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CHAPTER 13 CONDUCT OF OPERATIONS

13.0 INTRODUCTION

This chapter provides information relating to operation of the Clinton Power Station.

13.1 ORGANIZATIONAL STRUCTURE

AmerGen Energy Company, LLC (AmerGen), is a limited liability company that is a wholly-owned subsidiary of Exelon Corporation.

The members of the AmerGen Management Committee have the necessary authority and full responsibility for the safe and reliable operation of the nuclear facilities licensed by AmerGen. The Chairman of the Management Committee does not have any non-nuclear ancillary responsibilities.

The Nuclear Safety Review Boards (NSRBs) report to and advise the Chairman of the Management Committee and CNO, and the CEO on nuclear safety matters. The NSRBs are responsible for the independent review and audit function for the nuclear units licensed by AmerGen.

13.1.1 Offsite Organization

The resources required to support day-to-day operation and maintenance of each plant are located onsite and report to site management. Supplemental support for the sites is available, as needed, from the corporate organizations. Needed support is provided by assigned resources and is available upon request. Other support for the plants in the areas of human resources, business operations and nuclear oversight (i.e., the quality assurance function) is also provided as needed. Personnel from these organizations are located at headquarters and in regional offices in order to ensure timeliness and ready availability of support.

The corporate organizations establish and implement policies, programs, and processes to effectively and efficiently implement nuclear services and technical support functions in accordance with applicable regulations, codes, standards, and practices. Sufficient levels of management have been established within the functional areas in each support organization and dispersed between headquarters and the regional offices to provide clear management control and effective lines of authority and communication among the organizational units. The corporate organizational arrangement is illustrated in Figure 13.1-2.

In addition, the headquarters offices are staffed by personnel with sufficient expertise and experience to provide the required technical support and services for the safe and reliable operation of the nuclear facilities.

13.1.1.1 Nuclear Services

The Senior Vice President - Nuclear Services is responsible for areas such as nuclear fuels, outage and project management, nuclear security, engineering, and training. The Senior Vice President - Nuclear Services is accountable for defining standard programs and processes, delivering effective services and support, providing technical oversight of program implementation, and supporting the deployment and sharing of best practices throughout the organization.

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13.1.1.1.1 Nuclear Fuels

Nuclear Fuels is responsible for the overall management and supervision of nuclear fuel and related services activities. Nuclear Fuels provides support for ensuring timely and economic supply of reload nuclear fuel, as well as providing reactivity management oversight and assuring that fuel procurement, reload fuel design, fabrication, licensing, utilization, cost accounting, and material accountability are consistent with safe and reliable operation of the nuclear units.

13.1.1.1.2 Outage and Project Management

Outage and Project Management is responsible for support to the site maintenance organizations in the areas of outage management, project management, reactor services, turbine generator services, steam generator services, and NDE services. Outage and Project Management establishes policies, common administrative controls and processes to ensure compliance with applicable requirements and effective use of resources. Outage and Project Management is responsible for the safe, effective and efficient performance of maintenance of plant equipment, instruments and controls in accordance with applicable regulations, policies and procedures.

13.1.1.1.3 Nuclear Security

Nuclear Security is responsible for the effective implementation of security programs, including access authorization, in-processing and fitness for duty. Nuclear Security is responsible for providing strategic direction, providing program and policy guidance, and monitoring overall performance to ensure that security activities are performed in accordance with applicable regulatory requirements.

13.1.1.1.4 Engineering

Engineering is responsible for the establishment of policies related to the design and modification of the nuclear stations in accordance with applicable codes, standards, and regulations. Engineering provides engineering support to the sites for major engineering efforts or projects, or as requested by the stations. Engineering establishes and implements procedures which control material and component specifications, system designs, and modification activities.

Engineering is responsible for the overall management and supervision of information systems related services and activities. This includes creating, obtaining, and enhancing computer hardware, communication, and software systems to support operational requirements. In addition, NIS maintains and preserves information as a corporate asset and is responsible for the software quality assurance program.

13.1.1.1.5 Training

Training is responsible for oversight of the conduct of training activities. Training is accountable for the content of accredited and non-accredited training programs and for supporting the regional training organizations in the implementation and assessment of those programs.

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13.1.1.2 Nuclear Technical Support

Other support areas include licensing and regulatory affairs, business operations, nuclear oversight, human resources, and project development. These groups are accountable for defining standard programs and processes, delivering effective services and support, providing technical oversight of program implementation, and supporting the deployment and sharing of best practices throughout the organization.

13.1.1.2.1 Operations Support

Operations Support is responsible for providing corporate support and management oversight of the nuclear stations in the areas of chemistry, radwaste, radiation protection, operations, and maintenance, work control, and decommissioning. Generation Support is responsible for developing and implementing common administrative controls and processes to ensure safe and efficient plant operations.

13.1.1.2.2 Licensing and Regulatory Affairs

Licensing and Regulatory Affairs is responsible for providing support and management oversight of the nuclear stations to ensure prompt and proper disposition of regulatory issues and emergency preparedness. Licensing and Regulatory Affairs is responsible for developing regulatory positions and advising executive management on priorities and activities affecting regulatory issues at the nuclear sites. Licensing and Regulatory Affairs is responsible for 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, and the dissemination of regulatory and operational experience information. Licensing and Regulatory Affairs has overall responsibility to ensure that these activities are performed in accordance with applicable regulations. Licensing and Regulatory Affairs also provides support for the NSRBs.

13.1.1.2.3 Maintenance and Work Control

Maintenance and Work Control is responsible for providing support and standardization in the areas of predictive, proactive, and preventive maintenance. Maintenance and Work Control routinely assesses station maintenance and work control performance to identify and eliminate inefficiencies in work practices.

13.1.2 Onsite Organization

The Onsite Organization section describes the structure, functions and responsibilities of the onsite organization established to operate and maintain the Clinton Power Station.

13.1.2.1 Onsite Organizational Arrangement

Clinton Power Station is under the direction of the CPS Site Vice President who reports to the Exelon Chief Operating Officer. The Site Vice President is the senior executive on site responsible for overall plant nuclear safety and for compliance with the NRC operating license. The Site Vice President provides day-to-day direction and management oversight of activities associated with the safe and reliable operation of the facility. All station organizations are accountable to the CPS Site Vice President.

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Manager - Human Resources

The Manager - Human Resources is responsible for Medical Programs and Human Resources for the CPS site. This includes liaison with Union Officials and State and Federal Authorities. The Manager - Human Resources reports to the Corporate Human Resources Manager.

13.1.2.1.1 Plant Manager - Clinton Power Station

The Plant Manager is responsible for overall facility operation including the direction of the operation, refueling, chemistry, radiation protection and radwaste activities. The Plant Manager is responsible for compliance with the station's operation license, regulations and ASME code requirements. The Plant Manager reports to the CPS Site Vice President.

13.1.2.1.1.1 Plant Operations

Operations Director

The Operations Director is responsible for daily operation of the plant, including detailed planning and scheduling of operations activities such as startups and shutdowns, as well as activities which support the execution of work by other plant groups. He directs the development and review of required procedures, reports and documents dealing with plant operations. In the development of operating procedures he is assisted by the Site Engineering Director. The Operations Director reports to the Plant Manager. The Operations Director has the following direct reports: Operations Services Manager; Operations Support Manager; Shift Operations Superintendent, and the reactor engineers. The Operations Director is responsible for:

- a. Day-to-day operating routine;
- b. Investigation and resolution of abnormal or emergency operating situations;
- c. Ensuring that operations are carried out in a safe, efficient manner and in strict conformance to the operating license, technical specifications, and operating procedures;
- d. Close liaison with other station groups to ensure safe equipment startup and shutdown;
- e. Surveillance and routine maintenance activities within his purview;
- f. Ensuring that other station activities do not place the plant in an unsafe condition; and,
- g. Evaluation of the operating history of the plant (such as equipment operating failures or operator errors) to detect changes that may improve availability, reliability, and safety in plant operation.

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Operating Shift Crew

Procedures or Standing Orders are issued to delineate the authority and responsibility of the Shift Managers and shift operating crews as follows:

- a. The Reactor Operator's authority and responsibility for shutting down the reactor when he determines that the safety of the reactor is in jeopardy or when operating parameters exceed any of the reactor protection circuit setpoints and automatic shutdown does not occur.
- b. The responsibility to determine the circumstance, cause, and limits under which operations can safely proceed before the reactor is returned to power following a trip or an unscheduled or unexplained power reduction.
- c. The Senior Reactor Operator's responsibility to be present at the plant and to provide direction for returning the reactor to power following a trip or an unscheduled or unexplained power reduction.
- d. The responsibility to believe and respond conservatively to instrument indications unless they are proven to be incorrect.
- e. The responsibility to adhere to the plant Technical Specifications.
- f. The responsibility to review routine operating data to assure safe operation.
- g. The responsibility to meet the requirements of 10 CFR 50.54(i), (k), (l), (m) pertaining to RO and SRO licensed operators.
- h. The responsibility to adhere to plant operating procedures and the requirements for their use. In the event of an emergency not covered by an approved procedure, operations personnel should take action to minimize personnel injury and damage to the facility and to protect health and safety.

Shift Managers

The Shift Operating Crews are supervised by Shift Managers who report directly to the Shift Operations Superintendent. The Shift Managers are in charge of and responsible for plant operations on their shift. They are specifically responsible for supervising and directing operating employees during a shift and ensuring that work is performed according to approved procedures. They are also responsible for coordinating maintenance activities on their shift. Shift Managers are SRO licensed and have the authority to direct shutdown or to direct the plant to any specific set of conditions commensurate with approved procedures when observations of plant equipment or conditions indicate that a nuclear safety hazard exists, or as directed by approved procedures.

The Shift Managers must remain aware of and in control of plant operational, maintenance, and testing activities that may affect safe operation. In the assignment of duties to the Shift Managers, consideration is given to the need to prevent administrative duties from detracting from the primary responsibility of ensuring safe operation of the plant.

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Operations Supervisors

Operations Supervisors may be assigned to function as Control Room Supervisor, Work Control Supervisor or Field Supervisor.

The Operations Supervisors report to the Shift Manager on their shift and assist the Shift Manager in supervising and directing the employees who operate the plant. The Operations Supervisors ascertain and remain aware of plant equipment conditions by reviewing reports and making personal inspections. They are responsible for scheduling certain routine tests and maintenance activities. Operations Supervisors assigned as Control Room Supervisors or Work Control Supervisors are SRO licensed. The Control Room Supervisor has the authority to direct plant shutdown when observations of plant equipment or conditions indicate that a nuclear safety hazard exists or as directed by approved procedures. An Operations Supervisor may serve as the fire brigade leader when not assigned as Control Room Supervisor.

Shift Technical Advisors

The Shift Technical Advisor (STA) function is to provide advisory technical support on shift in the areas of thermal hydraulics, reactor engineering, and plant analysis with regard to the safe operation of the unit.

The STA shall have a bachelor's degree or equivalent in a scientific, engineering or engineering technology discipline and have received specific training in the response and analysis of the plant for transients and accidents. The STA shall also receive training in plant design and layout, including the capabilities of instrumentation and controls in the control room.

The NRC Policy Statement on Engineering Expertise on Shift (Generic Letter 86-04) offers two options for meeting the requirements for providing engineering expertise on shift and meeting licensed operator staffing requirements.

Option 1: Combine SRO/STA Position
This option is satisfied by assigning an individual who has met the STA educational and training requirements, identified in the STA Training Program Description, to each shift as one of the required SROs.

Option 2: Continued Use of STA Position
This option is satisfied by placing on each shift a dedicated STA who meets the educational and training requirements identified in the STA Training Program Description.

Either Option 1 or Option 2 may be used on each shift. CPS may use Option 1 on some shift and Option 2 on other shifts. If Option 1 is used for a shift, then the separate STA position may be eliminated for that shift.

Plant Operators (Control/Reactor Operators)

Plant Operators are Licensed Reactor Operators (RO) classified as either Control Operators or Reactor Operators and report to the Operations Supervisor (Control Room Supervisor) on their shift. They are responsible for manipulating station controls as necessary to match load demands, respond to process changes, and take immediate operator action as necessary to bring the plant into and/or maintain the plant in a safe condition during abnormal or emergency

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conditions. They keep the Operations Supervisors informed of plant activities related to operations. Control Operators and Reactor Operators have the authority to shut down the plant when observations of plant equipment or conditions indicate that a nuclear safety hazard exists or is directed by approved procedures.

Equipment Operators

Equipment Operators report to the Operations shift supervision and perform routine duties outside the control room as necessary for continuous, safe plant operation. They are available for additional work assignments that may arise from time to time. They assist in plant startup, shutdown, surveillance, and emergency response as directed by the Control Operator, Reactor Operator, and/or shift supervision.

Operations Support Manager

The Operations Support Manager is responsible for supporting the daytime shift organization by relieving operators and shift management of some of their administrative burdens and ensuring effective coordination of operations program and projects.

The Operation Support Manager is responsible for reviewing operating experience reports that may be directed to the plant by various groups and regulatory agencies to determine the impact on Operation Section programs and practices. The Operations Support Manager is responsible for clearance and tagging coordination, shift-training, and work coordination. The work coordination activities include pre-planning of Operation's activities in support of execution of work by other plant groups, and nuclear safety and risk pre-planning of the overall work coordination schedule. The Operations Support Manager reports to the Operations Director.

13.1.2.1.1.2 Plant Radiation Protection

Radiation Protection Manager

The Radiation Protection Manager is responsible for the planning, development, implementation and maintenance of all aspects of radiation protection, and radiological programs at CPS and for overseeing the radiological protection program. This includes meeting regulatory requirements and commitments necessary to support CPS in the Radiation Protection area. The Radiation Protection Manager reports to the Plant Manager.

The Plant Manager with the concurrence of the CPS Site Vice President will designate who will fill the role of Radiation Protection Manager (RPM) as described in Regulatory Guide 1.8. This individual has direct access to site management regarding all radiological matters. The RPM is responsible for the implementation of the Radiological Protection Program. The RPM must play a key role in the decision making process regarding radiological safety, ALARA, and Radiation Worker qualification.

The Radiation Protection Manager supervises the planning, development and implementation of radiation protection practices and equipment to be used during normal plant operations and outages of Clinton Power Station.

Furthermore, the RPM through the Radiation Protection Shift Supervisors and/or Radiological Engineering Manager is responsible for:

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- (1) directing operational radiological control activities including control of the radiological aspects of work activities within the RCA, personnel exposures, radioactive materials, and radioactive effluent release monitoring via the radiation monitoring system.
- (2) the development and implementation of operational and technical aspects of the ALARA program; and
- (3) the assessment of contracted radiological control personnel to ensure their qualifications and experience standards are adequate for their assigned tasks at CPS.

Radiological Technical Manager

The Radiological Technical Manager is responsible for all radiological control support services including radiological technical evaluations, coordination of the RP Department's assessment and review program, radiological reviews necessary to support licensing activities, internal and external dosimetry, maintenance of individual exposure records, maintenance and issue of respiratory protection equipment, respirator fit testing, and calibration of radiation detection instruments. The Radiological Technical Manager reports to the Radiation Protection Manager.

13.1.2.1.1.3 Plant Chemistry

Chemistry Manager

The Chemistry Manager is responsible for the supervision of planning and development of the operational aspects of chemical and radiochemical processes and laboratory facilities to be used during the operation of CPS. The Chemistry Manager is responsible for Dry Active Waste and Wet Solid Waste processing, storage, shipment and disposal, hazardous/mixed waste packaging, storage and disposal. He/she is responsible for successful implementation of the Radiological Environmental Monitoring Program (REMP), Radiological Effluent Program including maintenance of the Offsite Dose Calculation Manual, Spill Prevention Control and Countermeasures (SPCC) Program, Solidification Vendor interface and supervising the Chemistry Department to support operation of CPS. The Chemistry Manager reports to the Plant Manager.

13.1.2.1.1.4 Licensing

Regulatory Assurance Manager

The Regulatory Assurance Manager is directly responsible for the corrective action program, emergency response organization, providing representation and interface with regulatory agencies to maintain operating licenses for CPS, managing the USAR, including certification and revision submittals; managing the resolution of licensing issues, conduct of licensing reviews and studies; providing representation to safety groups; and administering the tracking programs for 10CFR21 items. In addition, the Regulatory Assurance Manager is responsible for coordinating the review of plant events to determine causes and corrective actions; reviewing operating experience reports that may be directed to the plant by various industry groups and regulatory agencies and for disseminating such reports to the appropriate personnel for review of applicability to CPS and determination of required action. Also, the Regulatory Assurance Manager is responsible for the review and analysis of select significant plant issues associated

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with human performance and the reduction of human errors, coordination of Institute of Nuclear Power Operations (INPO) Programs, and other special assignments from the Manager-Clinton Power Station. The Regulatory Assurance Manager reports to the Site Vice President.

13.1.2.1.2 Site Engineering Department

In general, Site Engineering personnel have expertise in nuclear, mechanical, electrical, thermal-hydraulics, controls and instrumentation, structural, civil, metallurgy, and materials engineering; chemistry; maintenance support; fueling and refueling operations; technical and engineering management; operations management; fire protection; and quality assurance. The exact technical expertise within Site Engineering will vary from time to time with the makeup of the Department personnel. To the degree necessary supplemental technical assistance will be available from consulting contracts, S&L, and GE. With these arrangements, the specific requirements of NUREG-0731 (Paragraph II.B.2.c(2)) will be met.

Experience requirements for engineering positions in Site Engineering vary with the position. Site Engineering positions may be filled by either a degreed engineer, or a non-degreed individual with equivalent experience in the area of assigned responsibility. Individuals in Site Engineering without engineering degrees are classified as Specialists. Additional requirements have been established both in terms of education and previous experience for the advanced engineering levels, supervision, and management. For example, positions vary from three to four years of working experience beyond an engineering degree for the first promotion level, Engineer (II), and eight to ten years of experience beyond an engineering degree for the Department Directors. Most of the personnel currently filling these positions in the department are considerably better qualified in both education and work experience, than required by the minimum requirements for the positions they are filling.

The Senior Engineer-Nuclear is responsible for the development, administration and performance of the station nuclear engineering program. He is also responsible for the performance of assigned surveillance procedures. He is the "Professional Technical, Reactor Engineering" as described in ANSI/ANS 3.1.-1978.

Site Engineering personnel may perform in-plant technical support activities such as testing and performance monitoring. Prior to performing site activities, or as appropriate during the initial phases of such work, training in administrative process, controls, and conduct of operations shall be provided by the plant training program to assure that such Site Engineering personnel are familiar and adequately qualified to function safely and to perform effectively in their assignments.

Site Engineering Director

The Site Engineering Director is directly responsible for the CPS Nuclear Station Engineering Department. The Site Engineering Department is responsible for Design Control, Inservice Inspection and Technical Support as described in USAR Section 13.1.1.1.3.

The Site Engineering Director reports to the CPS Site Vice President.

Senior Manager Plant Engineering

The Senior Manager Plant Engineering directs a staff which provides technical support for operations, testing, maintenance and modifications. He is responsible for evaluating equipment

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performance data, machinery history, maintenance failure data, and corrective action data to improve equipment/system performance and reliability. The Senior Manager Plant Engineering reports to the Site Engineering Director.

Senior Manager Design Engineering

The Senior Manager Design Engineering is responsible for design development to support modifications to the CPS design. The Senior Manager Design Engineering provides engineering analysis, nuclear fuel management and design changes to CPS equipment/system. This person is also responsible for implementing long term, complex engineering modifications and assigned projects. The Senior Manager Design Engineering reports to the Site Engineering Director.

Engineering Programs Manager

The Engineering Programs Manager is responsible for implementing the Inservice Inspection and Inservice Testing programs, Fire Protection program, Probabilistic Risk Assessment, and the Maintenance Rule (10 CFR 50.65).

13.1.2.1.3 Plant Maintenance

Maintenance Director

The Maintenance Director is responsible for day-to-day maintenance activities including mechanical, electrical, I&C and the Fix-It-Now (FIN) process. The Maintenance Director reports to the Plant Manager.

Electrical Maintenance Manager

The Electrical Maintenance Manager is responsible for directing routine preventive maintenance and repairs of station mechanical and electrical equipment, and performance of mechanical and electrical systems surveillance. The Electrical Maintenance Manager reports to the Maintenance Director.

Mechanical Maintenance Manager

The Mechanical Maintenance Manager is responsible for directing routine preventive maintenance and repairs of station mechanical and electrical equipment, and performance of mechanical and electrical systems surveillance. The Mechanical Maintenance Manager reports to the Maintenance Director.

I&C Maintenance Manager

The I&C Maintenance Manager is responsible for directing routine preventive maintenance and repair of station instrumentation and control equipment, and performance of controls and instrumentation systems surveillance. The I&C Maintenance Manager reports to the Maintenance Director.

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Maintenance Planning Manager

The Maintenance Planning Manager is responsible for planning, scheduling and coordinating maintenance activities during operational and outage conditions. The Maintenance Planning Manager reports to the Maintenance Director.

Maintenance Support Manager

The Maintenance Support Manager is responsible for providing various support functions for station work activities to meet station goals and objective. Facilities reports to the Maintenance Support Manager. The Maintenance Support Manager reports to the Maintenance Director.

13.1.2.1.4 Work Management

Work Management Director

The Work Management Director is responsible for overall performance of on-line and outage scheduling including approval of outage and on-line strategies and milestones. The Work Management Director is responsible for managing the overall performance of On-Line Work Management, Outage Management, and Materials Management. The Work Management Director reports to the Plant Manager.

On-Line Work Manager

The On-Line Work Manager is responsible for the on-line and outage programs including; strategy development; goal setting and milestones; conduct of risk assessment; process and procedures; program assessment and corrective actions; and employee performance. The On-Line Work Manager reports to the Work Management Director.

On-line Outage Manager

The On-Line Outage Manager is responsible for the outage programs including; strategy development; goal setting and milestones; conduct of risk assessment; process and procedures; program assessment and corrective actions; and employee performance. The On-Line Outage Manager reports to the Work Management Director.

Site Supply Manager

The Site Supply Manager is responsible for material management activities to include requisition tracking, stock coding, inventory management, receiving records, maintaining a materials management database, and procurement engineering activities. Further, the Materials Management Manager is responsible for stores activities to include receiving, warehousing, issuing and shipping of parts/materials. The Site Supply Manager reports to the Business Services Company (BSC) Director Supply Operations.

13.1.2.1.5 Nuclear Training

Nuclear Training Director

The Nuclear Training Director is responsible for the CPS Training program as described in Section 13.2. The Nuclear Training Director reports to the CPS Site Vice President.

13.1.2.1.6 Business Operations

Business Operations Director

The Business Operations Director is responsible for providing support to the nuclear organization including budget and cost control. Additional responsibilities include Records

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Management and Document Control. The Business Operations Director reports to the CPS Site Vice President.

13.1.2.2 Plant Personnel Responsibilities and Authorities

The functions, responsibilities, and authorities of various CPS staff positions are described in 13.1.2.1.

13.1.2.2.1 Succession of Authority

The Plant Manager is responsible for overall station operation. If the Plant Manager is unavailable, absent, or incapacitated, one of the following will be designated as responsible for all station activities:

- 1) Operations Director;
- 2) An Operations Middle Manager (which can be either the Operations Support Manager or the Shift Operations Superintendent); or
- 3) Shift Manager.

The delegation of authority including the authority to issue standing or special orders is specified in administrative procedures.

13.1.2.2.2 Administrative Duties

Administrative functions are structured such that details are performed by other personnel or other departments while shift supervision maintains a review/approval role for those activities important to safe operation of the plant. Maintenance work and tagouts are preplanned by the maintenance department even to the point of requesting tagging boundaries. Any qualified individual may review the tagout request, prepare the tags, and submit the tagout to the Tagging Authority for approval. Work Documents are similarly prepared and reviewed by maintenance supervision with approval to commence work being retained by the cognizant positions designated by CPS administrative procedures. The administrative procedures designating which positions may have authority for tagging and work authorization shall not relieve the Shift Manager of ultimate responsibility for plant work. Radiation Work Permits are completed by Radiation Protection personnel, and reviewed and approved by Radiation Protection supervision or individuals designated by the Radiation Protection Manager. Clerical functions such as filing of records and maintenance of procedure manuals are performed by clerical personnel.

The organization structure assists the Shift Manager in concentration on safe operation of the plant in numerous ways. Chemistry Group supervision is responsible for all Chemistry-related activities. Radiation Protection Department supervision is responsible for all Radiological Protection Program activities. The radiation monitoring system is monitored, and appropriate actions initiated in the event of an anomaly. The Shift Manager maintains an overview of radiological control activities. Supervision in each maintenance discipline is responsible for administrative aspects of the maintenance activities in progress. The Operations Director provides a means for relieving the Shift Manager of burdens such as LER investigation, special activities planning, and special surveillance support. The Operations Director and staff provide coordination of outage/testing activities for the Operations Department. They support the Shift Manager in ensuring compliance with the CPS Technical Specifications through the scheduling

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of required periodic surveillance testing. The licensed Senior Reactor Operator on shift provides additional supervision, with a senior license, to aid the Shift Manager in handling administrative functions that must be retained on shift. The ability of the Shift Manager to delegate certain duties shall allow him to concentrate on management of the plant.

13.1.2.3 Operating Shift Crews

CPS typically utilizes a five or more operating shift crew rotation for Operations personnel. Each operating shift crew is qualified to carry out activities related to station operations.

13.1.2.3.1 Administrative Requirements

13.1.2.3.1.1 Command Function

The Shift Manager or during his absence from the Control Room, a designated individual, shall be responsible for the Control Room command function.

13.1.2.3.1.2 Unit Staff

- a. Each on duty shift shall be composed of at least the minimum shift crew composition shown in a Plant operations procedure.
- b. All CORE ALTERATIONS shall be observed and directly supervised by either a licensed Senior Reactor Operator or licensed Senior Reactor Operator Limited to Fuel Handling who has no other concurrent responsibilities during this operation;
- c. A site fire brigade of at least five members shall be maintained on site at all times. The fire brigade shall not include the Shift Manager, the Shift Technical Advisor (or the OTA when the STA is not present), nor the two 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; and
- d. The amount of overtime worked by unit staff members performing safety-related function shall be limited in accordance with the NRC Policy Statement on working hours (Generic Letter No. 82-12).

The objective shall be to have operating personnel work a normal 8-hour day, 40-hour week while the unit is operating.

13.1.2.3.1.3 Minimum Shift Complement

The Minimum Shift Complement represents the normal number of personnel required on shift during Power Operations, Startup and Hot Shutdown, Cold Shutdown, and Refueling.

Staffing requirements are taken from 10 CFR 50.54(m) "Minimum Requirements per Shift for On-Site Staffing of Nuclear Power Units by Operators and Senior Operators Licensed Under 10 CFR Part 55," and the minimum staffing requirements for the on-shift ERO as shown on Table B-1 of the Exelon Nuclear Radiological Emergency Plan Annex for CPS.

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Each shift crew shall include a Shift Manager or a person qualified and designated to act as a Shift Manager. Further, each shift crew shall include an individual qualified by education and experience to act as a Shift Technical Advisor during operating modes 1,2, and 3. If properly qualified per the STA Training Program Description, a Senior Reactor Operator may perform the STA function. If the Shift Manager or Control Room Supervisor fulfill the STA function an additional SRO who has no concurrent emergency duties shall perform the Emergency Plan role of providing independent oversight.

During refueling operations, a separate Senior Reactor Operator or Senior Reactor Operator Limited to Fuel Handling shall supervise these operations and shall have no other concurrent duties.

An around-the-clock Radiological Protection Program is implemented by the presence of at least one Radiation Protection technician meeting ANS/ANSI 3.1-1978 qualifications. Additional personnel are assigned as necessary to provide adequate coverage to meet station needs as determined by Radiation Protection supervision. RP Technicians report to the Radiation Protection Shift Supervisor.

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

13.1.3 Qualifications of Nuclear Plant Personnel

13.1.3.1 Qualification Requirements

CPS has committed to the guidelines set forth in Regulatory Guide 1.8 for selection and training of management personnel with the exceptions noted in Section 1.8. Table 13.1-1 lists members of the plant staff and designates equivalent ANSI/ANS 3.1-1978 titles as a comparison.

13.1.3.2 Qualifications of Plant Personnel

The qualification of support staff personnel responsible for CPS technical support meet or exceed those requirements set by ANS/ANS 3.1-1978. The training records of key staff personnel are available on request.

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TABLE 13.1-1
CPS STAFF TITLES AND ANSI/ANS 3.1-1978 EQUIVALENT

<u>CPS Position or Title</u>	<u>ANSI/ANS 3.1-1978 Equivalent</u>
Plant Manager	Plant Manager
Operations Director	Operations Manager
Maintenance Director	Maintenance Manager
⁴ Radiation Protection Director	Professional - Technical, Radiation Protection
Shift Manager Operations Supervisor (Control Room Supervisor and Field Supervisor)	Supervisors Requiring NRC Licenses
Reactor Operator	Operators
Electrical Maintenance Manager Mechanical Maintenance Manager Maintenance Support Manager Maintenance Planning Manager	Supervisors Not Requiring NRC Licenses
I&C Maintenance Manager	Professional-Technical, Instrumentation and Control
Chemistry Manager	Professional-Technical, Chemistry

⁴ The qualifications of this individual, or the designated Radiation Protection Manager, shall meet the requirements of ANSI/ANS-3.1-1978, for the position of Professional-Technical, Radiation Protection which is equivalent to the Radiation Protection Manager as described in Regulatory Guide 1.8.

Table 13.1-2 has been relocated to Chapter 14 as Table 14.2-6.

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13.2 TRAINING

13.2.1 Training System

The CPS Nuclear Training Program has been developed and implemented to ensure the health and safety of the public by:

- A. Ensuring that personnel are effectively trained and qualified to safely operate and maintain the plant throughout its design life.
- B. Meeting or exceeding all regulatory requirements.
- C. Meeting or exceeding the industry standards and practices identified in Section 1.8
- D. Meeting or exceeding the requirements established by INPO for accreditation of training programs.

The Nuclear Training Department programs are supported by a CPS-referenced simulator which has been certified by the NRC as meeting the requirements of ANSI/ANS 3.5 1993 as endorsed by NRC Regulatory Guide 1.149. The simulator facility is a full scope simulator that meets the requirements of 10 CFR 55.45 and is located on-site.

13.2.1.1 Accredited Training Programs

Training programs recognize a combination of education, experience, and skills commensurate with an individual's level of responsibility which provides reasonable assurances that decisions and actions during all plant conditions will be made consistent with plant safety procedures and operations limits established to protect the public health and safety.

The following key training programs are currently accredited by the National Nuclear Accrediting Board. The initial accreditation date for each training program is noted.

Control and Instrumentation Technician	November, 1988
Electrical Maintenance Personnel	November, 1988
Mechanical Maintenance Personnel	November, 1988
Chemistry Technician	November, 1988
Radiological Protection Technician	November, 1988
Engineering Support Personnel	November, 1988
Non-Licensed Operator	October, 1989
Reactor Operator	October, 1989
Senior Reactor Operator	October, 1989
Shift Technical Advisor	October, 1989
Licensed Operator Requalification	October, 1989
Shift Manager	Implemented May, 1992

Clinton Power Station will maintain these programs in an accredited status with the National Nuclear Accrediting Board or:

- A. will receive approval by the NRC for their content and structure and
- B. meet or exceed the requirements of Reg. Guide 1.8.

13.3 EMERGENCY PLANNING

The Clinton Power Station Emergency Plan is a written emergency plan that establishes the necessary to limit and mitigate the consequences of potential or actual radiological emergencies. The CPS Emergency Plan provides the necessary prearrangements, directions, and organization so that all nuclear emergencies can be effectively and efficiently resolved in order to safeguard station personnel, property, and the general public.

The CPS Emergency Plan is intended to meet the emergency planning and preparedness requirements specified in Regulatory Guide 1.101, Revision 2 (October 1981), 10CFR50.47, and 10CFR50 Appendix E. The CPS Emergency Plan has been submitted to and approved by the NRC. It is reviewed annually; any changes or revisions are procedurally controlled and, when required by regulations, are submitted to the NRC for approval.

The CPS Emergency Plan:

- identifies onsite and offsite emergency response facilities,
- identifies equipment available for emergency assessment, communications, first aid and medical care, and damage control,
- provides for classification of emergencies into four categories,
- depicts notification requirements for classified events,
- makes provisions for prompt and accurate notifications to Federal, State and local governments and,
- describes actions necessary to mitigate an emergency.

Training is conducted for emergency response personnel to ensure their proficiency. The training programs for emergency response personnel are based on the requirements of 10CFR50.47 and 10CFR50 Appendix E. Evaluated exercises are conducted in order to test the adequacy of timing and content of implementing procedures and methods; to test emergency equipment and communication networks, and to ensure that emergency response personnel are familiar with their duties. Each exercise involves participation by Federal, State, and/or local personnel as prescribed by regulatory requirements.

The CPS Emergency Plan revision and distribution is controlled by the appropriate procedures and is distributed on a controlled basis to all positions and locations requiring them, including appropriate Federal, State, and local agencies.

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13.4 REVIEW AND AUDIT

A program for reviews and audits of activities affecting safety is established to:

- a. Verify that these activities are performed in conformance with applicable codes and standards and with company policy and rules, approved procedures and license provisions.
- b. Review significant proposed plant changes, tests and procedures.
- c. Verify that reportable events which require reporting to the NRC within 24 hours are promptly investigated and corrected in a manner which reduces the probability of recurrent events.
- d. Detect trends which may not be apparent to a day-to-day observer.

CPS utilizes a formal committee method, functioning at two levels, to provide for reviews. Reviews at the plant operating level are the responsibility of the Plant Operations Review Committee (PORC). Independent reviews are the responsibility of the Nuclear Safety Review Board (NSRB). The NSRB is independent of direct responsibility for plant operations.

A program for audits of activities affecting plant safety during the operational phase is established to verify that such activities are performed in accordance with company policy and rules, approved procedures, license provisions, and quality assurance program requirements.

The audit program is the responsibility of the CPS Nuclear Oversight Organization and is fully described in the Clinton Power Station Quality Assurance Topical Report.

Guidance in the development of the review and audit program was derived from Regulatory Guide 1.33 and 10 CFR 50.59. Exceptions taken to Regulatory Guide 1.33 are identified in Section 1.8.

13.4.1 Plant Operations Review Committee

The Plant Operations Review Committee (PORC) is responsible for on-site reviews. The PORC is made up of management and technical personnel.

a. Function

The PORC shall function to advise the Plant Manager on all matters related to nuclear safety in accordance with a written plant management procedure which delineates committee composition, responsibility and authority, subjects to be reviewed, reporting requirements, and administrative controls under which the PORC will operate.

b. Membership

The PORC shall be composed of a chairman and supervisory (supervisor or higher) members collectively having the experience and competence in areas of Plant Operations, Maintenance (Control and Instrumentation/Electrical, and

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Mechanical), Radiation Protection, Chemistry, Engineering, and Work Management, necessary to perform the required review function.

c. Meeting Frequency, Quorum, and Alternates

The PORC shall meet on an as needed basis as convened by the PORC Chairman or his designated alternate. A quorum of the PORC shall consist of the PORC Chairman or his designated alternate and four members, including alternates. All alternate members shall be appointed in writing by the Plant Manager; however, no more than two alternates shall participate as voting members in PORC activities at one time.

d. Responsibility

The PORC shall provide timely and continuing monitoring of operating activities to assist the Plant Manager in keeping abreast of general plant conditions and to verify that the day-to-day operating activities are conducted safely and in accordance with applicable administrative controls.

PORC shall perform reviews periodically and, as situations demand, evaluate plant operations and plan future activities. Specifically, the PORC shall be responsible for:

1. Administrative procedures, program descriptions, and changes thereto for the following:

NOTE: Minor/Editorial changes such as correction of punctuation, insignificant word or title changes, typographical errors, or correction of reference errors that do not change the intent, outcome, results, functions, processes, responsibilities, or performance requirements of the item being changed, do not require PORC review.

- a) Applicable station Administrative Procedures recommended in Regulatory Guide 1.33, Appendix A.
- b) The administrative procedure for development of Emergency operating procedures required to implement NUREG-0737 and NUREG-0737, Supplement 1 as stated in Section 7.1 of Generic Letter 82-33.
- c) Station Security Plan
- d) Fire Protection Program
- e) Process Control Program (PCP)
- f) Off-site Dose Calculation Manual (ODCM)
- g) Emergency Plan

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2. Proposed changes for which written evaluations were completed under the provisions of 10 CFR 50.59 or 10 CFR 72.48 or required to be PORC reviewed by other procedures or programs.
3. Proposed change to Technical Specifications (TS), Technical Specification Bases (as required by the TS Bases Control Program), and the Operating License that require Nuclear Regulatory Commission (NRC) approval prior to implementation.
4. Results of investigations, i.e., root cause reports, for events and conditions that involve violations of the Technical Specifications or the Operating License, covering evaluations and recommendations to prevent recurrence.
5. Results of investigations, i.e., root cause reports, for events reportable to the NRC via 10 CFR 50.72 (for items affecting nuclear safety), 10 CFR 50.73 or 10 CFR 72.216 covering evaluations and recommendations to prevent recurrence.
6. Results of investigations, i.e., root cause reports, for responses to Notices of Violation.
7. Results of investigations, i.e., root cause reports for any accidental, unplanned or uncontrolled radioactive release covering evaluations and recommendations to prevent recurrence.
8. Aggregate review of unit operations to detect hazards to nuclear safety, which will be conducted on a minimum annual basis. Items to be considered during this review should include, but not be limited to the following:
 - Operability Determinations
 - Active Temporary Configuration Change Packages
 - Degraded Equipment Log
 - Operator Work-arounds
 - Review of emergent technical issues
9. Performance of special reviews, investigations and reports thereof requested by the Site Vice President, Plant Manager or Nuclear Safety Review Board.
10. Startup reviews for plant refueling and forced outages as required by OP-AA-108-108.
11. Other items as identified by the Plant Manager.

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- e. The PORC shall provide prompt notification to the Site Vice President and the NSRB of any safety significance disagreement between the PORC and Plant Manager.
- f. PORC meeting minutes shall be prepared and all material reviewed shall be identified. Copies of meeting minutes and documentation of reviews will be disseminated to appropriate management and the NSRB.

13.4.2 Nuclear Safety Review Board

The NSRB shall provide the independent review function and report directly to and advise the Chairman of the Management Committee and Chief Nuclear Officer (CNO) and the Chief Executive Officer.

a. Function

The NSRB functions in accordance with a written charter which delineates composition, responsibility and authority, subjects to be reviewed, reporting requirements, and administrative controls under which it operates.

b. Membership

The NSRB shall be composed of individuals who are generally experienced and competent in the areas of nuclear power plant operations, nuclear engineering, chemistry and radiochemistry, metallurgy, controls and instrumentation, electrical engineering, quality assurance, nondestructive testing, radiological safety, mechanical engineering, administrative controls and other appropriate fields associated with the unique characteristics of CPS. In addition to the general engineering understanding in the areas noted above, additional specialized expertise will be used by the NSRB Chairman to provide expert advice on an as-needed basis through the use of consultants. Nondestructive testing, radiochemistry, and metallurgy are typically specialized fields where additional expertise may be required. American National Standard (ANS) N18.7-Section 4.3.2.1 states, "when a standing committee is responsible for the independent review it shall be composed of no less than five members..." The minimum NSRB membership shall be a Chairman and four members. The Chairman and members shall be appointed by the Chairman of the AmerGen Management Committee.

The Chairman and all members shall meet the education and experience requirements of ANSI/ANS 3.1-1978, Section 4.7. Consultants may be utilized as determined by the Chairman.

Alternates shall be appointed in writing by the NSRB Chairman, and their use shall be restricted to the legitimate absence of the permanent member. Alternates shall serve on a continuing basis. Alternates shall function in a manner similar to that of the members except that alternates shall vote only when the members for whom they are alternates are absent. However, no more than two alternates shall participate as voting members in NSRB activities at any one time.

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c. Meeting Frequency and Quorum

The NSRB shall meet as required, but no less frequently than once per six calendar months. Formal meetings shall consist of the Chairman or the Chairman's alternate and at least four NSRB members, including alternates, of which no more than a minority of the quorum shall have line responsibility for operation of the plant.

d. Responsibility

The NSRB shall be responsible for reviewing the following:

1. Written evaluations for:
 - a) Changes to procedures, equipment, or systems, and
 - b) Tests or experiments completed under the provision of 10 CFR 50.59, to verify that such actions did not constitute an unreviewed safety question.
2. Proposed changes to procedures, equipment, or systems which require prior NRC approval as defined in 10 CFR 50.59.
3. Proposed tests or experiments which require prior NRC approval as defined in 10 CFR 50.59.
4. Proposed changes in Technical Specifications or the Operating License.
5. Violations of applicable statutes, codes, regulations, orders, Technical Specifications, license requirements, or of internal procedures or instructions having nuclear safety significance.
6. Significant operating abnormalities or deviations from normal and expected performance of plant structures, or components that affect nuclear safety.
7. All reports required by 10CFR50.73.
8. All recognized indications of an unanticipated deficiency in some aspect of design or operation of structures, systems, or components that could affect nuclear safety.
9. Meeting minutes of the PORC.

e. Audits of unit activities shall be performed as required by the station's Quality Assurance Program.

f. Records

NSRB meeting minutes and written records of reviews shall be prepared and all documentary material reviewed shall be identified. Copies of meeting minutes and documentation of reviews shall be promptly disseminated to appropriate

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management, the NSRB and the Chairman of the Management Committee and CNO.

Audit reports encompassed by section 13.4.2.e shall be forwarded to appropriate management responsible for the areas audited within 30 days after the completion of the audit by the auditing organization.

13.4.4 Audit Program

A comprehensive program of planned and documented audits shall be established and implemented by the Nuclear Oversight Organization, under the direction of the Manager - Nuclear Oversight to verify conformance with quality assurance requirements. The audit program is fully described in the Quality Assurance Topical Report. Results of audits pertaining to plant operations shall be disseminated to appropriate management, and the Nuclear Safety Review Board.

13.4.5 Nuclear Oversight (NOS)

The Nuclear Oversight Department is a corporate based organization providing direct independent oversight of Clinton Power Station quality assurance program activities.

13.4.5.1 Responsibilities

The Manager - Nuclear Oversight is responsible for the CPS quality assurance program, including internal audits and assessments. The performance assessment program is described in the Quality Assurance Topical Report. The Manager - NOS is also cognizant of and supports the employee concern program. The Manager - NOS reports to the Performance Assessment Director – Nuclear Oversight, who reports to the Vice President Nuclear Oversight. This vice president reports to the Chairman of the Management Committee and Chief Nuclear Officer.

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13.5 PLANT PROCEDURES

The safe, efficient, and productive operation of the Clinton Power Station (CPS) is dependent upon trained and qualified people. A series of CPS procedures and Exelon procedures delineate the methods by which Clinton Power Station personnel are managed and directed. These procedures convey a single management philosophy addressing all aspects of plant management, including technical, quality, compliance, administrative, safety, personnel and environmental considerations. This management philosophy is communicated in procedures, which are divided into nine volumes to enhance the flow of work within the plant.

The CPS procedures are compiled in nine volumes that address plant specific requirements. The volumes shall be prepared by the plant staff under the direction of the Plant Manager.

The following is a list of the nine volumes of the CPS procedures:

Volume Number	Title
1	Administrative Procedures
2	Technical Procedures
3	System/Plant Operating Procedures
4	Off-Normal/Emergency Operating Procedures
5	Annunciator Procedures
6	Chemical/Radiochemical Procedures
7	Radiation Protection Procedures
8	Maintenance Procedures
9	Surveillance Procedures

Exelon procedures, including Clinton specific Exelon procedures shall be prepared in accordance with the Exelon Writer's Guide using the Exelon Procedure and Training & Reference Material Process or the CPS process, as appropriate. The USAR sections below describe only CPS procedures and the processing of CPS procedures.

13.5.1 Administrative Procedures

13.5.1.1 Conformance with Regulatory Guide 1.33

The plant procedures necessary to cover the systems, activities and subjects listed in Appendix A to Regulatory Guide 1.33 shall be developed. Each of these procedures are sufficiently detailed for a qualified individual to perform the required functions without direct supervision, but need not provide a complete description of the system or plant process. The format of CPS plant procedures are controlled by an Administrative Procedure meeting the guidelines of ANSI N18.7.

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13.5.1.2 Preparation of Procedures

Procedures needed for fuel loading were written by the plant staff or consultants prior to fuel loading. Procedures required for plant operations under normal and emergency conditions were written by the plant staff or consultants, to the extent practical, for use during the initial plant testing phase to allow for correction prior to fuel loading and for use in the plant operator training program. The responsibility for writing, reviewing and implementing plant procedures is delineated in Section 3, Responsibility, of each procedure.

Procedures requiring a full evaluation in accordance with 10CFR50.59 are reviewed by the PORC and approved by the Plant Manager-Clinton Power Station prior to implementation. Administrative procedures, safety-related procedures, and procedures not requiring a full 50.59 evaluation are approved by the responsible Department Head/Designee prior to implementation. Procedures are reviewed periodically as set forth in Administrative Procedures. Temporary changes to procedures which clearly do not change the intent of the approved procedure shall, as a minimum, be approved by two members of the plant staff knowledgeable in the areas affected by the procedure. At least one of the two members of plant management staff shall hold a Senior Reactor Operator's license. Section 13.4 defines types of procedures requiring PORC review.

Appropriate plant management shall approve all permanent and temporary procedures in accordance with Administrative Procedure requirements. Distribution of CPS procedures shall be controlled as prescribed in appropriate Administrative Procedures. Subsequent revisions, changes or temporary changes shall be controlled in accordance with the Administrative Procedures and as prescribed by the Technical Specifications and the Operational Requirements Manual (ORM). Changes which conflict with the intent of the Operating License and/or the Technical Specifications or involve an unreviewed safety question shall be made only with the review of the PORC and the NSRB and authorization from the Nuclear Regulatory Commission.

13.5.1.3 Procedures

Administrative Procedures which consist of Plant Management Procedures (PMP's), Department Administrative Procedures, and Plant Management Special Procedures define the responsibilities, methodology, and procedural actions required to assure that the plant shall be managed in a safe and dependable manner. They include basic guidelines and controls for efficient dissemination of information and direction to plant personnel and describe the interfaces with external organizations. Plant procedures describe the method by which operating experience information is disseminated to plant personnel.

The Plant Management Procedures describe station functions required to implement the Operational Quality Assurance Program and other plant activities, assign departmental responsibilities for performing these functions, and delineate activities and methods which are applicable to all personnel assigned work at CPS. Departmental Administrative Procedures describe the functions required to implement the Plant Management Procedures and assign group responsibilities. The Plant Management and Departmental Administrative Procedures are issued and include the following:

1. Reactor Operator and Senior Operator authority and responsibilities.
2. The requirements of 10CFR50.54 (i), (j), (k), (l), and (m).

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NOTE

The space designated for the "At the Controls" area of the Control Room is shown in Figure 13.5-1.

3. Special orders of a temporary or self-canceling nature.
4. Equipment control.
5. Control of maintenance and modifications.
6. Surveillance testing.
7. Logbook usage and control.
8. Temporary procedure issuance and control.

The Plant Management Special Procedures describe the functions required to implement the special requirements imposed by various codes and standards and assign departmental responsibilities for accomplishing these functions. In addition, the Administrative Procedures assure that the records, logs, and files are maintained to provide evidence of the safe and dependable operation of the plant.

Administrative Procedures are written in the format outlined in Table 13.5-2.

13.5.2 Operating and Maintenance Procedures

13.5.2.1 Control Room Operating Procedures

The procedures described in this section are followed primarily by licensed operators or reflect licensed operator actions in the performance of their work. Operating procedures are arranged categorically and include a descriptive title for each procedure identified within the classification.

13.5.2.1.1 System and Plant Operating Procedures

System and Plant Operating Procedures describe the sequence of steps to be performed to properly operate equipment, components, systems or combinations of systems. The sequence of steps required for integrated plant operations is also covered. Instructions for energizing, filling, venting, draining, starting up, shutting down, changing modes of operation and other instructions appropriate for operation of systems related to the safety of the plant are delineated in the System and Plant Operating Procedures.

A typical listing of these procedures is provided in Table 13.5-3. The various classifications of procedures are as follows:

- Integrated Plant Operating Procedures
 - Turbine Cycle Systems
 - Auxiliary Cycle Systems
 - NSSS Systems
 - HVAC Systems
 - Electrical Systems
 - Fuel Handling Systems
 - Radwaste Processing Systems

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The format for Plant and System Operating Procedures is provided in Table 13.5-2.

Procedures shall require crane operators who operate cranes over fuel pools be qualified and conduct themselves in accordance with ANSI B30.2-1976.

Clinton Power Station is equipped with status monitoring that satisfies the requirements of Regulatory Guide 1.47. This status monitoring provides the ability for the operator to identify most conditions that would render a safety system inoperable. The system enables the operator to verify that the correct system is undergoing maintenance or test; when a system is placed out of service, an alarm provides that verification. Periodic monitoring of the system is assured through the shift relief and turnover checklist, although routine visual checks are expected. Independent verification of safety-related system valve and electrical lineups for isolation of components for maintenance, for restoration of components following maintenance, and for surveillance procedures shall be performed. The following are exceptions to Independent Verification, Concurrent Verification is required for: THROTTLED valves with a pre-determined valve position, Bus Metering and Potential Fuses. Verification of major flow paths shall normally consist of a second visual verification, remotely when possible, that the valve/breaker is in the correct position. Verification of non-major flow lines may consist of functional testing where conditions such as radiation levels dictate. Post maintenance testing, additionally, may preclude the need for another verification that a system/component has been correctly restored.

Radioactive waste management procedures fall under the category of System and Plant Operating Procedures. Typical radioactive waste management procedures are listed in the Radwaste Processing Systems section of Table 13.5-3.

13.5.2.1.2 Off-Normal Procedures

Off-Normal Procedures describe actions to be taken during other than routine operations, which if continued, could lead to either material failure, personnel harm, or other unsafe conditions. These procedures are written so that a trained operator shall know in advance the expected course of events or indications that shall identify an off-normal situation and immediate action which should be taken. Since off-normal situations do not follow anticipated patterns, the procedures are so written to provide sufficient flexibility for accommodating variations. Off-Normal Procedures are written in the format outlined in Table 13.5-4. A typical list of Off-Normal Procedures is provided in Table 13.5-5.

13.5.2.1.3 Emergency Operating Procedures

Emergency Operating Procedures (EOPs) are plant procedures that direct operators' actions necessary to mitigate the consequences of transients and accidents that have caused plant parameters to exceed reactor protection system set points or engineered safety feature setpoints, or other established limits. The EOPs consist of symptom-oriented flowcharts designed to provide operator direction in response to critical plant parameters, and text-based support procedures written to provide specific operating guidance in response to an EOP event. The EOP flowcharts are prepared in accordance with the BWR Owner's Group Emergency Procedure Guidelines. The EOP text-based support procedures are written to the guidelines and format requirements found in the CPS EOP Program and Preparation manuals and procedures. EOP flowcharts and support procedures are identified as a unique series of off-Normal Procedures and are listed in Table 13.5-5. For beyond design basis events where core cooling can no longer be assured in the EOPs, directions and guidelines for protecting the

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containment and minimizing accident impact on the public are found in the Severe Accident Guidelines (SAG). These beyond design basis guidelines are prepared in accordance with the BWR Owner's Group Severe Accident Guidelines and CPS EOP Program and Preparation Manuals.

13.5.2.1.4 Annunciator Procedures

Alarm Procedures provide the following information associated with an annunciator: title and location, possible causes for the alarm, indications to determine the validity of the alarm, and automatic and manual actions in response to the alarm. They are identified numerically by alarm panel number and by row number on the particular panel. The individual alarm responses are designated alphanumerically by window.

13.5.2.1.5 Temporary Procedures

Temporary Procedures may be used to provide guidance in unusual situations not within the scope of CPS 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 such that portions of existing procedures do not apply.

13.5.2.2 Other Procedures

This section describes how other procedures are classified, what group within the CPS organization has the responsibility for following each class of procedures, and outlines the general objectives and character of each class of procedure.

13.5.2.2.1 Technical Procedures

Technical Procedures provide the necessary steps or guidelines for carrying out the various technical programs associated with the performance of fuel, balance-of-plant, environs, and other ongoing programs. The procedures are prepared by the Nuclear Station Engineering Department and are under the cognizance of the Manager - Nuclear Station Engineering. Procurement Engineering procedures are prepared by the Procurement Engineering group of Material Management and are under the cognizance of the Director - Material Management.

13.5.2.2.2 Chemical/Radiochemical Procedures

Chemical/Radiochemical Procedures describe the plant chemistry and radiochemistry equipment and methods of analysis used in the plant. The procedures are prepared by the Chemistry Department and are under the cognizance of the Director - Chemistry.

13.5.2.2.3 Radiation Protection Procedures

Radiation Protection Procedures describe the methods for monitoring both external and internal exposures to personnel radiation, surveys, radiation monitoring of maintenance and special work activities, operation of various equipment. The procedures are prepared by the Radiation Protection Department and are under the cognizance of the designated Radiation Protection Manager or appropriate Group Supervisors.

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13.5.2.2.4 Maintenance Procedures

Maintenance Procedures provide the sequence of steps required to repair, replace, service, calibrate, or overhaul a component, instrument, or system. The procedures contain enough detail to permit maintenance work to be performed correctly and safely. Additionally, Maintenance Procedures provide direction for conducting maintenance inspections. The procedures are prepared by the Maintenance Department and are under the cognizance of the Manager - Maintenance.

13.5.2.2.5 Emergency Plan Implementing Procedures

Procedures to implement the Emergency Plan were prepared prior to fuel load and complied with applicable guidelines. These procedures were written by the Emergency Preparedness Staff.

13.5.2.2.6 Security Plan Implementing Procedures

Procedures to implement the CPS Security Plan were developed prior to initial fuel load.

These procedures were written and remain under the cognizance of the Supervisor - Security and the procedures which contain safeguards information shall be withheld from public disclosure.

13.5.2.2.7 Surveillance Procedures

Surveillance Procedures prescribe the method for which systems and components important to safety are inspected and/or tested. Plant Technical Specifications and the Offsite Dose Calculation Manual delineate the frequency and type of surveillance tests/inspections to be performed. It is the responsibility of the appropriate department personnel having accountability of the equipment/operation to prepare and follow appropriate surveillance procedures.

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TABLE 13.5-1
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TABLE 13.5-2
FORMAT FOR OTHER THAN "ABNORMAL" OR "ANNUNCIATOR" PROCEDURES

Procedures include, as appropriate, the following elements:

- Title: A title description of the work or system or unit to which the procedure applies, a revision number or date, and an approval status.
- 1.0 Purpose - A brief description of the purpose for which the procedure is intended is clearly stated; for example, for use during reactor or plant startup.
 - 2.0 Discussion/Definitions - A brief description of the applicable component, system, or task for understanding the background, function, or interrelationships of the procedure. Definitions if necessary.
 - 3.0 Responsibility - Indicates the member of CPS management staff responsible for ensuring the proper implementation of the procedure.
 - 4.0 Precautions - Precautions to alert the individual performing the task to those important measures used to protect equipment and personnel, including the public, or to avoid an abnormal or emergency situation are listed in this section. Cautions and warnings specific to steps of the procedure appear within the body of the procedure.
 - 5.0 Prerequisites - This section contains independent actions or procedures which must be completed and plant and environmental conditions which shall exist prior to the use of the procedure. Prerequisites applicable to only certain sections of the procedure should also be identified.
 - 6.0 Limitations - Limitations on the parameters being controlled and appropriate corrective measures to return the parameter to the normal control band should be specified. Administrative limits may be included.
 - 7.0 Materials and/or Test Equipment - Lists special tools and equipment, reagents, instrumentation, measuring and test equipment, materials, etc., required to accomplish the work in accordance with the procedure.
 - 8.0 Procedure - Step-by-step directions to the degree necessary to guide personnel into achieving the stated purpose of the procedure.
 - 9.0 Acceptance Criteria - Specific criteria against which test or inspection results shall be judged for approval/disapproval.
 - 10.0 Final Conditions - Listing of those tasks required to return the applicable component or system to operational status.
 - 11.0 References - References, including references to Technical Specifications, should be included in procedures as applicable. Identified documents or manuals referred to for the purpose of providing background information are listed in this section.

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TABLE 13.5-2 (Cont'd)

- 12.0 Appendices - Applicable appendices such as engineering listings, sketches, photographs, vendor information, engineering drawings, additional supporting information, etc. may be included in this section.
- 13.0 Documents - Complex procedures should have checkoff lists (i.e., datasheets, forms, checklists, valve line-ups, electrical line-ups, etc.). These lists may be included as part of the procedure or may be appended to the procedure.

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TABLE 13.5-3 SYSTEM AND PLANT OPERATING PROCEDURES

INTEGRATED PLANT OPERATING PROCEDURES

Approach to Criticality
Heatup and Pressurization
Startup from Hot Standby
Turbine Startup and Generator Synchronization
Unit Power Changes
Unit Shutdown with Condenser
Unit Shutdown without Condenser
Unit Cooldown

TURBINE CYCLE SYSTEMS PROCEDURES

Main Steam (MS & IS)
Extraction Steam/Heater Vent and Drains (ES, HD, DV)
Feedwater (FW)
Cond. and Cond. Booster (CD & CB)
Turbine Generator (TG, EHC & TS)
Moisture Separator Reheater
Turbine Gland Seal (GS)
Turbine Oil and Transfer (OT, TO)
Generator Seal Oil (SO)
Generator Stator Cooling (GC)
Generator Gas (HY, CO)
Condenser Vacuum (CA)
Circulating Water (CW)

AUXILIARY CYCLE SYSTEM PROCEDURES

Acid and Caustic Handling (AC & OH)
Auxiliary Steam (AS)
Component Cooling Water (CC)
Turbine Bldg. Closed Cooling Water (WT)
Make-Up Water Pump House (WM)
Potable Water (WD)
Filtered Water (TW)
Cycled Condensate (CY)
Chlorination (CL)
Screen Wash (SW)
Shutdown Service Water (SX)
Plant Service Water (WS)
Fire Detection and Protection
Plant Air (IA & SA)
Off-Gas (OG)

NSSS SYSTEMS

Nuclear Boiler (NB)
Reactor Recirculation (RR)

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TABLE 13.5-3 (Cont'd)

Reactor Water Cleanup (RT)
Control Rod Hydraulics & Control (RD & RC & IS)
Reactor Protection (RPS)
Source Range Monitors (SRM)
Intermediate Range Monitors (IRM)
Local Power Range/Average Power Range Monitors (LPRM & APRM)
High Pressure Core Spray (HPCS)
Reactor Core Isolation Cooling (RCIC)
Automatic Depressurization System (ADS)
Residual Heat Removal (RHR)
Low Pressure Core System (LPCS)
Standby Liquid Control (SLC)
Containment Monitoring/Leak Detection (CM & LD)
Containment Combustible Gas Control (HG)
Fuel Pool Cooling and Cleanup (FC)
Suppression Pool Cleanup & Transfer (SF)
Standby Gas Treatment (VG)
Drywell Cooling (VP)
Drywell Purge (VQ)
Traversing In-Core Probe (TIP)

HVAC SYSTEMS

Auxiliary Building HVAC (VA)
Control Room HVAC (VC)
Diesel Generator HVAC (VD)
Fuel Building HVAC (VF)
Screenhouse and Make-Up Water Pumphouse HVAC (VH)
Machine Shop HVAC (VJ)
Off-Gas Building HVAC (VO)
Containment Building HVAC (VR)
Service Building HVAC (VS)
Turbine Building HVAC (VT)
Radwaste Building HVAC (VW)
Essential Switchgear Heat Removal (VX)
Plant Chilled Water System (WO)
Laboratory HVAC (VL)

ELECTRICAL SYSTEMS

6.9 kv and 4 kv VAC Auxiliary Power System
480 VAC Auxiliary Power System
Battery & D-C Distribution
Main Power System
Switchyard & 13.8 kv Auxiliary Power
Diesel Generator & Support Systems
Lighting and Low Voltage Systems
Cathodic Protection

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TABLE 13.5-3 (Cont'd)

Fuel Handling Procedures

New Fuel Receiving and Handling
Containment/Fuel Building Transfer
Refueling Operations
Fuel Slipping Operations
Cask Handling and Transfer

Radwaste Processing Systems

OP* Bldg. Equipment Drain System
OP Equipment Drain Collection System
OP Bldg. Floor Drain System
OP Floor Drain Collection System
OP Bldg. Chemical Waste System
OP Chemical Waste Collection System
OP Bldg. Laundry Drain System
OP Laundry Drain Collection System
Operating Radwaste Filters
Processing Waste Through the RW Filters
Operating Radwaste Demineralizers
Processing Waste Through the RW Demineralizers
Operating Radwaste Evaporators
Processing Waste with the RW Evaps
Operating Waste Sample Tanks
Operating Excess Water Tanks
Discharging from the Station
OP Spent Resin System
OP Phase Separators
OP F/P F/D Sludge System
OP Concentrate Waste System
OP Waste Sludge System
Operating Solidification System
Operating Solid Radwaste Components

* OP = Operating Procedure

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TABLE 13.5-4
"OFF-NORMAL" PROCEDURE FORMAT

Procedure Title - The title describes the "off-normal" situation for which the procedure is provided.

1. Symptoms - Symptoms are included to aid in the identification of the situation. They include alarms, operating conditions, and probable magnitudes of parameter changes. If one condition is peculiar to the situation under consideration, it is listed first.
2. Automatic Action - Describes automatic action expected to occur (State "none" if not pertinent).
3. Immediate Operator Action - These steps specify immediate actions for operation of controls and confirmation of automatic actions that are required to stop the degradation of conditions and mitigate their consequences. Examples may include (a) verification of automatic actions, (b) assurance that the reactor is in a safe condition, (c) notification of station personnel of the nature of the situation, (d) determination that containment and exhaust systems are operating properly in order to prevent uncontrolled releases of radioactivity.
4. Subsequent Action - Steps are included to return the reactor to a normal condition or to provide for a safe extended shutdown period under off-normal conditions.
5. Final Conditions - These steps specify the documentation, authorizations, and plant conditions that must be completed prior to resumption of normal operation.
6. Discussion - A brief explanation of the procedure. This section should contain background information, causes, effects, and other information that may assist in clarifying the procedure and analyzing symptoms.
7. References - Lists various materials used to develop the procedure.

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TABLE 13.5-5
"OFF-NORMAL" PROCEDURES

SYSTEMS/PLANT FAILURES

Reactor Coolant Leakage (Tech. Spec. Limit)
Remote Shutdown
Loss of Control Air
Reactor Scram
Loss of AC Power
Loss of DC Power
Loss of Reactor Coolant Flow
Inadvertent Opening Safety/Relief Valve
Automatic Isolation
Reactor Cavity Leakage During Refueling
Spent Fuel Pool Abnormal Water Level Decrease
Toxic Gas Release
Flooding

FEEDWATER PROBLEMS

Loss of Feedwater

CONTROL ROD PROBLEMS

Inadvertent Rod Movement
Rod Drop

CHEM/RADCHEM PROBLEMS

Reactor Coolant High Activity
Plant Chemistry

NATURAL DISASTER/OTHER MISC

Earthquake
Tornado
Security Intrusion

RADIATION PROBLEMS

High Airborne Activity
High Airborne Radioactivity

RADIOACTIVE MATERIAL RELEASES

Abnormal Releases of Radioactive Liquid
Abnormal Airborne Radioactive Release
Radioactive Liquid Spill

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TABLE 13.5-5 (Cont'd)

EMERGENCY OPERATING PROCEDURES

Flowcharts:

RPV Control
Primary Containment Control
RPV Flooding
ATWS RPV Control
Hydrogen Control
Secondary Containment Control
Radioactivity Release Control
Emergency RPV Depressurization

Supporting Procedure Series:

Bypassing/Defeating EOP Interlocks Series
Amplifying EOP Operator Actions Series
Chemistry Sampling During EOP Conditions Series

Severe Accident Guidelines (SAG)

Primary Containment Flooding flowchart
RPV, Containment, and Radioactivity Release Control flowchart
Support Procedures
Technical Support Guidelines (TSG)

FUEL BUNDLE PROBLEMS

Dropped Fuel Bundle in the Fuel Building
Dropped Fuel Bundle in the Containment Building

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13.6 PHYSICAL SECURITY PLAN

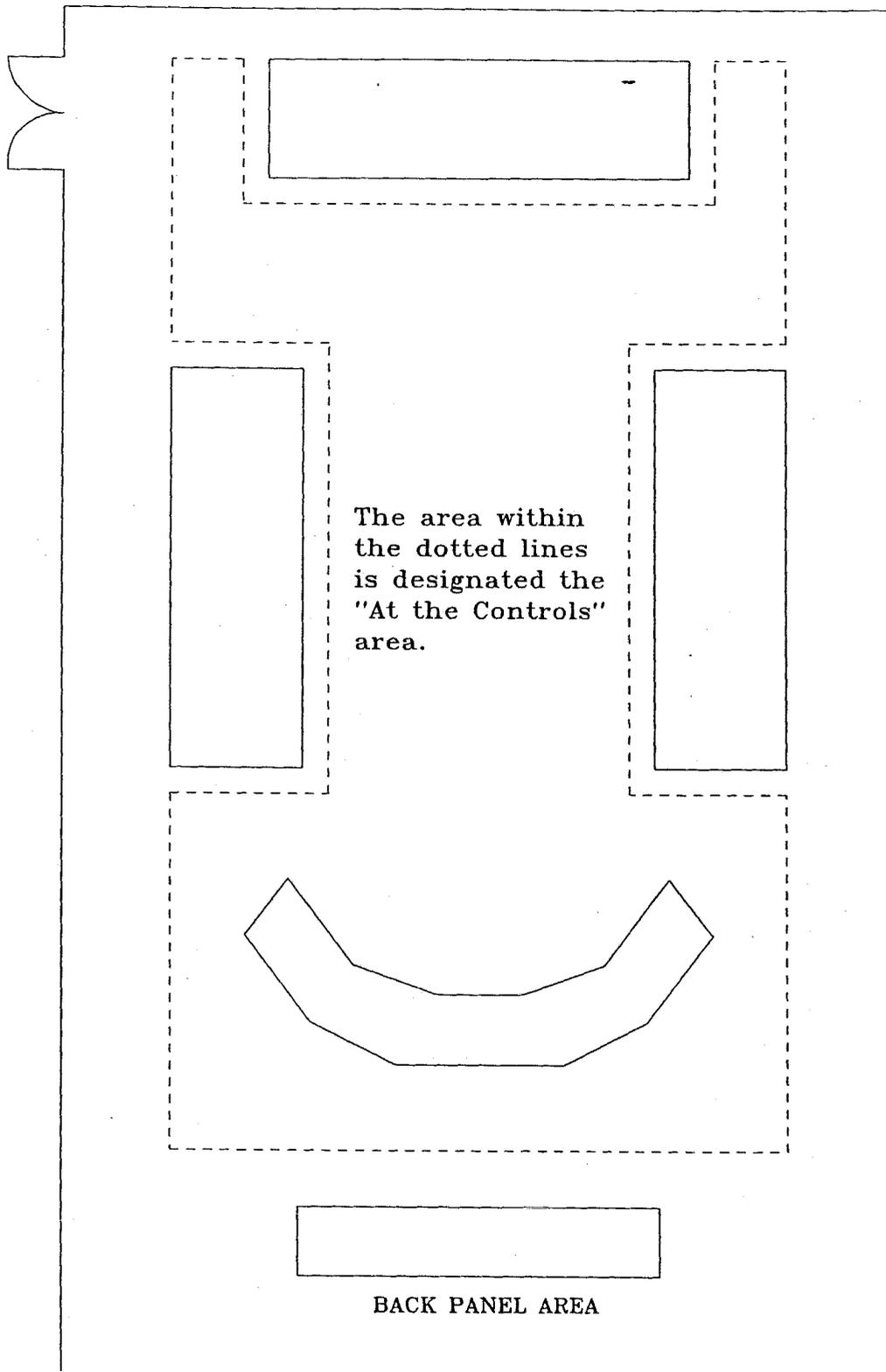
A detailed Physical Security/Contingency Plan, and Qualification and Training Plan, withheld from public disclosure pursuant to 10 CFR 73.21, have been separately submitted to the NRC. These plans conform to applicable sections of 10CFR50.34(c) and (d), 10CFR73, Regulatory Guide 1.17, and ANSI N18.17-1973. Any exceptions to the referenced requirements and regulatory guides are specified in the appropriate plan.

Document control methods limit distribution of, and access to, the approved plan and procedures to persons approved by CPS.

The Supervisor-Security is responsible for administration and implementation of the plan, which has been reviewed by the PORC and approved by the Manager-Clinton Power Station. Enforcement of access control and security surveillance shall be the responsibility of the integrated security force.

Security incidents which directly affect the integrity of Clinton Power Station's security shall be resolved in accordance with established procedures.

All elements of Regulatory Guide 5.66 have been implemented to satisfy the requirements of 10CFR73.56.



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FIGURE 13.5-1
DIAGRAM OF "AT THE
CONTROLS" AREA