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generation; transmission, substation and distribution systems; economic engineering and management consulting service, steel making and processing; cement and mineral processing; chemical and general industrial facilities; water desalination plants; institutional and commercial installations; environmental and solid waste treatment; and water production projects. Projects undertaken have ranged from large electric power generating plants and production facilities to small industrial boiler plants and allied service facilities.

Since 1942, Gilbert Associates has been responsible for the design of well over 100 thermal generating units, both fossil and nuclear power, representing approximately 50,000,000 kW of new generating capacity. The company's experience includes one of the first reheat units, one of the first once-through boiler units and one of the first supercritical steam pressure units. Individual unit designs have ranged in ratings up to 1,200,000 kW, and stations have varied in complexity - nuclear, mine-mouth, closed cycle cooling tower, base-load, peaking, and others.

Since 1950, Gilbert Associates has played an active and important role in the development of nuclear energy for private utilities, industry and governmental agencies. Gilbert Associates projects include complete programs of nuclear power development involving analysis of sites, complete evaluation of proposals, contract and fuel program assistance, preparation of license applications, containment vessel design concepts, and complete plant design and procurement. More than a score of studies, cost estimates, evaluations, concept developments, and preliminary plant designs have been prepared since 1953 for various utility customers and other clients. At the time of the submittal of the original FSAR, Gilbert had over 17,000,000 kW of generation under design, of which 10,600,000 kW was nuclear.

Gilbert Associates, Inc. is qualified to provide the required services for engineering and plant design.

- b. The General Electric Company (GE) was awarded the contract to design, fabricate, deliver, and install the single-cycle, boiling water nuclear steam supply system, to fabricate the first core of nuclear fuel and to provide technical direction for installation and startup of this equipment. General Electric has engaged in the development, design, construction, and operation of boiling water reactors (BWR) since 1955. Thus, General Electric has substantial experience, knowledge and capability to design, manufacture and furnish technical assistance for the installation and startup of the reactors.
  
- c. The General Electric Company (GE) was responsible for the design, fabrication and delivery of the turbine generator as well as for providing technical assistance for installation and startup of this equipment. General Electric has a long history in the application of turbine generators in nuclear power stations which goes back to the inception of nuclear facilities for the production of electrical power. General Electric furnished the turbine generator units for most of its BWR nuclear steam supply contracted stations. At the time of the original submittal of the FSAR, General Electric had firm orders to supply numerous turbine generator units for use in nuclear facilities, similar to the Perry Nuclear Power Plant. The inlet pressure of these units varied from 750 psig to 1,500 psig and the inlet temperature varied from saturation to approximately 40°F superheat. The ratings of these units ranged from 500,000 kW to 1,224,000 kW. Thus, General Electric is technically qualified to design, fabricate and deliver the turbine generator and to provide technical assistance for the installation and startup of the turbine generator.

- d. Raymond Kaiser Engineers, Incorporated (RKE) was engaged to assist in the construction management effort. At Perry, the construction management function was performed by an integrated team of experienced construction personnel from both CEI and RKE with overall supervision by CEI. Key individuals from each company performed vital tasks of the management program with the assistance, cooperation and direct efforts of the other.

Raymond Kaiser Engineers is one of the major engineering and construction firms that has continuously served a wide range of industrial clients in the aluminum, chemical, power, steel, and other industries throughout the world since 1914.

- e. The NUS Corporation was employed in the performance of environmental studies for preconstruction and construction monitoring.

NUS Corporation was established in 1960 to meet industrial and governmental needs in important sectors of nuclear technology. A significant activity of the firm through the years has been technical support in the analysis of environmental and process control factors associated with other facilities which employ nuclear materials. This has involved the evaluation of alternative sites and associated environmental factors, definition of the potential or actual nuclear pollutant source and the analysis of the release, transport, diffusion, and deposition of the pollutant materials, and their effects on the plant environment. In conjunction with this in-depth capability to analyze the pollutant chain, NUS has formulated waste system designs, established site and area monitoring and meteorological programs to assess the pollutant burden attributed to plant operation and its effects on the environment; and participated in negotiations with state and federal regulatory agencies.

NUS has been active in multiple discipline and environmental analysis. Diffusion meteorology, hydrology and limnology (thermal effects and waste dispersion), ecology, geology and seismology, and population studies have been utilized in assessing the effects of plant operations and release of pollutants. These efforts have played a major role in the site evaluation services NUS has performed for a number of utilities as well as the preparation of the Safety Analysis Reports for a number of nuclear power plants.

#### 13.1.1.1.1.1 Principal Site-Related Engineering Work

Principal site-related engineering work in the areas of geology, seismology and hydrology was performed by the project architect engineer, Gilbert Associates, Incorporated (GAI), with input in some specific areas from the NUS Corporation, the project environmental consultant. Meteorologic and demographic studies, and assessment of environmental effects were performed by the NUS Corporation. Work in all the aforementioned areas was initiated in 1972. Ongoing environmental assessments by NUS and CEI during plant construction were made according to the established Construction Environmental Monitoring Program that terminated in mid-1981. A demographic study of the area was completed in 1980. Radiation monitoring required for fuel load began early in 1981. The latest meteorological reports are maintained by CEI.

#### 13.1.1.1.1.2 Design of Plant and Ancillary Systems

Overall plant and system design was performed by GAI. General Electric was responsible for the design of the nuclear steam supply system.

#### 13.1.1.1.1.3 Review and Approval of Plant Design Features

The plant design features were prepared by GAI for review by the CEI's onsite Nuclear Engineering Department personnel in accordance with the Perry Corporate Nuclear Quality Assurance Program.

#### 13.1.1.1.1.4 Site Layout with Respect to Environmental Effects and Security Provisions

Orientation of the plant on the site was done in such a manner as to minimize terrestrial impact, specifically minimizing the number of trees which had to be removed. The wooded areas to the east and west of the plant were avoided as much as possible.

Security provisions have been accounted for in the layout of the site in accordance with applicable NRC regulations. These provisions are discussed in <Section 13.6.2>.

#### 13.1.1.1.1.5 Development of Safety Analysis Reports

FSAR preparation was coordinated by Perry Nuclear Licensing and Compliance Section personnel with primary input from GAI. Where necessary, additional input was provided by GE and the NUS Corporation.

The USAR is prepared by the Perry departments.

#### 13.1.1.1.1.6 Material and Component Specification Review and Approval

The Perry specifications were prepared by GAI for the majority of plant materials and components and were subject to review by CEI. Material and component specifications for the NSSS were established by General Electric and were also subject to review by CEI.

Safety-related specifications are reviewed in accordance with the Perry Corporate Nuclear Quality Assurance Program.

13.1.1.1.1.7 Procurement of Materials and Equipment

Material and equipment procurement solely for PNPP is performed by the PNPP Perry Services Department, an on-site element of CEI's Finance and Administration Group.

13.1.1.1.1.8 Management and Review of Construction Activities

From the beginning of construction on October 21, 1974, Project Management conducted regular meetings to review progress of construction activity and associated costs.

Personnel in the Cost and Schedules Section were responsible for developing the overall project budget, monitoring its financial status, and providing management with timely cost data.

Nuclear Construction Services Section personnel conducted field inspections on a daily basis to assure contractor compliance with the terms of their contract(s). They also monitored all costs associated with construction contractors.

13.1.1.1.2 Preoperational Activities

13.1.1.1.2.1 Development of Human Engineering Design Objectives and Design Phase Review of Proposed Control Room Layouts

The design and layout of the control room was developed by CEI/GAI after much consideration of such factors as space, layout, access, color, lighting, audio vs. visual alarms, viewing angles, and instrumentation labeling. Additionally, the BWR Owners Group Survey Team conducted a

survey in September, 1981 to identify any human factor design deficiencies in the plant panels. CEI utilized the Survey Report to identify those deficiencies requiring improvement.

The Perry Nuclear Engineering Department is responsible for implementing all corrections and improvements.

#### 13.1.1.1.2.2 Development and Implementation of Staff Recruiting and Training Program

The Nuclear Test Section of the Perry Plant Operations Department was assigned the responsibility for preoperational and acceptance testing of systems turned over from construction. The Nuclear Test Section developed procedures detailing the methods and requirements for indoctrinating, training and certifying test personnel. These procedures were incorporated in the Nuclear Test Section's Administrative Procedure matrix and were separate from the Training Program developed for the Perry operating organization and described in <Section 13.2>.

Recruiting of qualified personnel for staffing the Nuclear Test Section was accomplished with a combination of CEI and consultant personnel.

#### 13.1.1.1.2.3 Development of Plans for Initial Testing

Planning for initial testing began in 1975 and included numerous discussions with consultants, other utility nuclear testing organizations and the NRC Region III Office of Inspection and Enforcement. This planning effort resulted in the establishment of a testing organization within the Nuclear Engineering Department which was responsible for all aspects of acceptance and preoperational testing. Startup testing, commencing with fuel loading, was the responsibility of the Plant Manager and was implemented by the plant staff with assistance from GE and personnel from the testing organization. It was recognized

that, because of other concurrent project activities, CEI could not provide the total testing organization resources from within, in the proper number and qualification of personnel, without affecting project objectives in other areas. Therefore, an integrated CEI/consultant organization was developed which maximized overall project organization effectiveness.

Effective October 1, 1984, two plant operating departments, Perry Plant Operations Department and Perry Plant Technical Department were formed. The action included the transfer of responsibility for acceptance and preoperational testing (Nuclear Test Section) to the Perry Plant Operations Department. Planning and implementation of the Startup Test Program was the responsibility of the Perry Plant Technical Department.

To fill specific needs for fully qualified test personnel, the Nuclear Test Section had contracts, with seven separate testing service organizations, which identified the specific numbers, qualifications of, and timing for consultant additions to the Nuclear Test Section. The Nuclear Test Section was allocated the necessary budget and resources to efficiently plan, organize, develop, and implement an effective testing program.

Administrative controls for the preoperational test program were written and approved. For further details, refer to <Chapter 14>.

The startup test program was the responsibility of the Perry Plant Technical Department Manager and was implemented by the Startup Test Organization under the direction of the Startup Test Program Director, who reported directly to the Technical Superintendent. The Startup Test Organization consisted of Plant staff personnel, General Electric Startup Test-Design-Analysis personnel and Nuclear Test Section personnel who had participated in preoperational test phase activities.

The Perry Operations Manual contained procedures which defined the administrative controls that governed implementation of the startup test program. These procedures defined the responsibilities of organizations and personnel involved in the program. Volume 5 of the Operations Manual contained the individual startup test instructions discussed in <Chapter 14>. The test instructions to be used for each specific startup test were prepared by the Startup Test Organization, reviewed by PORC, GE and NQAD, and approved by the Plant Operations and Technical Department Managers. For further details, refer to <Chapter 14>.

The initial test program for Unit 1 was concluded in November 1987.

#### 13.1.1.1.2.4 Plant Maintenance Programs

Programs were developed to support plant maintenance activities during plant operations.

The maintenance staff is sized to perform activities associated with routine and preventive maintenance and will be supplemented as necessary by other internal personnel and/or outside contractor crews. In all cases, maintenance and repairs of safety-related equipment is performed under the direction of qualified supervision and in accordance with approved procedures, written instructions, vendor technical manuals, and applicable codes and regulations. Routine training meetings are held to ensure safety awareness and emphasize the importance of quality workmanship.

All maintenance activities, with the exception of those resulting from emergency situations are preplanned.

#### 13.1.1.1.3 Technical Support for Operations

Technical services and backup support for the operating organization have been established and are planned to continue throughout the life of the plant.

These services are designed to provide the necessary specialized expertise as needed in such areas as nuclear, mechanical, electrical, thermal-hydraulic and instrumentation and controls engineering, power production, licensing, and quality assurance. These services will be provided by on-site and corporate personnel. Additional expertise or services will be provided as required through the use of outside consultants and other available professional services.

Record keeping responsibilities are provided to the Site Vice President, Perry, and the FENOC President through the staff of FirstEnergy Corporate.

#### 13.1.1.1.2 FENOC Corporate Arrangement

The description of the FENOC corporate organization and the lines of authority, responsibility, and communication between the corporate organization and the site organization are defined and established in the FENOC Quality Assurance Program Manual (QAPM), which is incorporated by reference into this document.

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The operating organization is discussed in <Section 13.1.2>.

#### 13.1.1.2.1 Site Engineering Organization

The Site Engineering Department is shown on <Figure 13.1-2>.

The Director, Site Engineering, reports directly to the FENOC executive responsible for engineering and indirectly to the Site Vice President, Perry, and is responsible for the technical and engineering activities in support of site design control, plant modifications, and system performance requirements. An engineering assessment board, reporting to the Director, Site Engineering, reviews selected engineering products as a supplement to normal management reviews and approvals. Site Design Engineering, Plant Engineering, and Technical Services Engineering report to the Director, Site Engineering. The Director, Site Engineering, shall utilize fleet engineering resources when necessary in support of site engineering activities, and will provide assurance that all engineering activities in support of the site are accomplished in accordance with the appropriate, plant, fleet, and quality assurance policies and procedures.

The Manager, Site Design Engineering, is responsible for maintaining the station design basis. This includes plant modifications, plant design support, design basis and transient analysis, and technical support of plant systems and operations. The Manager, Site Design Engineering shall utilize fleet engineering resources when necessary in support of site design engineering activities. The Manager, Site Design Engineering, reports to the Director, Site Engineering.

The Manager, Plant Engineering, is responsible for short and long-term health of plant systems and components, providing technical support and services related to system health, and recommending and sponsoring system improvements to optimize availability and reliability, and for reactor engineering. The Manager, Plant Engineering shall utilize fleet engineering resources when necessary in support of site systems engineering activities. The Manager, Plant Engineering, reports to the Director, Site Engineering.

The Manager, Technical Services Engineering, is responsible for technical support of emergent plant issues, providing engineering technical services to support the operations and maintenance organizations, and ensuring engineering programs are effective through interface with site and fleet engineering resources. The Manager, Technical Services Engineering, reports to the Director, Site Engineering.

### 13.1.2 OPERATING ORGANIZATION

This section describes the structure and functions of the onsite organization established to operate and maintain Perry.

The operating organization consists of the Site Vice President, Perry, and departments whose functions are described in <Section 13.1.2.2>. The departments are the Site Operations Department (SOD) and the Site Performance Improvement Department (SPID).

The Site Vice President, Perry, shall have the corporate responsibility for overall plant nuclear safety at the site and shall take any measures needed to ensure acceptable performance of the site staff in operating, maintaining, and providing technical support to the plant to ensure nuclear safety.

#### 13.1.2.1 Perry Organization

The onsite Perry organization is shown on <Figure 13.1-2>. The NRC shall be notified of changes to the plant department's organization. These organization charts indicate the title of each position and reporting responsibilities. The minimum number of personnel required for operating shift positions (including common or duplicate positions), reporting responsibilities and the positions requiring NRC licenses are discussed in <Section 13.1.2.3>. All functional positions were filled by the time of initial fuel loading of Unit 1.

Additional consultant and contract personnel may be required to support normal crewing during outages and will be utilized as workloads dictate.

#### 13.1.2.2 Perry Personnel Functions and Authorities

The functions and authorities of selected Perry positions are summarized briefly in the following paragraphs.

#### 13.1.2.2.1 Site Operations Department

##### General Plant Manager

The General Plant Manager is the Plant Manager and performs the duties as described in the Technical Specifications. The General Plant Manager has overall responsibility for the safe operation of the plant including, but not limited to, plant operations, chemistry control, radiation protection, and fire protection. The General Plant Manager, is responsible for compliance with the plant's operating license, regulations and the FENOC Quality Assurance Program Manual. The General Plant Manager reports to the Site Vice President, Perry.

##### Manager, Site Operations Section

The Manager, Site Operations Section responsibilities include, but are not limited to, directing daily operation of the plant including all mechanical and electrical equipment, fire brigades, planning and scheduling of operations and radwaste activities including tests, startups and shutdowns, and directing the development and review of required procedures and instructions dealing with plant operations to assure that the plant is operated in accordance with the requirements of the Operating License and the Perry Operations Manual. The Manager, Site Operations Section reports to the General Plant Manager.

##### Manager, Site Maintenance Section

The Manager, Site Maintenance Section, responsibilities include, but are not limited to, directing maintenance repairs, overhauls, and preventive maintenance activities on plant equipment; and the Fix-It-Now (FIN) process. The scope of plant equipment includes mechanical, electrical, instrument and control systems, various microprocessor-based equipment, and also, control of tools and Measuring and Test Equipment. The Manager, Site Maintenance Section, reports to the General Plant Manager.

Manager, Site Chemistry Section

The Manager, Site Chemistry Section responsibilities include, but are not limited to directing activities associated with the control of radioactive effluents, environmental monitoring and compliance, and chemistry monitoring and controls to meet regulatory commitments. The environmental activities include the monitoring of the effects of plant

operation upon the environment, obtaining appropriate state and federal permits for air and water, and reporting as necessary to demonstrate compliance with applicable environmental regulations. The chemistry activities include development and implementation of the chemistry program, wet chemistry, plant process chemistry, system operations performed by chemistry and monitoring of all plant systems for chemical parameters to ensure compliance with regulatory requirements and industry guidance. The Manager, Site Chemistry, reports to the General Plant Manager.

#### Manager, Radiation Protection Section

The Manager, Radiation Protection Section is designated as the Radiation Protection Manager as defined in <Regulatory Guide 1.8>. The Radiation Protection Manager responsibilities include, but are not limited to, directing all activities associated with radiation protection and other radiological control services required to support plant operation and maintenance activities. This includes conducting the plant radiological survey activities required to ensure that personnel exposure to radiation and radioactive materials is maintained within regulatory guidelines and that such exposure is kept as low as reasonably achievable (ALARA). If the Manager, Radiation Protection Section, does not meet the Radiation Protection Manager qualifications specified in <Regulatory Guide 1.8>, an individual, who meets the Radiation Protection Manager qualifications specified in <Regulatory Guide 1.8>, shall be designated as the technical specification qualified Radiation Protection Manager, who shall be responsible for all of the aforementioned activities for which the Radiation Protection Manager is responsible, including reviewing, approving and signing/countersigning all associated documents. The Radiation Protection Manager has direct reporting authorization to the General Plant Manager and/or the Site Vice President and shall have sufficient operational freedom to ensure independence from operating pressures in order to carry out radiation

protection duties. The Manager, Radiation Protection Section is responsible for staffing, budgeting, department coordination activities, and other non-technical specification Radiation Protection Manager related duties. The Manager, Radiation Protection Section reports to the General Plant Manager.

Manager, Site Outage Management Section

The Manager, Site Outage Management Section, responsibilities include, but are not limited to, directing the scheduling and coordination of all plant outages. The Manager, Site Outage Management Section, reports to the General Plant Manager.

Manager, Site Work Management Section

The Manager, Site Work Management Section, responsibilities include, but are not limited to directing the scheduling for maintenance and testing performed during power operations. The Manager, Site Work Management Section, reports to the General Plant Manager.

13.1.2.2.2 Site Performance Improvement Department

Director, Site Performance Improvement Department

The Director, Site Performance Improvement Department (SPID) has the overall responsibility for site training, compliance with the plant operating license and regulations, emergency planning activities, and monitoring the site's performance of the Corrective Action Program. The Director, SPID reports to the Site Vice President - Perry.

Manager, Site Regulatory Compliance Section

The Manager, Site Regulatory Compliance Section responsibilities include, but are not limited to general regulatory compliance activities, and managing the Corrective Action Program. The Manager, Site Regulatory Compliance Section reports to the Director, SPID.

Manager, Emergency Response Section

The Manager, Emergency Response Section responsibilities include, but are not limited to, coordinating efforts toward developing and maintaining onsite and offsite emergency response procedures for Perry's emergency planning zone and maintaining the emergency plan. The Manager, Emergency Response Section reports to the Director, SPID.

Manager, Site Training Section

The Manager, Site Training Section responsibilities include, but are not limited to developing a Perry Training Program based on the input of the Perry departments, government regulations, and industry standards; scheduling training activities; and maintaining documentation of training completed. The Manager, Site Training Section reports to the Director, SPID.

#### 13.1.2.2.5 Operating Shift Crews

Procedures and instructions are issued to delineate the responsibilities and authorities of the Shift Managers and shift operating crews for:

- a. Adhering to the plant Technical Specifications and the Perry Operations Manual.
- b. Observing and responding to instrument indications unless proven false.
- c. Shutting down the reactor when it is determined that safety of the reactor is in jeopardy or when operating parameters exceed any of the reactor protection setpoints and automatic shutdown does not occur.
- d. Determining the circumstance, cause and limits under which operations can safely proceed, before returning the reactor to power following a trip or an unscheduled or unexplained power reduction.
- e. Reviewing routine operating data to assure safe operation.
- f. Meeting the requirements of <10 CFR 50.54(i)>, <10 CFR 50.54(j)>, <10 CFR 50.54(k)>, <10 CFR 50.54(l)>, and <10 CFR 50.54(m)> pertaining to reactor operator and senior reactor operator licensed personnel.

- g. Departing from approved procedures and instructions in cases of emergency, if necessary to prevent injury to personnel and/or the public or to prevent damage to the plant facility.
- h. Identifying and providing feedback for desired modifications to plant procedures and instructions.

The functions and responsibilities of the various shift crew positions are summarized as follows:

Superintendent, Shift Operations

The Superintendent, Shift Operations is responsible for supervising the Shift Managers and for assisting the Manager, Operations Section in the efficient and reliable operation of the plant. This includes coordinating operating and refueling activities, performing analyses of plant operations, developing methods to ensure effective operating practices, and coordinating investigations of plant equipment damage and malfunctions. The Superintendent, Shift Operations reports to the Manager, Operations Section.

### Shift Manager

The Shift Manager on duty is responsible for operating the plant in compliance with licensing requirements, administrative controls and operating instructions. This includes, when warranted, approving on-shift operations that deviate from established procedures and instructions, evaluating operating experiences and providing on-shift technical advice to the Unit Supervisors.

Administrative procedures have been written to clearly define the Shift Manager's command and control responsibilities and authorities and to emphasize responsibility for safe operation of the plant. Those functions which clearly detract from responsibility for assuring safe operation of the plant will be assigned to other personnel.

The Shift Manager reports to the Superintendent, Shift Operations, Operations Section.

### Unit Supervisor

The Unit Supervisor is responsible for assisting the Shift Manager on duty in operating the plant in a safe and dependable manner. This includes supervising the reactor operators, plant operators, attendants and assistants required to operate the unit, instructing the shift operating crew concerning temporary and permanent changes to the Perry Operations Manual, and assisting the Shift Manager in administrative duties. The Unit Supervisor reports to the Shift Manager.

### Reactor Operator

The Reactor Operator is responsible for directing the activities of the non-licensed shift employees including plant operators, attendants,

assistants, and others as may be assigned for special tasks to insure proper operation and monitoring of plant systems and equipment. The Reactor Operator reports to the Unit Supervisor.

#### Plant Operator

The Plant Operator is the senior non-exempt operating person on each shift. The Plant Operator performs routine inspections and operations on plant equipment outside the control room at the direction of the Reactor Operator, Unit Supervisor or Shift Manager.

##### 13.1.2.2.6 Succession of Authority

The General Plant Manager has overall responsibility for all plant activities during normal operations. In the event of unexpected contingencies of a temporary nature, when the General Plant Manager is unavailable, responsibility will be delegated to the following positions in the order listed:

- a. Manager, Perry Operations Section
- b. Superintendent, Shift Operations
- c. Shift Manager

Administrative procedures have been written to limit access to the control room and to establish a clear line of authority, responsibility and succession in the control room.

##### 13.1.2.2.7 Technical Specification Equivalent Positions

The improved Technical Specifications (Amendment 69) introduced the concept of generic position descriptions with the intent that the USAR

would provide a list of the equivalent Perry-specific titles. Hence, as used in the Technical Specifications, the following equivalences are applied.

<u>Technical Specification description:</u>	<u>Perry equivalent:</u>
corporate executive responsible for overall plant nuclear safety	Site Vice President, Perry
plant manager	General Plant Manager
shift supervisor	Shift Manager
shift technical advisor	Shift Engineer
auxiliary operator	Plant Operator
auxiliary operator	Plant Operator Assistant
radiation protection manager	Manager, Radiation Protection Section
radiation protection supervisor	Radiation Protection Supervisor
radiation protection technician	Radiation Protection Technician

#### 13.1.2.3 Operating Shift Crews

Perry normally has a minimum of five operating shift crews. During plant shutdown conditions, the number of shift crews may be less than five in order to better accommodate outage workload and scheduling requirements. Each operating shift crew is qualified to carry out

activities related to plant operations. Position titles, license requirements and their equivalent to positions listed in ANSI N 18.1-1971 are as follows:

<u>Perry Position or Title</u>	<u>License</u>	<u>ANSI N 18.1-1971 Equivalent</u>
Shift Manager	SRO	Supervisor requiring NRC license
Unit Supervisor	SRO	Supervisor requiring NRC license
Reactor Operator	RO	Operator
Plant Operator	-	-
Plant Operator Assistant	-	-
Plant Attendant	-	-
Radiation Protection		
Technician	-	Technician
Chemistry Technician	-	Technician
I & C Technician	-	Technician
Shift Engineer	-	-

The provision of Technical Specification 5.2.2.c does not permit any shift crew position to be unmanned upon shift change due to an oncoming shift crewman being late or absent. The Perry operating shift crews are staffed in accordance with Technical Specifications, Section 5.2.2 and with the following:

MINIMUM SHIFT CREW COMPOSITION

<u>Position</u>	<u>NUMBER OF INDIVIDUALS REQUIRED TO FILL POSITION</u>	
	<u>MODE 1, 2, or 3</u>	<u>MODE 4 or 5</u>
Shift Manager	1	1
Unit Supervisor	1	None

MINIMUM SHIFT CREW COMPOSITION (Continued)

<u>Position</u>	<u>NUMBER OF INDIVIDUALS REQUIRED TO FILL POSITION</u>	
	<u>MODE 1, 2, or 3</u>	<u>MODE 4 or 5</u>
Shift Engineer	1 <sup>(1)</sup>	None
Reactor Operator	2	1
Plant Operator	1	1
Plant Operator Assistant	1 <sup>(2)</sup>	None
Radwaste Supervising Operator	1	1
Radiation Protection Technician	1	1
Chemistry Technician	1	1
I&C Technician	1	1

NOTES:

<sup>(1)</sup> The Shift Engineer position may be filled by an on-shift Shift Manager or Senior Reactor Operator provided the individual meets the qualification requirements.

<sup>(2)</sup> The Plant Operator Assistant position may be filled by a Plant Operator.

All CORE ALTERATIONS shall be observed and directly supervised by either a licensed Senior Operator or licensed Senior Operator Limited to Fuel Handling who has no other concurrent responsibilities during this operation.

An around-the-clock radiation protection program will be implemented by the presence of at least one individual qualified in radiation protection. Additional personnel will be scheduled as required to cover special jobs or work loads as determined by radiation protection supervision. During normal work days, the radiation protection

personnel report to radiation protection supervision. During off shifts and weekends, the radiation protection personnel will report to radiation protection supervision or to the Shift Manager.

A Shift Engineer (Shift Technical Advisor) is on shift reporting to the Shift Manager and available to provide technical support to the Shift Manager, including advising him on the safety status of the plant, diagnosing plant accidents and recommending actions to mitigate the consequences of accidents. In addition, the Shift Engineer shall meet the qualifications specified by the Commission Policy Statement on Engineering Expertise on shift. The Shift Engineer shall have a bachelor's degree or equivalent in a scientific or engineering discipline and shall have received specific training in the response and analysis of the unit for transients and accidents, and in unit design and layout, including the capabilities of instrumentation and controls in the control room. The Shift Engineer position may be filled by an on-shift Shift Manager or Senior Reactor Operator provided the individual meets the Commission Policy Statement on Engineering Expertise on shift. The Shift Engineer provides on shift reactor engineering support, if qualified. Administrative procedures require all planned control rod movements be performed as specified by a qualified reactor engineer.

Administrative procedures have been written to limit maximum working hours for those personnel performing safety-related functions.

### 13.1.3 QUALIFICATIONS OF PERSONNEL

Qualifications for personnel are described in the following sections.

#### 13.1.3.1 Qualification Requirements

Perry follows the guidelines set forth in <Regulatory Guide 1.8> for selection and training of management personnel, as discussed in <Section 1.8>. <Table 13.1-1> lists select members of the plant staff and designates equivalent ANSI N 18.1-1971 titles as a comparison.

#### 13.1.3.2 Qualifications of Plant Personnel

The qualifications for positions equivalent to ANSI N18.1-1971 are met except as noted on <Table 13.1-1>.

Members of the staff possess the combined education and expertise to reasonably ensure that decisions and actions required from design through operating phases will not result in a hazard to the health and safety of employees and the public.

#### 13.1.4 REFERENCES

1. NRC Safety Evaluation Report dated June 27, 1995 accompanying Amendment 70 to the Technical Specifications.

TABLE 13.1-1

SELECT PERRY STAFF TITLES AND ANSI N18.1-1971 EQUIVALENT

<u>Perry Position or Title</u>	<u>ANSI N18.1-1971 Equivalent</u>
General Plant Manager	Plant Manager <sup>(1)</sup>
Director, Site Performance Improvement Department	Technical Manager
Director, Site Engineering	Engineer In Charge <sup>(1)</sup> Technical Manager <sup>(1)</sup>
Manager, Site Operations Section	Operations Manager <sup>(1) (2)</sup>
Manager, Site Chemistry Section	Technical Manager
Superintendent, Shift Operations	Operations Manager
Shift Managers	Supervisors requiring NRC License <sup>(1) (3)</sup>
Unit Supervisors	Supervisors requiring NRC License <sup>(1) (3)</sup>
Reactor Operators	Operators <sup>(1) (3)</sup>
Manager, Site Maintenance Section	Maintenance Manager <sup>(1)</sup>
Manager, Site Work Management Section	Maintenance Manager <sup>(1)</sup>
Manager, Site Outage Management Section	Maintenance Manager <sup>(1)</sup>
Superintendents, Maintenance Units	Supervisor not requiring NRC License <sup>(1)</sup>

TABLE 13.1-1 (Continued)

SELECT PERRY STAFF TITLES AND ANSI N18.1-1971 EQUIVALENT

<u>Perry Position or Title</u>	<u>ANSI N18.1-1971 Equivalent</u>
Manager, Design Engineering Section	Technical Manager
Manager, Plant and Equipment Reliability Engineering Section	Technical Manager
Reactor Engineer	Professional-Technical, Reactor Engineering and Physics <sup>(1)</sup>
Manager, Site Radiation Protection Section	Technical Manager

NOTES:

- (1) Denotes the ANSI N18.1-1971 positions and the corresponding Perry Supervisory and Operating Staff titles that fill those positions. Additional staff positions and ANSI equivalents have been shown to identify the depth and qualifications of the Perry staff.
- (2) If the Manager, Perry Operations Section does not have a Senior Reactor Operator (SRO) license, an operations middle manager (e.g., Superintendent, Shift Operations) shall maintain an SRO license. This individual shall meet the qualifications described in Section 4.3.8 of ANSI/ANS-3.1-1993.
- (3) Individuals requiring NRC licenses will satisfy the requirements of <10 CFR 55> in lieu of the requirements of ANSI N18.1-1971.

13.2            TRAINING PROGRAM

13.2.1            PERRY STAFF TRAINING PROGRAM

The Perry Staff Training Program has been developed and implemented to:

- a.    Ensure that personnel are effectively trained and qualified to safely operate and maintain the plant throughout its design life.
- b.    Meet or exceed all regulatory requirements.
- c.    Meet or exceed current INPO Training Guidelines.

Development of the training program outlined in this section will meet or exceed the requirements of <10 CFR 50>, <10 CFR 55> and other applicable industry standards. The training programs are developed using a systematic approach to training in that the specific objectives for all levels of instruction outlined in this section are derived from the job analysis for the applicable position. Additionally, student and supervisor feedback and on-the-job performance are also factored into applicable training program content.

The following training programs at Perry are accredited by INPO:

- a.    Non-licensed Operator
- b.    Reactor Operator
- c.    Senior Reactor Operator
- d.    Shift Manager
- e.    Shift Engineer/Shift Technical Advisor
- f.    Instrument & Control Technician and Supervisor
- g.    Electrical Maintenance Personnel and Supervisor
- h.    Mechanical Maintenance Personnel and Supervisor
- i.    Chemistry Technician

- j. Radiation Protection Technician
- k. Engineering Personnel
- l. Continuing Training for Licensed Personnel.

Perry maintains these training programs according to INPO Training Guidelines.

The Training Manager is responsible for the overall program. He designates qualified individuals to prepare learning objectives, instructor guides, lectures, tests, and examinations, and to provide performance evaluations for various aspects of the training program. The detailed program description which follows is divided into three sections relating to the categories of personnel being trained: (1) Licensed Personnel, (2) Non-Licensed Technical Personnel and (3) Plant Access Training Programs.

The programs outlined below are specifically written for Perry Unit 1. The specific arrangement or structure of the training provided may vary from this section based upon feedback and changing requirements.

## 13.2.2 LICENSED OPERATOR TRAINING PROGRAM

The Licensed Operator Training Program has been developed to ensure that the individuals who operate the controls of the Perry Plant are competent to do so. The Licensed Operator Training Program is taught at the Senior Reactor Operator level and provides training in job-related knowledge requirements and skills.

Written and/or oral examinations are periodically given to students during the completion of the Licensed Operator Training Program. These examinations are given to evaluate student performance and to assess the level of comprehension of the course material.

### 13.2.2.1 Initial Training

#### 13.2.2.1.1 Academic Refresher Training

License candidates will receive classroom training in subjects covering science and engineering (such as heat transfer, fluid flow, thermodynamics).

#### 13.2.2.1.2 Systems Operation Training

License candidates will receive classroom instruction on Nuclear Steam Supply Systems (NSSS) and selected Balance of Plant (BOP) Systems important to safety over which the licensed control room operator has control or cognizance. This training also includes instruction on the normal operating procedures for the operation of the plant.

#### 13.2.2.1.3 Simulator Training

License candidates participate in a Simulator Training Course which prepares the individual to proficiently conduct routine evolutions and carry out abnormal/emergency actions from the control room. The

simulator utilized in this program will have operating characteristics and control room design similar to those of the Perry Plant.

The simulator training courses prepare the student to operate Perry under normal conditions as well as provide extensive training in transients and casualty response.

Exercises involving multiple failures and/or operator error are also included. Utilization of applicable plant procedures and Technical Specifications during training exercises are emphasized.

Students are evaluated on a periodic basis and provided feedback in order to improve their performance. A final review and evaluation will be given as described in <Section 13.2.2.1.5.2>.

#### 13.2.2.1.4 Operating Practices Training

License candidates gain experience in plant operation and casualty response through a combination of in-plant, on-shift training and classroom presentations/discussions. This training includes Administrative Requirements Training, Plant Operation and Casualty Response Training.

##### 13.2.2.1.4.1 Administrative Requirements Training

License candidates receive training in the plant administrative procedures, policies, practices, and Technical Specifications which affect the licensed control room operator.

#### 13.2.2.1.4.2 Plant Operation and Casualty Response Training

License candidates and applicable Operations Management Staff receive classroom training on the following subjects:

- a. Abnormal and emergency operating procedures.
- b. Plant transients and accident analysis.
- c. Recognition and mitigation of the consequences of core damage.
- d. Site Emergency Plan including applicable Emergency Implementing Instructions.

#### 13.2.2.1.4.3 On-The-Job Training

License candidates spend time on shift in a training status, with no concurrent duties, under the supervision and guidance of a licensed reactor operator or senior reactor operator, as appropriate. The intent of this training period is for each candidate to gain experience in the routine operation of the nuclear power plant. During this period, the candidate will perform duties of the licensed reactor operator or senior reactor operator, as appropriate, including reactivity manipulations. These duties will be evaluated by the licensed operator or senior operator to ensure the duties are performed correctly and in accordance with approved procedures and in other standards which may be promulgated. A Qual Card will be used to verify progress and correct performance of the duties.

#### 13.2.2.1.5 License Examination Preparation

Prior to the proposed NRC examination date, each license candidate's progress in the training program is evaluated to assess the candidate's

ability to safely and competently operate the plant. The license examination preparation period includes a simulator refresher period (when required), an Audit examination and a Management Board review.

#### 13.2.2.1.5.1 Audit Examination

License candidates are administered NRC-style, comprehensive, written, oral, and performance examinations. The standards for these examinations are those in current use by the NRC at the time of the examination. The intent of these examinations is to determine the individual's ability to operate the plant in a safe and competent manner. If the candidate's performance is unsatisfactory, the candidate's weaknesses are evaluated, and a remedial training program may be developed to correct those weaknesses. Alternatively, the candidate will not be allowed to take the NRC license examination.

#### 13.2.2.1.5.2 Management Board

Prior to the actual NRC license examination, the candidate's overall performance in the Licensed Operator Training Program is reviewed by a Management Board. The Management Board verifies that the NRC examination prerequisites are satisfied, that the operator training program has been completed, and that the candidate can safely operate the plant. If the Management Board determines that the candidate's performance is satisfactory and that the candidate meets all prerequisites, the candidate will be recommended for NRC License Examination to the Site Vice President, Perry who is responsible for certifying the competency of each license candidate.

#### 13.2.2.1.6 SRO Upgrade

Candidates for Senior Operator who currently hold an Operator's license on PNPP will complete an SRO Upgrade Training Program to upgrade their knowledge and skills to those required of Senior Operators.

#### 13.2.2.1.7 Direct Senior Operator Training Program

Direct Senior Operators (those who have not previously held an operators license) will complete a program as developed and implemented in accordance with the Training Manual.

#### 13.2.2.1.8 Licensed Operator Training Program Instructors

Instructors for the Licensed Operator Training Program who teach systems, integrated plant response, transients, and simulator courses to license candidates or NRC licensed personnel shall either complete an instructor certification program or be a guest presenter in accordance with the Training Manual.

#### 13.2.2.1.9 Previous Nuclear Training

An individual's participation in nuclear training programs at this or other facilities or previous education that satisfied the intent of the program outlined in <Section 13.2.2.1> may be substituted for portions of the training outlined for reactor operator and senior reactor operator candidates. The individual's successful completion of these other training programs will be verified prior to excusing the individual from segments of the program described in <Section 13.2.2.1>. In cases where objective evidence is not available to document completion of other training programs, procedures have been established to verify the individual's knowledge through written or oral examinations.

Substitutions of previous training will not be authorized for special PNPP equipment operations training (e.g., Emergency Diesel Generator Operations Training) unless such training is on identical equipment.

#### 13.2.2.1.10 Diesel Generator Training for Licensed and Non-Licensed Personnel

13.2.2.1.10.1 Diesel Generator Operation Training

All licensed and non-licensed operators responsible for the safe operation of the emergency diesel generators shall successfully complete a course covering the operation of the emergency diesel generators.

13.2.2.1.10.2 Diesel Generator Maintenance Training

Maintenance personnel responsible for the performance of maintenance on the emergency diesel generator shall successfully complete a course covering the maintenance repair and troubleshooting of the emergency diesel generator.

13.2.2.2 Retraining and Requalification Programs

13.2.2.2.1 Licensed Operator Requalification Training Program

A continuing requalification training program for licensed operators and senior operators has been implemented in accordance with <10 CFR 55>. Licensed operators and senior operators are required to participate in the requalification program as described in this section. The Licensed Operator Requalification Program consists of regularly scheduled lectures, simulator training, examinations, and accelerated requalification (when necessary). Each of these elements is discussed in the paragraphs below.

13.2.2.2.1.1 Regularly Scheduled Lectures

The Requalification Program includes preplanned lectures given throughout the requalification period. Emphasis shall be placed on those areas where plant operating experience, industry experience, design or procedure change, or Operator and Senior Operator written examinations indicate that an increase in scope and depth of coverage is needed.

#### 13.2.2.2.1.2 Simulator Training

Licensed Operators and Senior Operators will participate in a preplanned Simulator Training Program during the period of the Requalification Program.

#### 13.2.2.2.1.3 Examinations and Evaluations

Requalification examinations are given to each licensed operator and senior operator. A comprehensive written examination is administered at least every two years, while the operating test (typically consisting of a simulator evaluation and job performance measures) is given annually. The results of each of these examinations will be determined using the NRC criteria prevailing at the time of the particular examination.

#### 13.2.2.2.1.4 Accelerated Requalification

Individuals who perform unsatisfactorily on the requalification examinations described in <Section 13.2.2.2.1.3> will not be allowed to perform licensed duties until they successfully complete an accelerated requalification program as described in the Training Manual.

13.2.2.2.1.5            Requalification of Inactive Operators and Senior Operators

Any Licensed Operator or Licensed Senior Operator who, for any reason, has not been actively performing the functions of an Operator or Senior Operator for a calendar quarter or longer will, prior to resuming activities for which that individual is licensed, demonstrate knowledge of facility operation. This demonstration will be accomplished by having a qualified member of the station management verify that:

- a.    The qualifications and status of the licensee are current and valid.
- b.    The licensee has completed a minimum of 40 hours of shift functions under the direction of a Licensed Operator or Senior Operator as appropriate. During this time, a complete tour of the plant and all required shift turnover procedures will be completed.
- c.    For Senior Operators limited to fuel handling, one entire shift must be completed under the direction of a Senior Operator or Senior Operator limited to fuel handling.

13.2.3                    TRAINING PROGRAMS FOR NON-LICENSED PERSONNEL

Training programs for management, supervisory, professional, and technical personnel not requiring NRC licenses are provided. Trainee performance in these programs will be evaluated to ensure that the trainees have obtained an adequate knowledge of the subject matter. The individual programs are evaluated to ensure they are providing the training necessary for the personnel to fulfill their job functions.

Training for individuals in these categories is based upon the individual's background, experience, ability, and the position duties and responsibilities. This training is accomplished through a combination of vendor-supplied courses and courses developed and instructed by the PNPP Training Staff. In addition, Non-Licensed Technical Personnel will participate in a Continuing Training Program applicable to their job certification.

#### 13.2.3.1 Non-Licensed Operator Training Program

The Non-Licensed Operator Training Program contains training programs for the various non-licensed operator positions. The initial training program is an entry level program, and is designed to lead individuals to ultimately become Perry Plant Operators (PPO). The training typically consists of classroom presentations on power plant fundamentals, power plant theory, and systems. The program also includes on-shift training in the plant.

#### 13.2.3.2 Shift Engineer (Shift Technical Advisor) (STA) Training Program

The Shift Engineer Training Program is designed to ensure that individuals assigned to this position are prepared to make evaluations concerning plant safety and provide technical assistance to the operating shift. The Shift Engineer Training Program will be taught to the Senior Operator Level and may contain the elements described in <Section 13.2.2.1.2>, <Section 13.2.2.1.3>, and <Section 13.2.2.1.4>. Additionally, Shift Engineers receive training that relates to their function during power operation and outages. This typically covers the process computer, reactor behavior, thermal hydraulics, Technical Specifications, core thermal limit calculations, core reactivity, and the procedures that directly involve the functions of the Shift Engineer.

#### 13.2.3.3 Instrument and Control Technician Training Programs

The Instrument and Control Technician Training Program consists of classroom presentations, laboratory training and on-the-job training. The classroom presentations include fundamentals relevant to the discipline, I&C procedures training and discussion of Technical Specifications. The Instrumentation and Control Technician Training Program is supplemented, when required, by special I&C courses (such as Diesel Generators, RCIS, Nuclear Instrumentation) presented by equipment vendors.

#### 13.2.3.4 Maintenance Personnel Training Program

Training programs for Maintenance Technicians (Mechanical and Electrical) are provided to ensure that these technicians have or acquire appropriate job-related knowledge and skills. Each training program (Mechanical and Electrical) consists of classroom presentations, laboratory training and on-the-job training. The classroom presentations include fundamentals relevant to the discipline, maintenance procedures training and discussion of Technical Specifications. The Maintenance Personnel Training Programs are supplemented, when required, by special maintenance courses (e.g., emergency diesel generator maintenance, control rod drive maintenance, SRVs, MSIVs, Reactor Recirc Pump Seals) presented by equipment vendors and/or FENOC Training Staff.

#### 13.2.3.5 Chemistry Training Program

The Chemistry Training Program consists of classroom lectures and on-the-job training. The classroom training typically includes theory, practical application, procedures, applicable Technical Specifications, and selected PNPP systems training. The Chemistry Training Program is supplemented, when required, by courses presented by equipment vendors.

13.2.3.6 Radiation Protection Technician Training Program

The Radiation Protection Technician Training Program consists of classroom lectures and on-the-job training. The classroom training typically includes health physics technology, theory procedures, applicable Technical Specifications, introduction to Perry systems, and concepts of ALARA. The Radiation Protection Training Program is supplemented, when required, by courses presented by equipment vendors.

13.2.3.7 Engineering Support Personnel Training Program

The Engineering Support personnel Training Program consists of classroom lectures, simulator training, and position-specific on-the-job training. The curriculum provides both a broad-based education in nuclear fundamentals and position-specific training necessary for engineering staff enrolled in the program to be able to perform their jobs competently. The Engineering Support Personnel Training Program is supplemented, when required, with courses presented by vendors.

13.2.3.8 Management Supervisory Training

Plant management will attend supervisory courses applicable for the job position assigned.

13.2.4 PLANT ACCESS TRAINING

The Plant Access Training Program provides individuals with an indoctrination in the general requirements necessary to gain access to the plant. This program enhances employee effectiveness and safety by covering plant organization, security, safety regulations, radiation fundamentals, and the emergency plan. All individuals who require unescorted access to the protected area of Perry must complete Plant Access Training.

In addition to Plant Access Training for gate access, Radiation Worker Training is provided for employees who will work in radiation areas. This course covers basic radiation theory, exposure controls, safe work practices, and worker's rights and responsibilities. Specialized training is also provided for individuals who will wear respiratory equipment in the performance of their jobs.

#### 13.2.5 FIRE PROTECTION TRAINING

The primary purpose of fire protection training is to develop a group of plant employees knowledgeable in fire prevention, fire fighting techniques and equipment, first aid procedures, and emergency response who are trained and equipped to function as a team for the fighting of fires. The plant fire protection organization, consisting of a fire prevention staff, fire brigade and on-shift personnel, is intended to be self-sufficient with respect to fire fighting activities. A fire brigade consisting of a brigade leader with either a reactor operator's license or equivalent knowledge of plant safety-related systems (simulator certification with plant systems familiarity) and four other personnel will be available on all shifts. Two of the four other personnel shall have sufficient training in or knowledge of plant safety-related systems to understand the effect of fire and fire suppressants on safe shutdown capability. Fire brigade members will have no duties during a fire except those directly related to manual fire fighting.

Prior to assignment to the fire brigade, and annually thereafter, each member will receive a physical examination that will ensure that no physical conditions exist that would prevent proper performance of strenuous fire fighting activities.

The fire brigade will be equipped with sufficient quantities of personal protective equipment, manual suppression equipment and other equipment necessary for effective fire fighting. Equipment will meet criteria stipulated in <10 CFR 50, Appendix R>, Section H.

13.2.5.1 Fire Brigade Training (X8)

The fire brigade training program provides for classroom training, practice sessions and drills and meets the criteria stipulated in <10 CFR 50, Appendix R>, Section III.I.

The initial fire brigade receives classroom training in the fundamentals of fire fighting, fire prevention, fire protection equipment, fire brigade organization, hazard recognition, implementing procedures, and individual responsibilities.

A periodic training program will be conducted for all designated brigade members and replacements, on a regularly scheduled basis in conjunction with operation periodic training. The periodic training program will be repeated on a two-year cycle and includes instruction on:

- a. The plant fire brigade organization and plan of implementation, including individual responsibilities and specific response procedures.
- b. Basic fire fighting principles such as the chemistry of fire, first aid and rescue procedures, forcible entry methods and salvage techniques.
- c. Identification of the location of various fire fighting equipment throughout the plant, access and egress routes, latest plant modifications that affect fire protection, and current fire fighting procedures.

- d. The proper use of available fire fighting equipment including both permanent and portable systems such as deluge systems, detection and alarm systems, sprinklers, fire hoses, extinguishers, ladders, communication, lighting, ventilation, and emergency breathing equipment.
- e. Identification of the fire hazards and associated types of fires that could occur in the plant, probable locations and the correct methods of fighting each type of fire. Included are electrical fires, cable tray fires, flammable gas fires, flammable liquid fires, record file fires, and other ordinary combustible fires.

Fire brigade leaders will be provided additional training in directing and coordinating fire fighting activities. The NFPA Fire Protection Handbook, NFPA National Fire Codes and others are used as references for conducting all training activities. Classroom training is provided by qualified individuals knowledgeable and experienced in fire fighting and in using the types of equipment available in a nuclear plant. Members of the fire protection staff and fire brigade leaders are responsible for conducting this training.

Practice sessions are held for fire brigade members annually. These sessions will be utilized to provide instruction in the proper methods of fighting various types of fires and will include practical exercises in extinguishing actual fires. During these exercises, brigade members will don protective equipment including self-contained breathing apparatus.

Fire drills are conducted in the plant so that the fire brigade can practice as a team. Drills are conducted at regular intervals, that will not exceed three months for each fire brigade.

Fire brigade drills shall be performed quarterly per shift with intervening intervals no more than five months nor less than one month

for any given shift. At least one drill per year for each fire brigade is unannounced. Drills are preplanned to provide experience for each team in fighting fires in various areas of the plant with emphasis on safety-related areas containing significant hazards.

The drills are selected to simulate as realistically as practical the size, type and location of potential fires which could occur in the plant and to provide as much experience as possible in the use of the various fire fighting equipment available. Each drill is critiqued to evaluate the entire brigade response and how well the objectives were met. Fire alarm response time, leaders' direction of the effort, each individual members' response, selection, placement, and use of equipment are assessed by the critique.

#### 13.2.5.2 Fire Protection Staff Training

Training for the fire protection staff members includes courses in design and maintenance of fire detection, suppression and extinguishing systems, fire prevention and manual fire fighting techniques, and procedures for plant personnel and the fire brigade.

#### 13.2.5.3 On-Shift Personnel

Sufficient on-shift personnel to meet the requirements of <10 CFR 50, Appendix R> will receive fire fighting training. These on-shift personnel will be available and trained to assist members of the fire brigade as necessary.

#### 13.2.5.4 Offsite Fire Department

Public fire department response is limited to assistance outside the restricted (protected) area or as additional manpower under the direct supervision and control of responsible plant personnel inside the restricted area.

Training sessions for these personnel will be available periodically to cover basic radiation principles, typical radiation hazards, precautions for fires involving radioactive materials, station layout, fire hydrant locations outside the restricted area, basic emergency plans, and plant security procedures.

13.3        EMERGENCY PLANNING

A detailed emergency plan document describing the plans for coping with emergency situations is provided in the Emergency Plan for the Perry Nuclear Power Plant (Reference 1). The Emergency Plan's conformance to applicable codes, Regulatory Guides and standards is discussed in <Section 2.4.1> of the Plan.

The Plan has as its objectives the protection of the health and safety of the public, including Perry employees, and the limitation of damage to facilities or property in the event of an accident occurring at the Perry Nuclear Power Plant.

The Emergency Plan sets forth the objectives and the methods for achieving them. It describes the related emergency organization, including assignments of authority and responsibility. The Plan provides for the following activities: detecting and evaluating emergency conditions; establishing protective action levels and protective measures when such levels are exceeded; communications; postaccident reentry and recovery; liaison with offsite support groups, including federal, state and local governmental authorities; document review and control; periodic emergency preparedness assessment; drills and training of the participating personnel.

The Plan provides that detailed instructions be prepared for dealing with a spectrum of incidents. It also provides the bases for actions to be taken in providing for decontamination, administering of first aid and for diagnosis and treatment of persons injured as a result of a nuclear incident occurring at Perry.

Detailed implementing instructions for the Emergency Plan have been prepared for accomplishing appropriate emergency functions at Perry.

13.3.1 REFERENCE FOR SECTION 13.3

1. "Emergency Plan for Perry Nuclear Power Plant."

13.4        REVIEW AND AUDIT

A program for review, including in-plant and independent review, has been established to ensure that operation of Perry is in accordance with written procedures, instructions and license provisions which have been reviewed and approved by established authorities. This program provides for:

- a. Review of significant proposed plant changes, tests and procedures.
- b. Verification that reportable events, as defined in <10 CFR 50.73>, are promptly investigated and corrected in a manner which reduces the probability of recurrence of such events.
- c. Detection of trends which may not be apparent to a day-to-day observer.
- d. Examination of plant operating characteristics, design and operating experience information that may indicate areas for improving plant safety.

Three organizations have been established to accomplish the review and audit function. Reviews at the plant operating level are the responsibility of the Plant Operations Review Committee (PORC). Independent reviews are the responsibility of the Company Nuclear Review Board (CNRB) and the FENOC Oversight Department, which are independent of direct responsibility for plant operation.

A program for audits of activities affecting plant safety during the operational phase has also been established to verify that such activities are performed in accordance with company policy and rules, approved operating procedures, license provisions, and quality assurance requirements. Audits of plant operations will be administered and performed as discussed in USAR <Section 17.2>.

Guidance in the development of the review and audit programs was derived from <Regulatory Guide 1.33>.

#### 13.4.1 PLANT OPERATIONS REVIEW COMMITTEE

The review functions of the on-site review organization, which is known as the Plant Operations Review Committee (PORC), are described in ANSI N18.7-1976, which is committed to as delineated in the FENOC Quality Assurance Program Manual (QAPM). The specific details related to the activities of PORC are set forth in administrative procedures.

13.4.1.1 (Deleted)

13.4.1.2 (Deleted)

13.4.1.3 (Deleted)

13.4.1.4 (Deleted)

#### 13.4.2 COMPANY NUCLEAR REVIEW BOARD

The description, responsibilities, and functions of the independent review organization, which is known as the Company Nuclear Review Board (CNRB), are described in ANSI N18.7-1976, which is committed to as delineated in the FENOC Quality Assurance Program Manual (QAPM). The specific details related to the activities of CNRB are set forth in administrative procedures.

13.4.2.1 (Deleted)

13.4.2.2 (Deleted)

13.4.2.3 (Deleted)

13.4.2.4 (Deleted)

13.4.3 (Deleted)

13.4.4 FENOC OVERSIGHT DEPARTMENT

The FENOC Oversight Department shall conduct audits of the Perry operational phase activities as described in USAR <Section 17.2>. Audit frequencies of specific safety-related activities as listed in USAR <Section 17.2> are based on the safety significance of each activity, and are consistent with <Regulatory Guide 1.33>. Written reports of such audits shall be directed to the CNRB and appropriate management for review and assessment.

13.5 PLANT PROCEDURES

The safe, efficient and reliable operation of the Perry Nuclear Power Plant is dependent upon the knowledge and performance of trained and qualified personnel and upon effective management and direction of these personnel. A series of documents, collectively entitled the Perry Operations Manual, clearly delineates the methods used to train, manage and direct Perry personnel. This manual is prepared to document and communicate approved methods for complying with corporate commitments to the Technical Specifications, Operational Quality Assurance Program, Updated Safety Analysis Report, and <Regulatory Guide 1.33>.

The Perry Operations Manual is established as a complete management document addressing all aspects of plant management including administrative, technical, quality, safety, personnel, and environmental.

Individual procedures and instructions shall be prepared and reviewed by plant or consultant personnel knowledgeable in the subject matter to be presented. When required by <10 CFR 50.59>, each review shall include a determination of whether or not an unreviewed safety question is involved.

All plant procedures and instructions are approved by procedurally authorized individuals.

Procedures and instructions shall be prepared, reviewed, and approved as described in the Nuclear Operating and Plant Administrative Procedures.

13.5.1 PROCEDURES AND INSTRUCTIONS

13.5.1.1 Conformance with <Regulatory Guide 1.33>

Plant procedures and instructions shall be prepared to address the applicable systems, activities and subjects identified in Appendix A of <Regulatory Guide 1.33>, "Quality Assurance Program Requirements (Operation)," and shall be contained in the Perry Operations Manual.

Specific systems, activities and subjects identified in Appendix A may be deleted, combined or separated, as appropriate, to conform with plant configuration and the procedures for the Perry Operations Manual. Procedures and instructions shall address all aspects of subject activities including administrative, technical and quality.

13.5.1.2 Preparation of Procedures and Instructions

Safety-related procedures and instructions shall be prepared in accordance with the Perry Operations Manual. All safety-related activities performed by the Perry departments shall be performed in accordance with approved, written procedures or instructions. Procedures and instructions required for fuel loading were written and approved for use prior to initial fuel loading. Procedures and instructions which address plant operation under normal and emergency conditions were written, to the extent practical, for use during the initial test program to familiarize plant operating and technical personnel with the operation of the plant, to verify the adequacy of content and to provide sufficient time, prior to initial fuel loading, for any necessary revisions resulting from the initial test program.

Responsibility for preparation, review, approval and implementation of the Operations Manual documents shall be addressed in applicable Plant Administrative or Nuclear Operating Procedures.

Nuclear Operating Procedures (NOPs), which can be administrative or technical, Plant Administrative Procedures (PAPs), and Instructions shall be independently reviewed prior to approval and implemented by plant staff personnel knowledgeable in the requirements applicable to the activity being described.

Interdepartmental activities are described in plant procedures and instructions. These documents define the interface responsibilities of departments involved in operational activities.

Subsequent distribution or alteration shall be controlled in accordance with Nuclear Operating and Plant Administrative Procedures. Proposed changes which conflict with the intent of the operating license shall not be made without prior review of the PORC and authorization from the Company Nuclear Review Board and the Nuclear Regulatory Commission as required by existing regulations.

#### 13.5.1.3 Procedures

PAPs and NOPs are the top level documents within the Perry Operations Manual and delineate the quality assurance policies and controls which implement the Perry Operational Quality Assurance Program. They define department, section and unit responsibilities; assign authority to the section and unit supervisors; and, in most cases, address activities which involve two or more Perry department sections and/or units.

PAPs and/or NOPs shall address such subjects as:

- a. Standing orders to operations Shift Managers and personnel including proper shift relief and turnover procedures.
- b. Authority and responsibilities of reactor operators and senior reactor operators including succession in the control room.
- c. Responsibility to meet licensed operator requirements as described in <10 CFR 50.54(i)>, <10 CFR 50.54(j)>, <10 CFR 50.54(k)>, <10 CFR 50.54(l)>, and <10 CFR 50.54(m)>. The areas associated with the "at the controls" concept as discussed in the above articles of <10 CFR 50.54> and in the guidance in <Regulatory Guide 1.114> is shown in <Figure 13.5-1> as the Surveillance Area. In the event of an emergency affecting the safety of operations, the "operator at the controls" may enter the Operations Area to verify receipt of an annunciator alarm or to initiate corrective actions depicted on <Figure 13.5-1>. In extreme emergencies, such as situations threatening the operator's personal well being, or situations which require evacuation of the control room, relocation to the Remote Shutdown Panel will be allowed.
- d. Special orders of a temporary or self-canceling nature.
- e. Equipment, modification and maintenance control.

- f. Surveillance testing and scheduling.
- g. Logbook and signed checklist usage and control to assure staff knowledge of critical plant parameters and system status, availability and alignment.
- h. Temporary procedure issuance and control.
- i. Fire Protection Program.

## 13.5.2 OPERATING AND MAINTENANCE INSTRUCTIONS

### 13.5.2.1 Operating Instructions

Instructions described in this USAR Section are implemented primarily by operators or reflect operating personnel actions in the performance of their work.

Preparation and maintenance responsibilities of the following operating instructions are as follow:

Shared among the Operations, Radiation Protection, and Radwaste, Environmental, and Chemistry section heads - System Operating Instructions, Valve Lineups, and Alarm Response Instructions.

Operations section head - Electrical Lineups, Integrated Operating Instructions, Off Normal Instructions, Plant Emergency Instructions, Plant Rounds, and Perry Specific Technical Guidelines.

#### 13.5.2.1.1 System Operating Instructions

System Operating Instructions shall be written to provide guidance for operating the various plant systems. These instructions shall provide

the operator with the steps necessary for safe startup, operation and shutdown of plant equipment and systems.

These instructions' format shall provide for the instruction title, scope, precautions and limitations, prerequisites, startup, operation, shutdown, other operations, and references.

#### 13.5.2.1.2 Electrical Lineups

Electrical lineups shall be established to provide guidance in identifying the necessary electrical component positions required as prerequisite conditions for plant startup.

#### 13.5.2.1.3 Valve Lineups

Valve lineups shall be established to provide guidance in identifying the necessary valve positions required as prerequisite starting conditions for each system.

#### 13.5.2.1.4 Integrated Operating Instructions

Detailed operating instructions shall be written to provide operating personnel with step-by-step instructions for changing modes of operation. These instructions shall ensure the operator has information required to safely operate the plant from initial startup to power operation and return to a shutdown condition within the limits and conditions specified in the Technical Specifications and Operating License. These instructions shall reference other instructions or

documents as required for changing modes. They shall contain check-off provisions for verifying various items as appropriate.

These instructions' format shall provide for the instruction title, scope, precautions and limitations, prerequisites, and detailed procedural steps.

#### 13.5.2.1.5 Off-Normal Instructions

Off-Normal Instructions shall be prepared to address correction of off-normal plant conditions which, in themselves, do not constitute an actual emergency condition, but which could degenerate into an emergency condition if positive actions were not initiated.

These instructions' format shall provide for the instruction title, symptoms, automatic actions, immediate operator actions, and subsequent actions.

#### 13.5.2.1.6 Perry Specific Technical Guidelines

Perry Specific Technical Guidelines (PSTG), shall be prepared as the Perry specific technical document which serves as the licensing basis for the plant Emergency Instructions. The PSTG is derived from the BWROG Emergency Procedure Guidelines (EPG) and includes plant specific deviations from the generic owner's group guidance.

#### 13.5.2.1.7 Emergency Operating Procedures

Emergency Operating Procedures (EOPs) shall be prepared to ensure that the PSTG's evaluated actions are taken in response to emergency conditions or malfunctions. Revisions and changes to the EOPs are evaluated from a <10 CFR 50.59> aspect using the PSTG as their licensing basis. Changes to the EOPs that deviate from the PSTG require a 10 CFR 50.59 Review to be performed. These instructions shall provide

symptom oriented guidance to the operators for reacting to emergency situations, as necessary, to either verify that the plant is in, or place the plant in, a safe condition with the minimum effect on the safety of the general public, site personnel or plant equipment.

These instructions' format provides for the instruction title, scope, entry conditions and operator actions.

#### 13.5.2.1.8 Plant Rounds Instructions

Plant rounds shall be prepared to provide directions to monitor equipment operation, direct performance of actions in accordance with an approved procedure, or direct skill-of-the-craft tasks.

#### 13.5.2.1.9 Startup Test Instructions

These instructions have been canceled.

#### 13.5.2.1.10 Alarm Response Instructions

Alarm Response Instructions shall be prepared to provide operators with the necessary information to respond to actuation of all significant annunciator and alarm indications in the control room.

These instructions' format shall provide for the instruction title, identity of the alarm, its panel location and setpoint, probable cause, automatic actions, immediate operator actions, and subsequent operator actions.

#### 13.5.2.1.11 Temporary Instructions

Temporary instructions may be issued to direct operations during testing or maintenance, to provide guidance in unusual situations not within the normal scope of operating instructions and to ensure orderly and uniform

operation for short periods when the plant, a system or component is being operated in a manner not covered by existing documents. Temporary instructions shall also be prepared to address one time or infrequently performed tests or experiments not described in the USAR which might affect the safe operation of the plant. Each temporary instruction shall identify its period or condition of effectiveness. When appropriate, portions of temporary instructions may be included in revisions to permanent instructions before being canceled.

The format for temporary instructions shall be the same as that of an appropriate permanent instruction, depending on the use and circumstance involved.

13.5.2.2        Other Plans, Manuals, Descriptions, Procedures, and Instructions

This section describes the remainder of the Perry Operations Manual, including procedures and instructions, and specific plans, manuals, descriptions, and plant data that management believes sufficiently important to address as part of the Perry Operations Manual.

13.5.2.2.1        Administrative Instructions

Administrative Instructions shall be prepared to provide detailed instructions necessary to implement activities outlined in the various Plant Administrative Procedures.

13.5.2.2.2        Test Instructions

Test Instructions shall be prepared to cover Technical Specification surveillances, inservice inspections and periodic test instructions. A master surveillance schedule shall identify responsibility for, and coordinate efforts for these instructions. The instructions shall

address surveillance activities to be performed by plant personnel responsible for monitoring specific operations, instrument, maintenance, reactor engineering, chemistry and radiochemistry, radiation protection, and environmental activities or equipment. A Ten-Year Inservice Inspection Program Plan shall identify components subject to inservice inspections and establish a schedule for performance of the inspections for each 10 year inspection interval. A Pump and Valve Inservice Testing Program Plan shall identify pumps and valves subject to inservice testing and establish frequencies for performance of tests.

#### 13.5.2.2.3 Instrument Calibration/Maintenance Instructions

Instructions shall be prepared to provide guidance to plant calibration personnel in the performance of plant system, plant instrument and measuring and test equipment calibration and maintenance.

#### 13.5.2.2.4 Maintenance Instructions

Maintenance Instructions shall be prepared to provide maintenance personnel with a maintenance planning guide, as well as detailed instructions for general, preventive and corrective maintenance applicable to the electrical and mechanical activities. Preventive maintenance periodicities are established based on manufacturer's recommendations, qualified personnel judgments and past experiences with similar equipment. The General Plant Manager is responsible for preparation and maintenance of this instruction type.

#### 13.5.2.2.5 Material Control Instructions

Stores and Material Control Instructions shall be prepared to address receiving, inspection, warehousing, storage, material and parts requisition and issue; including any special handling, storage or shipping requirements to be implemented.

#### 13.5.2.2.6 Fuel and Technical Instructions

Fuel and Technical Instructions shall be written to provide direction for performing reactor engineering activities, fuel and core analysis, application and usage of process and offline computers, special nuclear material accountability, refueling and related activities, and technical engineering activities.

#### 13.5.2.2.7 Health Physics Instructions

Plant Health Physics Instructions shall be written and included in the Perry Operations Manual. These instructions account for radioactive material and implement the radiation protection program described in <Chapter 12>.

#### 13.5.2.2.8 Chemistry Instructions

Instructions to implement the Chemistry Program shall provide direction for laboratory techniques, reagent preparation, laboratory equipment calibration, obtaining samples, performing chemical and radiochemical analyses, and arriving at chemical and radiochemical determinations.

#### 13.5.2.2.9 Radwaste Instructions

Instructions shall be written to address liquid and solid radioactive waste management, radwaste system operation and alarm response actions. These instructions shall provide appropriate plant personnel with details necessary to control radwaste discharge, handling, storage and shipping, and to determine the activity of packaged radwaste.

#### 13.5.2.2.10 Training Manual

Instructions shall be written to describe the training and qualification activities for the personnel described in <Section 13.2>.

#### 13.5.2.2.11 Emergency Plan and Instructions

The Emergency Plan and Instructions shall provide an orderly program for dealing with plant emergencies. Step-by-step methods shall be presented for evaluating emergency conditions. The individual and collective responses required to mitigate or terminate the emergency conditions will also be included. Instructions shall address actions to be taken by specific plant personnel in responding to Unusual Event, Alert, Site Area, and General Emergency situations.

The Perry Emergency Plan will be maintained as an individual document under separate cover.

#### 13.5.2.2.12 Security Plans and Instructions

The Security Plan, Security Personnel Training and Qualification Plan and Instructions shall be prepared to describe implementation and maintenance of the Security Plan discussed in <Section 13.6>. The instructions shall address routine administration, implementation, equipment inspections, maintenance and tests; and records as required to implement, maintain and document the security program.

The Security Plan, and the Security Personnel Training and Qualification Plan will be maintained under separate cover.



13.6            INDUSTRIAL SECURITY

13.6.1           SECURITY PLAN

A Security Plan has been prepared which describes the comprehensive physical security program for the Perry Nuclear Power Plant. The plan was prepared in accordance with ANSI N.18.17-1973 to meet the intent of <10 CFR 73> and <Regulatory Guide 1.17> 1973, which references ANSI N18.17 and GSA Specification W-A-00450 B(GSA-FSS).

The security plan contains a summary description of vehicle control measures that are required pursuant to <10 CFR 73.55(c) (7)> and <10 CFR 73.55(c) (8)>.

Pursuant to provisions of <10 CFR 2.790(b)>, and <10 CFR 9.5>, this Security Plan will be filed separately and is exempt from public disclosure.

13.6.2           SECURITY ORGANIZATION

The Director, Nuclear Security Department (FENOC) is responsible for the overall security at Perry. Reporting directly to the Director, Nuclear Security Department is the Manager, Site Protection Section who is responsible for administration of the Security Plan, including the selection and training of a security force that meets the requirements of <10 CFR 73, Appendix B> with respect to suitability, physical and mental qualification and training.

13.6.3 SECURITY PROCEDURES

Detailed procedures have been prepared to cover implementation of the Security Plan including procedures for investigation, resolution and reporting of each security incident.

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