposed Emergency Plan is provided in COLA Part 5. }

13.4 OPERATIONAL PROGRAM IMPLEMENTATION

This section of the U. S. EPR FSAR is incorporated by reference with the following supplements.

The U.S. EPR FSAR includes the following COL Item in Section 13.4:

A COL applicant that references the U.S. EPR design certification will provide site-specific information for operational programs and schedule for implementation.

This COL item is addressed as follows:

The operational programs listed in Table 13.4-1 are those required by regulations and subject to program implementation license conditions. The table includes each of the operational programs listed in Section C.I.13.4, Operational Program Implementation, of Regulatory Guide 1.206, dated June 2007 (NRC, 2007). Table 13.4-1 lists each operational program, the regulatory source of the program, the section of the FSAR in which the operational program is described, and the associated milestones.

These operational programs and their implementation are fully described in the applicable sections of the FSAR identified in Table 13.4-1 or the associated U.S. EPR FSAR section. In some instances, operational programs may be implemented in phases and the phased implementation milestones are also provided in Table 13.4-1. For example, the Radiation Protection Program implementation milestones are based on radioactive sources on site, fuel on site, fuel load, and first shipment of radioactive waste.

13.4.1 REFERENCES

{This section is added as a supplement to the U.S. EPR FSAR.

NRC, 2007. Combined License Applications for Nuclear Power Plants (LWR Edition), Regulatory Guide 1.206, Revision 0, U.S. Nuclear Regulatory Commission, June 2007.

AmerenUE, 2008. AmerenUE Quality Assurance Program Description, Rev. 1}

Table 13.4-1—Operational Programs Required by NRC Regulations and Program Implementation

(Page 1 of 5)

		Source	FSAR	Implementation	
Item	Program Title	(Required By)	Section	Milestones	Requirements
1	In-service Inspection Program	10 CFR 50.55a(g)	5.2.4[1] 6.6 [1]	Prior to commercial service	10 CFR 50.55a(g) ASME XI IWA 2430(b)
2	In-service Testing Program	10 CFR 50.55a(f); 10 CFR Part 50, App. A	3.9.6[1] 5.2.4[1]	After generator online on nuclear heat	10 CFR 50.55a(f) ASME OM Code
3	Environmental Qualification Program	10 CFR 50.49(a)	3.11[1]	Prior to initial fuel load	License Condition
4	Preservice Inspection Program	10 CFR 50.55a(g)	5.2.4[1] 6.6[1]	Completion prior to initial plant startup	10 CFR 50.55a(g) ASME Code Section XI IWB-2200(a)
5	Reactor Vessel Material Surveillance Program	10 CFR 50.60; 10 CFR 50, App. H	5.3.1[1]	Prior to initial fuel load	License Condition
6	Preservice Testing Program	10 CFR 50.55a(f)	3.9.6[1] 5.2.4[1]	Prior to initial fuel load	License Condition
7	Containment Leakage Rate Testing Program	10 CFR 50.54(o); 10 CFR 50, App. A (GDC 53); 10 CFR 50, App. J	6.2.6[1]	Prior to initial fuel load	10 CFR50, App. J, Option B, Section III.A
8	Fire Protection Program	10 CFR 50.48	9.5.1[1]	Prior to initial fuel receipt for elements of the Fire Protection Program necessary to support receipt and storage of fuel onsite. Prior to initial fuel load for elements of the Fire Protection Program necessary to support fuel load and plant operation	License Condition

FSAR: Chapter 13.0

Table 13.4-1—Operational Programs Required by NRC Regulations and Program Implementation

(Page 2 of 5)

Item	Program Title	Source (Required By)	FSAR Section	Implementation Milestones	Implementation Requirements
9	Process and Effluent Monitoring and Sampling Program:				
	Radiological Effluent Technical Specifications / Standard Radiological Effluent Controls	10 CFR 20.1301 and 20.1302; 10 CFR 50.34a; 10 CFR 50.36a; 10 CFR 50, App. I, Sect. II and IV	11.5[1]	Prior to initial fuel load	License Condition
	Offsite Dose Calculation Manual	Same as above	11.5[1]	Prior to initial fuel load	License Condition
	Radiological Environmental Monitoring Program	Same as above	11.5[1]	Prior to initial fuel load	License Condition
	Process Control Program	Same as above	11.4[1]	Prior to initial fuel load	License Condition
10	Radiation Protection Program	10 CFR 20.1101	12.5[1]	Prior to receipt of by-product, source, or special nuclear material (excluding Exempt Quantities as described in 10 CFR 30.18) for those elements of the Radiation Protection Program (RPP) necessary to support such receipt Prior to receipt of fuel onsite for those elements of the RPP necessary to support such receipt Prior to initial fuel load for those elements of the RPP necessary to support fuel load and plant operation Prior to first shipment of radioactive waste for those elements of the RPP necessary to support such shipment	License Condition
11	Non-licensed Plant Staff Training Program	10 CFR 50.120; 10 CFR 52.79(a)(33)	13.2	18 months prior to scheduled date of initial fuel load	10 CFR 50.120(b)

FSAR: Chapter 13.0

Table 13.4-1—Operational Programs Required by NRC Regulations and Program Implementation

(Page 3 of 5)

		Source	FSAR	Implementation	
Item	Program Title	(Required By)	Section	Milestones	Requirements
12	Reactor Operator Training Program	10 CFR 55.13; 10 CFR 55.31; 10 CFR 55.41; 10 CFR 55.43; 10 CFR 55.45	13.2	18 months prior to scheduled date of initial fuel load	License Condition
13	Reactor Operator Requalification Program	10 CFR 50.34(b); 10 CFR 50.54(i); 10 CFR 55.59	13.2	Within 3 months after issuance of the COL or the date the Commission makes the finding under 10 CFR 52.103(g)	10 CFR 50.54(i-1)
14	Emergency Plan	10 CFR 50.47; 10 CFR 50, App. E	13.3	Full participation exercise conducted within 2 years of scheduled date for initial fuel load Onsite exercise conducted within one year of scheduled date for initial fuel load Detailed implementing procedures submitted no less than 180 days prior to scheduled date for initial fuel load	10 CFR Part 50, Appendix E, Section IV. F.2a(ii) 10 CFR Part 50, Appendix E, Section IV. F.2a(ii) 10 CFR Part 50 Appendix E Section V

Table 13.4-1—Operational Programs Required by NRC Regulations and Program Implementation

(Page 4 of 5)

Item	Program Title	Source (Required By)	FSAR Section	Implementation	
				Milestones	Requirements
15	Security Program	10 CFR 50.34(c)	13.6		
	Physical Security Program Milestone Phases: {A). Establish New OCA boundary & surveillance Coverage B) Installation/construction of Unit 2 Security Features C) Activation of Unit 2 Perimeter Security Features & Unit 2 CAS/SAS D) Activate Remaining Unit 2 Security Features and perform testing. Implement Access Restrictions and Security Manning. E) Tie-in of Unit 1 Security to Unit 2 CAS/SAS and Abandonment of Unit 1 CAS/SAS. Activation of New Main Access Facility. NRC Security Inspection and Force-on-Force Validation. F) Abandonment of Perimeter Security Features between Units 1 and 2.}	10 CFR 73.55; 10CFR 73.56; 10C CFR 73.57;	13.6	See below {Prior to Construction[2] Prior to Phase C Prior to Phase D Prior to Phase E Prior to initial receipt of fuel Prior to initial receipt of fuel}	License Condition

Table 13.4-1—Operational Programs Required by NRC Regulations and Program Implementation

(Page 5 of 5)

Item	Program Title	Source (Required By)	FSAR Section	Implementation Milestones	Implementation Requirements
	Safeguards Contingency Program	10 CFR 50.34(d); 10 CFR 73, App. C	13.6	Prior to initial receipt of fuel	License Condition
	Training and Qualification Program	10 CFR 73, App. B	13.6	Prior to initial receipt of fuel	License Condition
	Fitness for Duty Program (Construction – Management and Oversight Personnel)	10 CFR Part 26 Subparts A-H, N, and O	13.7	Prior to initiating construction of safety-related or security-related SSCs	License Condition
	Fitness for Duty Program (Construction – Workers & First Line Supervisors)	10 CFR Part 26 Subpart K	13.7	Prior to initiating construction of safety-related or security-related SSCs	License Condition
	Fitness for Duty Program (Operation)	10 CFR 26	13.7	Prior to initial receipt of fuel	License Condition
16	Quality Assurance Program – Operation	10 CFR 50.54(a); 10 CFR Part 50, App. A (GDC 1); 10 CFR Part 50, App. B	17.5	{COL Issuance	License Condition}
17	Maintenance Rule	10 CFR 50.65	17.6	Prior to authorization to load fuel per 10 CFR 52.103(g)	10 CFR 50.65(a)(1)
18	Motor-Operated Valve Testing	10 CFR 50.55a(b)(3)(ii)	3.9.6[1]	Prior to initial fuel load	License Condition
19	Initial Test Program	10 CFR 50.34; 10 CFR 52.79(a)(28)	14.2 [1]	Prior to conduct of activities described in the Initial Test Program	License Condition
{20	GL 2008-01	10 CFR 50, App. A (GDC 1, 34 through 40	1.9.4	Prior to conduct of activities described in the Initial Test Program	License Condition}

Notes:

(1) The corresponding U.S. EPR FSAR sections are incorporated by reference and include additional information regarding these programs.

(2) {"Construction" includes those activities authorized by the issued COL or Limited Work Authorization. This does not include site preparation activities such as clearing, grubbing, excavation, demolition of existing structures, etc.}

13.5 PLANT PROCEDURES

This section of the U. S. EPR FSAR is incorporated by reference with the following supplements.

The U. S. EPR FSAR includes the following COL item in Section 13.5:

> A COL applicant that references the U. S. EPR design certification will provide site-specific information for administrative, operating, emergency, maintenance and other operating procedures.

This COL item is addressed as follows:

This section of the FSAR describes the administrative and operating procedures that the operating organization (plant staff) uses to ensure that routine operating, off-normal, and emergency activities are conducted in a safe manner. Activities affecting quality shall be prescribed by and conducted in accordance with approved procedures.

Procedures are developed consistent with guidance in the U. S. EPR FSAR Section 18.8.

13.5.1 ADMINISTRATIVE PROCEDURES

Regulatory Guide 1.33, Revision 2 (NRC, 1978) is used as guidance for the preparation of administrative and unit procedures.

13.5.1.1 Administrative Procedures – General

This section is added as a supplement to the U.S. EPR FSAR.

Procedures shall be reviewed, approved and controlled, according to the requirements of the QAPD. The responsible department head is charged with the preparation of procedures within the area of activity assigned to that individual under the overall responsibility of the {Senior Vice President & Chief Nuclear Officer}. The actual preparation may be performed by other {AmerenUE} personnel or outside contractors, but final responsibility resides with the responsible department head.

The {Senior Vice President and Chief Nuclear Officer} ensures that fleet procedures are prepared, reviewed, and approved in accordance with the QAPD.

13.5.1.1.1 Procedures Review and Approval

During the Design and Construction phase, {the Management Position Responsible for Quality and Performance Improvement} shall review and concur with quality related procedures associated with design, construction and installation.

During the Operations phase, {the Management Position Responsible for Quality and Performance Improvement, the Plant Director, and other manager level positions} have the responsibility to review and approve the procedures that cover activities under their organizational purview. These procedures shall be prepared 6 months before the start of the first licensed operator training class.

13.5.1.1.2 Equipment Control Procedures

Instructions shall be written to specify proper methods of obtaining clearances on plant equipment for maintenance or construction and to specify procedures for control of jumper, lifted lead, and bypass control. The clearance procedure shall assign responsibility for clearance

issue to the {Shift Manager}. A licensed operator, after ensuring he or she is aware of the effect of the activity on the system, shall be required to authorize all maintenance, tests, and surveillances performed on plant systems. Upon completion of the item, the document shall be returned to the operator for acceptance or for the purpose of returning the system to service. The administrative procedures which control these evolutions shall provide the required explicit notification of operational personnel whenever a safety-related system is removed from and returned to service.

The clearance procedure shall also contain certain restrictions on the issuance of a clearance. The work control procedures for control of jumper, lifted lead, and bypass control shall allow temporary alterations to critical structures, systems, or components to facilitate tests, maintenance, or operations. They shall specify administrative procedures to be followed in performing such alterations. These procedures shall be prepared 18 months before initial fuel load.

13.5.1.1.3 Control of Maintenance and Modifications

Administrative procedures shall implement the review and approval requirements for maintenance and modifications. These procedures shall include the control of plant modifications and maintenance on safety-related equipment. These procedures shall establish a framework of special process and maintenance procedures. These procedures shall be prepared 18 months before initial fuel load.

13.5.1.1.4 Fire Protection Procedures

These procedures govern the implementation of the Fire Protection Program. The Fire Protection Program is described in Section 9.5.1. Fire Protection Program procedures shall be prepared 6 months before initial fuel receipt for those procedures that implement elements of the Fire Protection Program supporting fuel onsite. Fire Protection Program procedures shall be prepared 6 months before initial fuel load for those procedures that implement elements of the Fire Protection Program supporting fuel load and plant operation.

13.5.1.1.5 Crane Operation Procedures

Personnel involved with crane operations over the refueling cavity and fuel pool shall be qualified and shall conduct crane operations in accordance with ANSI B30.2-1976, "Overhead and Gantry Cranes" (ANSI, 1976). These procedures shall be prepared 6 months before initial fuel load.

13.5.1.1.6 Temporary Changes to Procedures

A temporary procedure change that does not change the intent of the procedure may be made provided the change is approved by two members of the staff knowledgeable in the areas affected by the procedures. The applicable procedure shall control the process, documentation and approval of the temporary changes. The procedure that addresses the requirements for temporary changes to procedures shall be prepared 6 months before the start of the first licensed operator training class.

13.5.1.1.7 Temporary Procedures

Temporary procedures may be used to direct operations during testing, refueling, maintenance and modifications; to provide guidance in unusual situations not within the scope of normal procedures; and to ensure orderly and uniform operations for short periods when the plant, a system, or a component of a system is performing in a manner not covered by existing detailed procedures, or has been modified or affected in such manner that portions of existing

procedures do not apply. Temporary procedures shall define the period of time during which they may be used. The procedure that addresses the requirements for temporary procedures shall be prepared 6 months before the start of the first licensed operator training class.

13.5.1.1.8 Special Orders of a Transient or Self-Canceling Character

Special orders can be issued, when appropriate, to provide guidance to operating shifts. When used, special orders shall be temporary. The expiration period for the special order shall be noted in the special order. When appropriate, special orders shall be incorporated into either the administrative procedure regarding Conduct of Operations or another procedure, dependent on the subject matter, if the need becomes permanent. The procedure that addresses the requirements for special orders shall be prepared 6 months before the start of the first licensed operator training class.

13.5.1.1.9 Conduct of Operations

The administrative procedures regarding the Conduct of Operations shall address the requirements regarding:

- Standing orders to shift personnel including the authority and responsibility of the {Shift Manager, Control Room Supervisors}, Reactor Operators, and Shift Technical Advisor (these procedures shall be prepared 6 months before the start of the first licensed operator training class).

- Assignment of shift personnel to duty stations and the definition of "surveillance area" (these procedures shall be prepared 6 months before the start of the first licensed operator training class).

- Shift relief and turnover (these procedures shall be prepared 6 months before initial fuel load).

- Fitness for duty (FFD) (Construction FFD – these procedures shall be prepared 6 months before onsite construction of safety-related or security-related systems, structures, or components; Operation FFD – these procedures shall be prepared 6 months before initial fuel load).

- Control room access (these procedures shall be prepared 6 months before initial fuel load).

- Limitations on work hours (these procedures shall be prepared 6 months before initial fuel load).

- Feedback of design, construction, and applicable important industry and operating experience (these procedures shall be prepared 6 months before initial fuel load).

- {Shift Manager} administrative duties (these procedures shall be prepared 6 months before initial fuel load).

- Verification of correct performance of operating activities (these procedures shall be prepared 6 months before the start of the first licensed operator training class).

13.5.2 OPERATING AND MAINTENANCE PROCEDURES

13.5.2.1 Operating and Emergency Operating Procedures

The {Operations Manager} is responsible for the maintenance of the operating and emergency operating procedures.

13.5.2.1.1 Emergency Operating Procedures Content

No departures or supplements.

13.5.2.1.2 Emergency Operating Procedures Development Process

No departures or supplements.

13.5.2.1.3 Procedures Generation Package

The procedure development program, as described in the procedures generation package for Emergency Operating Procedures (EOPs), shall be submitted to the NRC at least three months prior to the planned date to begin formal operator training on the EOPs.

13.5.2.1.4 EOP Development Acceptance Criteria

No departures or supplements.

13.5.2.1.5 Operating Procedure Program

This section is added as a supplement to the U.S. EPR FSAR.

Operating procedures are used by the operating organization (plant staff) to conduct routine operating, abnormal and emergency activities in a safe manner. Operating procedures shall be developed at least six months prior to fuel load to allow sufficient time for plant staff familiarization and to allow NRC staff adequate time to review the procedures and to develop operator licensing examinations.

The Plant Operating Procedures Development plan establishes:

- A scope that includes those operating procedures which direct operator actions during normal, abnormal, and emergency operations, and considers plant operations during periods when plant systems/equipment are undergoing test, maintenance, or inspection.

- The methods and criteria for development, verification and validation, implementation, maintenance, and revision of procedures. The methods and criteria are in accordance with NUREG-0737 TMI Items I.C.1 and I.C.9 (NRC, 1980 and NRC, 1983).

The classifications of operating procedures are:

- System Operating Procedures

- General Plant Procedures

- Off-Normal Operating Procedures

- Emergency Operating Procedures

- Alarm Response Procedures
- Operations Surveillance Procedures

13.5.2.1.5.1 System Operating Procedures

These procedures shall provide instructions for energizing, filling, venting, draining, starting up, shutting down, changing modes of operation, returning to service following testing (if not given in the applicable procedure), and other instructions appropriate for operation of systems important to safety. These procedures shall provide step-by-step details for system operations with appropriate prerequisites, precautions, and limitations.

13.5.2.1.5.2 General Plant Procedures

These procedures shall provide instructions for the integrated operation of the plant, e.g., startup, shutting down, shutdown, power operation and load changing, process monitoring, and fuel handling. These procedures shall provide step-by-step details for the function or task with appropriate prerequisites, precautions, and limitations. General Operating Procedures shall refer operators to System Operating Procedures for detailed instructions regarding the operation of the involved systems during unit evolutions.

13.5.2.1.5.3 Off-Normal Operating Procedures

These procedures shall specify operator actions for restoring an operating variable to its normal controlled value when it departs from its normal range or to restore normal operating conditions following a transient. An off-normal operation is a condition that could degrade into an emergency or could violate Technical Specifications if proper action is not taken. These procedures shall identify the symptoms of the off-normal condition, automatic actions that may occur, and the appropriate immediate and subsequent operator actions.

13.5.2.1.5.4 Emergency Operating Procedures

These procedures shall direct actions necessary for the operators to prevent or mitigate the consequences of transients and accidents. The procedures shall include symptoms of the emergency conditions, automatic actions that may or should occur, and immediate and subsequent operator actions required to prevent or lessen the consequences of an emergency, and subsequent operator actions necessary to bring the plant to a safe, stabilized condition.

13.5.2.1.5.5 Alarm Response Procedures

These procedures shall guide operator actions for responding to plant alarms. A procedure is provided for each main control board annunciator identifying the proper actions to be taken by the operator in response to an alarm. Each of these procedures shall include the annunciator identification, alarm trip and reset setpoints, and proper corrective action to be taken. When corrective actions are very detailed or lengthy, the alarm response will refer to an off-normal procedure.

13.5.2.1.5.6 Operations Surveillance Procedures

These procedures shall provide step-by-step details for system or component surveillance. These procedures shall verify the operability of the system or component in accordance with Technical Specifications.

13.5.2.2 Maintenance and Other Operating Procedures

These procedures shall control the specific activities of the various departments in support of unit operation. The responsible department head is charged with the preparation of procedures within the area of activity assigned to that individual under the overall responsibility of {the Plant Director}.

Sections 13.5.2.2.1 through 13.5.2.2.9 are added as a supplement to the U.S. EPR FSAR.

13.5.2.2.1 Plant Radiation Protection Procedures

These procedures shall establish the criteria, concepts and managerial policies for implementation of the Radiation Protection Program described in Section 12.5. They shall address access control, radiation work permits, contamination control, personnel monitoring, training and qualification, radiological surveillance, respiratory protection, internal dose assessment, and radioactive material control. In addition, they shall ensure that occupational radiation exposure is maintained as low as reasonably achievable (ALARA).

13.5.2.2.2 Emergency Preparedness Procedures

The Emergency Plan provided in Part 5 of the COLA describes the procedures that are utilized to implement its requirements.

13.5.2.2.3 Instrument Calibration and Test Procedures

These procedures shall address the performance of periodic calibration, functional testing, and channel checking of safety-related plant instrumentation and all instruments used to satisfy Technical Specification requirements. These procedures shall ensure measurement accuracies are adequate to maintain plant safety parameters within operational and safety limits. In addition, instrumentation and control procedures shall outline the periodic calibration and accuracy requirements of test equipment necessary to support the calibration of safety-related instrumentation.

13.5.2.2.4 Chemistry Procedures

These procedures shall address the routine analysis and sampling methods to ensure compliance with plant chemistry and discharge limits.

13.5.2.2.5 Radioactive Waste Management Procedures

These procedures shall address the administrative controls for the shipment of solid radioactive waste and the release of liquid or gaseous radioactive waste. The procedures for solid, liquid, and gaseous radioactive waste systems shall be included in the System Operating Procedures.

13.5.2.2.6 Maintenance Procedures

Maintenance procedures shall describe maintenance planning and preparation activities. Maintenance procedures shall be developed considering the potential impact on the safety of the plant, license limits, availability of equipment required to be operable and possible safety consequences of concurrent or sequential maintenance, testing, or operating activities. Maintenance procedures shall contain sufficient detail to permit the maintenance work to be performed correctly and safely. Procedures shall include provisions for conducting and recording results of required tests and inspections, if not performed and documented under separate test and inspection procedures. References shall be made to vendor manuals, plant procedures, drawings, and other sources, as applicable.

Instructions shall be included, or referenced, for returning the equipment to its normal operating status. Testing shall be commensurate with the maintenance that has been performed. Testing may be included in the maintenance procedure or be covered in a separate procedure. Where appropriate sections of related documents, such as vendor manuals, equipment operating and maintenance instructions, or approved drawings with acceptance criteria provide adequate instructions to perform the required work in a quality manner. The applicable sections of the related documents shall be referenced in the procedure, or may, in some cases, constitute adequate procedures in themselves. Such documents shall receive the same level of review and approval as maintenance documents.

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

These procedures shall address safety-related work that requires a specific technique or sequence not normally part of an individual's routine skill. They support the requirements and programs of Section 13.5.1.1.3 regarding administrative control of maintenance.

13.5.2.2.7 Modifications Procedures

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

Proposed modifications that involve a license amendment or a change to Technical Specifications shall be processed as a proposed license amendment request.

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

13.5.2.2.8 Material Control Procedures

These procedures shall address the proper procurement, documentation, and control of materials and components to ensure that only correct and accepted items (consumables, items with limited shelf life, materials, parts, and components, including partially fabricated assemblies) are used or installed. These procedures shall be sufficiently detailed to ensure that materials and components are purchased and handled in a controlled manner in accordance with the QAPD.

13.5.2.2.9 Plant Security Procedures

The Physical Security Plan provided in Part 8 of the COL application describes the procedures that are utilized to implement its requirements.

13.5.3 REFERENCES

{This section is added as a supplement to the U.S. EPR FSAR.

ANSI, 1976. Overhead and Gantry Cranes, ANSI/ASME B30.2-1976, American Society of Mechanical Engineers, 1976.

NRC, 1978. Quality Assurance Program Requirements (Operation), Regulatory Guide 1.33, Revision 2, U.S. Nuclear Regulatory Commission, February 1978.

NRC, 1980. Clarification of the TMI Action Plan Requirements, NUREG-0737, U.S. Nuclear Regulatory Commission, November 1980.

NRC, 1983. Clarification of TMI Action Plan Requirements, NUREG-0737, Supplement 1, U.S. Nuclear Regulatory Commission, January 1983.}

13.6 SECURITY

This section of the U. S. EPR FSAR is incorporated by reference with the following supplements.

The U.S. EPR FSAR includes the following COL Items and conceptual design information in Section 13.6:

> The security plan consists of the [[physical security plan (PSP),]] the guard force training and qualification (T&Q) plan, and the safeguards contingency plan.
>
> A COL applicant that references the U.S. EPR design certification will provide a PSP to the NRC to fulfill the requirements of 10 CFR 52.79(a)(35).
>
> A COL applicant that references the U.S. EPR design certification will provide a site-specific security assessment that addresses identification of vital equipment, development of target sets, vulnerability assessments, defensive analyses, design features to enhance security, the portions of the NRC orders to the current operating plants that impact U.S. EPR design, and the other security features of the U.S. EPR that establish the security system design.

These COL Items and conceptural design information are addressed as follows:

The comprehensive Security Plan consists of the Physical Security Plan, the Training and Qualification Plan, and the Safeguards Contingency Plan. The Security Plan is submitted to the NRC as a separate licensing document in order to fulfill the requirements of 10 CFR 52.79(a)(35) (CFR, 2008b). The Security Plan meets the requirements contained in 10 CFR 26 (CFR, 2008a) and 10 CFR 73 (CFR, 2008d) and will be maintained in accordance with the requirements of 10 CFR 52.98 (CFR, 2008c). The Security Plan is classified as Security Safeguards Information and is withheld from public disclosure pursuant to 10 CFR 73.21(CFR, 2008e).

The Physical Security Plan during construction, including control of access to the new plant construction site, is consistent with NEI 03-12, Appendix F (NEI, 2007).

A comprehensive Security Plan is provided in COL Application Part 8. The schedule for security plan implementation is provided in Table 13.4-1.

There is a U.S. EPR Security Assessment report in addition to the Physical Security Plan, Training and Qualification Plan, and Contingency Plan. The assessment covers identification of vital equipment, development of target sets, vulnerability assessments, defensive analyses, design features to enhance security, the portions of the NRC orders to the current operating plants that impact U.S. EPR design, and the other security features of the U.S. EPR that establish the security system design. This report is categorized as Safeguards Information in accordance with 10 CFR 73.21.

A comprehensive Security Assessment is provided in COL Application Part 8.

The U.S. EPR FSAR includes the following conceptual design information in Section 13.6 for the security alarm system:

> The [[security alarm system]] will record each onsite alarm annunciation, including the location of each alarm, false alarm, alarm check, and tamper indication to include the type of alarm, location, alarm circuit, date and time.

This conceptual design information is addressed as follows:

The U.S. EPR FSAR description provided above is applicable to the plant-specific security alarm system and is incorporated by reference.

13.6.1 REFERENCES

{This section is added as a supplement to the U.S. EPR FSAR.

CFR, 2008a. Fitness for Duty Programs, Title 10, Code of Federal Regulations, Part 26, U.S. Nuclear Regulatory Commission, 2008.

CFR, 2008b. Contents of Applications; Technical Information in Final Safety Analysis Report, Title 10, Code of Federal Regulations, Part 52.79, U.S. Nuclear Regulatory Commission, 2008.

CFR, 2008c. Finality of Combined Licenses; Information Requests, Title 10, Code of Federal Regulations, Part 52.98, U.S. Nuclear Regulatory Commission, 2008.

CFR, 2008d. Physical Protection of Plants and Materials, Title 10, Code of Federal Regulations, Part 73, U.S. Nuclear Regulatory Commission, 2008.

CFR, 2008e. Requirements for the Protection of Safeguards Information, Title 10, Code of Federal Regulations, Part 73.21, U.S. Nuclear Regulatory Commission, 2008.

NEI, 2007. Security Measures during New Reactor Construction, NEI 03-12, Appendix F, Revision 2, Nuclear Energy Institute, September 2007.}

13.7 FITNESS FOR DUTY

This section of the U. S. EPR FSAR is incorporated by reference with the following supplements.

The U.S. EPR FSAR includes the following COL Item in Section 13.7:

> A COL applicant that references the U.S. EPR design certification will submit a PSP to the NRC to fulfill the fitness for duty requirements of 10 CFR Part 26.

This COL item is addressed as follows:

The Fitness for Duty (FFD) Program is implemented and maintained in two phases; the construction phase program and the operating phase program. The construction phase program is consistent with NEI 06-06 (NEI, 2007), which is currently under NRC review. NEI 06-06 provides implementation guidance consistent with the revised 10 CFR Part 26 regulations that are expected to be issued and become effective in early 2008. The construction phase program is implemented, as identified in Table 13.4-1, prior to on-site construction of safety- or security-related structures, systems, or components. {The operations phase program also is consistent with the expected revision to 10 CFR Part 26, and is implemented prior to initial fuel loading, as identified in Table 13.4-1.

The FFD Program is based on the revised 10 CFR Part 26 regulations that are expected to be issued and become effective in 2008, because on-site construction activities subject to 10 CFR Part 26 are not scheduled to occur until after that time. A request for an exemption from the current Part 26 regulations is discussed in COL Application Part 7.}

A comprehensive Security Plan is provided in COL Application Part 8.

13.7.1 REFERENCES

{This section is added as a supplement to the U.S. EPR FSAR.

NEI, 2007. NEI 06-06, Fitness for Duty Program Guidance for New Nuclear Power Plant Construction Sites, Revision 1, Nuclear Energy Institute, September 2007.}

13.8 REFERENCES

This section of the U. S. EPR FSAR is incorporated by reference.