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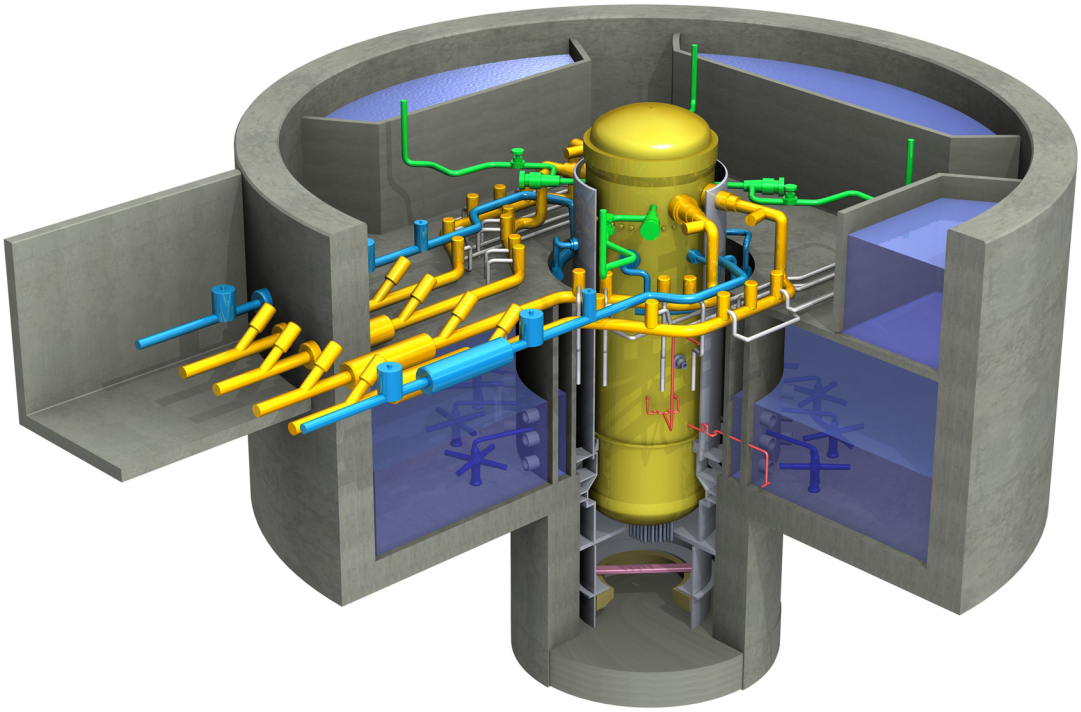

ESBWR Design Control Document
Tier 2

Chapter 13
Conduct of Operations

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13. CONDUCT OF OPERATIONS

This chapter provides information relating to the operational plans for the ESBWR. The purpose of this chapter is to provide reasonable assurance that the Combined License (COL) Applicant's organization will be able to operate the ESBWR in a manner that protects the public health and safety.

13.1 ORGANIZATIONAL STRUCTURE OF APPLICANT

This section is the responsibility of the COL Applicant. The organizational structure must be consistent with the Human System-Interface (HSI) assumptions used in the design of the ESBWR. These assumptions are described in Chapter 18. The organizational structure consistency with the ESBWR HSI design must be documented. The COL Applicant referencing the ESBWR will submit documentation that demonstrates that their organizational structure is consistent with the ESBWR Human Factors Engineering (HFE) design requirements and complies with the requirements of 10 CFR 50.54 (i) through (m) (COL 13.1-1-A).

13.1.1 COL Information

13.1-1-A Organizational Structure

The COL Applicant referencing the ESBWR will submit documentation that demonstrates that their organizational structure is consistent with the ESBWR Human Factors Engineering (HFE) design requirements and complies with the requirements of 10 CFR 50.54 (i) through (m) (Section 13.1).

The COL applicant shall provide a description of the fire protection program staffing requirements and the organization of the Fire Brigade (Subsection 9.5.1.15.3).

13.1.2 References

None.

13.2 TRAINING

13.2.1 Reactor Operator Training

The Training Program Development for Reactor Operator Training is described in Section 18.10. The Implementation of Licensed Operator Training Program validation of baseline training documentation in the full-scope simulator is described in Section 18.12. The Monitoring of Licensed Operator Training Program validation over the operating cycle (and after changes to the plant, staffing, and training program) by analyzing and trending full-scope simulator performance is described in Section 18.13.

Reactor operator training is an operational issue. The COL Applicant will provide a description of, and the schedule for, the training program for reactor operators and senior reactor operators, and the licensed operator requalification program (COL 13.2-1-A).

13.2.2 Training for Non-Licensed Plant Staff

Non-licensed Operator training is described in Section 18.10, Training Program Development. The Monitoring of Non-Licensed Operator Training Program validation over the operating cycle (and after changes to the plant, staffing, and training program) by analyzing and trending plant human performance data is described in Section 18.13.

Training for non-licensed plant staff is an operational issue. The COL Applicant will provide a description of, and the schedule for, the training program for non-licensed plant staff (COL 13.2-2-A).

13.2.3 Incorporation of Operating Experience

The results of reviews of operating experience are incorporated into training and retraining programs in accordance with the provisions of Three Mile Island (TMI) Action Item I.C.5, NUREG-0737 (Reference 13.2-1). The organizational responsibilities for accomplishing this are clearly identified. The Operator Experience Review input to the Training Program is described in Section 18.3.

13.2.4 Training Requirements for Preoperational and Low-Power Testing

A training program for the plant staff is developed. The program includes all phases of plant operation including preoperational testing and low-power operation in accordance with the provisions of TMI Action Item I.G.1, NUREG-0737 (Reference 13.2-1). The Plant Staff Training Program Development is described in Section 18.10.

13.2.5 COL Information

13.2-1-A Reactor Operator Training

The COL Applicant will provide a description of, and the schedule for, the training program for reactor operators and senior reactor operators, and the licensed operator requalification program (Subsection 13.2.1).

13.2-2-A Training for Non-Licensed Plant Staff

The COL Applicant will provide a description of, and the schedule for, the training program for non-licensed plant staff (Subsection 13.2.2).

13.2.6 References

13.2-1 NUREG-0737, "Clarification of TMI Action Plan Requirements," November 1980.

13.3 EMERGENCY PLANNING

Emergency planning is not within the scope of the ESBWR design. However, design features, facilities, functions, and equipment necessary for emergency planning are considered in the design bases of the standard plant.

The ESBWR Standard Plant complies with all the Technical Support Center (TSC) design requirements. Specifically, a TSC of sufficient size to support 26 people consistent with Section 2 of NUREG-0696 (Reference 13.3-2), is located in the electrical building. Display capability in the TSC includes a workstation that at a minimum is capable of displaying the parameters that are required of a Safety Parameter Display System (SPDS). The SPDS function is described in GE Report NEDE-33217P (Reference 13.3-1).

The TSC is environmentally controlled to provide room air temperature, humidity and cleanliness appropriate for personnel and equipment.

The room is provided with radiological protection and monitoring equipment necessary to ensure that radiation exposure to any person working in the TSC would not exceed 0.05 Sv (5 rem) Total Effective Dose Equivalent (TEDE) as defined in 10 CFR 50.2 for the duration of the accident. The level of protection is similar to the Main Control Room (MCR).

The TSC is provided with reliable voice and data communication with the MCR and Emergency Operations Facility (EOF) and reliable voice communications with the Operational Support Center (OSC), Nuclear Regulatory Commission (NRC) Operations Centers and state and local operations centers.

The OSC communications system shall have at least one dedicated telephone extension to the control room, one dedicated telephone extension to the TSC, and one telephone capable of reaching onsite and offsite locations, as a minimum. Any supplemental communications systems are also to be specified by the COL Applicant as appropriate.

The EOF is not within the scope of the ESBWR Standard Plant. It is the responsibility of the COL Applicant to identify the EOF and the communication interfaces for inclusion in the detailed design of the TSC and MCR.

The COL Applicant is responsible for the design of the communication system located in the EOF in accordance with NUREG-0696 (Reference 13.3-2) (COL 13.3-2-A).

Control room data communication of Emergency Response Data System (ERDS) data with the NRC Operations Centers is also provided as appropriate. The COL Applicant is responsible for identifying the OSC and the communication interfaces for inclusion in the detailed design of the control room and TSC (COL 13.3-1-A). The detailed guidance is provided in Section 3 of NUREG-0696 (Reference 13.3-2).

In a building adjacent to the main change rooms, decontamination facilities and supplies for use by onsite individuals are provided. The COL Applicant will provide supplies at the site for decontamination of onsite individuals in the service building adjacent to the main change rooms (COL 13.3-3-A). Showers and waste collection equipment are used to ensure spread of contamination is controlled and disposal cost of waste material is minimized. The central location is convenient to health physics support personnel who supervise their activity.

13.3.1 Preliminary Planning

Not required.

13.3.2 Emergency Plan

To be provided by the COL Applicant.

13.3.3 COL Information

13.3-1-A Identification of OSC and Communication Interfaces with Control Room and TSC

The COL Applicant is responsible for identifying the OSC and the communication interfaces for inclusion in the detailed design of the control room and TSC (Section 13.3).

13.3-2-A Identification of EOF and Communication Interfaces with Control Room and TSC

The COL Applicant is responsible for the design of the communication system located in the EOF in accordance with NUREG-0696 (Reference 13.3-2) (Section 13.3).

13.3-3-A Decontamination Facilities

The COL Applicant will provide supplies at the site for decontamination of onsite individuals in the service building adjacent to the main change rooms (Section 13.3).

13.3.4 References

13.3-1 [*GE Hitachi Nuclear Energy, "ESBWR Man-Machine Interface System and Human Factors Engineering Implementation Plan," NEDE-33217P, Class III (Proprietary), Revision 5, April 2009, and NEDO-33217, Class I, (Non-Proprietary), Revision 5, April 2009.*]*

13.3-2 NUREG-0696, "Functional Criteria for Emergency Response Facilities," December 1980.

* References that are bracketed and italicized with an asterisk following the brackets are designated as Tier 2*. Prior NRC approval is required to change Tier 2* information.

13.4 OPERATIONAL PROGRAM IMPLEMENTATION

Operational Programs are specific programs that are required by regulation. The COL Applicant should fully describe Operational Programs, as defined by SECY-05-0197 (Reference 13.4-1) and Regulatory Guide 1.206 (Reference 13.4-2), in an application for a combined license. The COL Applicant will develop a description of the Operational Programs (COL 13.4-1-A).

The COL Applicant will also provide implementation milestones for Operational Programs that are required by NRC Regulation (COL 13.4-2-A).

13.4.1 COL Information

13.4-1-A Operation Programs

The COL Applicant will develop a description of the Operational Programs (Section 13.4).

The COL applicant shall provide a description of the Fire Protection program (Subsection 9.5.1.15.2).

13.4-2-A Implementation Milestones

The COL Applicant will provide implementation milestones for Operational Programs that are required by NRC Regulation (Section 13.4).

13.4.2 References

13.4-1 SECY-05-0197, "Review of Operational Programs in a Combined License Application and Generic Emergency Planning Inspections, Tests, Analyses, and Acceptance Criteria," October 2005.

13.4-2 Regulatory Guide 1.206, "Combined License Applications for Nuclear Power Plants," June 2007.

13.5 PLANT PROCEDURES

Plant procedures are developed to provide control for activities that are important for safe operation of the facility. The applicable portions of Regulatory Guide 1.33 Rev. 2 (Reference 13.5-5) concerning plant procedures shall be followed.

13.5.1 Administrative Procedures

An Administrative Procedures Plan shall be generated and describe administrative procedures that provide administrative control over activities that are important to safety for operation of the facility. These procedures include those which provide the administrative controls with respect to procedures, and those which define and provide controls for operational activities of the plant staff.

The COL Applicant will develop the Administrative Procedures (COL 13.5-1-A).

13.5.2 Operating and Maintenance Procedures

The development of Operating Procedures is generally described in Section 18.9 (Procedure Development).

A Plant Operating Procedures Development Plan shall be generated and have the following attributes:

- That the scope encompassed by the procedures development process includes those operating procedures defined in Subsection 13.5.2, which direct operator actions during normal, abnormal and emergency operations. The procedure development process will also include consideration of plant operations during periods when plant systems/equipment are undergoing test, maintenance or inspection.
- The procedure development process will address methods and criteria for the development, verification and validation, implementation, maintenance and revision of procedures. The methods and criteria shall be in accordance with TMI I.C.1, NUREG-0737 (Reference 13.5-3).

The development of Operating and Maintenance Procedures is the responsibility of the COL Applicant (COL 13.5-2-A).

Implementation of the Plant Operating Procedures Development Plan shall establish:

- Procedures that are consistent with the requirements of 10 CFR Part 50 and the TMI requirements described in NUREG-0737 (Reference 13.5-3) and Supplement 1 to NUREG-0737 (Reference 13.5-7).
- Requirements that the procedures developed shall include, as necessary, the elements described in American National Standards Institute (ANSI)/American Nuclear Society (ANS)-3.2-1994; R1999 (Reference 13.5-2). Elements of ANSI/ANS-3.2-1994; R1999 addressing water hammer shall be applied in the development of procedures for RTNSS systems.
- That the operator basis for plant operating procedures shall use actions identified in the operational task analysis and Probabilistic Risk Assessment (PRA) efforts in support of the Standardized Design certification, Standardized Plant Design Emergency Procedure

Guidelines and consideration of plant-specific equipment selection and site-specific elements such as the service water intake structure.

- That the definition of the methods through which specific operator skills and training needs, as may be considered necessary for reliable execution of the procedures, will be identified and documented.
- That the procedures specified above shall be made available for the purposes of the Human Factors Verification and Validation (V&V) described in GE Report NEDE-33217P (Reference 13.5-1) provided under separate cover.
- Procedures for the incorporation of the results of operating experience and the feedback of pertinent information into plant procedures in accordance with the provisions of TMI I.C.5, NUREG-0737 (Reference 13.5-3).

The COL Applicant will establish a Plant Operating Procedures Development Plan (COL 13.5-4-A).

The following procedures shall be included in the scope of the Plant Operating Procedures Development Plan described above:

System Procedures

Procedures as delineated in Section A3 of ANSI/ANS-3.2-1994; R1999 (Reference 13.5-2) shall be prepared as appropriate.

Procedures For Off-Normal Or Alarm Conditions

Procedures for off-normal or alarm conditions that require operator action in the MCR and Remote Shutdown System (RSS) shall be prepared as appropriate.

General Plant Operating Procedures

As discussed in Section A5 of ANSI/ANS-3.2-1994; R1999 (Reference 13.5-2), procedures shall be prepared for the integrated operations of the plant.

Procedures for Combating Emergencies and Other Significant Events

As discussed in Section A10 of ANSI/ANS-3.2-1994; R1999 (Reference 13.5-2), procedures shall be provided to guide operations in emergencies and other significant events.

Procedures for Maintenance and Modification

All maintenance and modification procedures including those that require operator actions in the MCR or RSS shall be prepared as appropriate.

Procedures for Radiation Control

Procedures for the control of radioactive releases as discussed in Section A7 (d) of ANSI/ANS-3.2-1994; R1999 (Reference 13.5-2) shall be prepared as appropriate.

Procedures for Calibration, Inspection and Testing

Calibration, inspection and testing procedures that require operator actions to be taken in the MCR or RSS shall be prepared as appropriate.

The COL Applicant will include in its operating procedure development program:

- Procedures for calibration, inspection, and testing.
- Milestone for completing this category of operating procedures (COL 13.5-6-A).

These procedures will ensure that all portions of the safety-related logic circuitry are adequately covered as described in Generic Letter 96-01 (Reference 13.5-6).

Procedures for Radiation Monitoring

Procedures for the monitoring of radioactive releases as discussed in Subsection 5.3.7.4 of ANSI/ANS-3.2-1994; R1999 (Reference 13.5-2), shall be prepared as appropriate.

Procedures for Handling of Heavy Loads

Procedures for load handling and load handling equipment shall be prepared as appropriate using the guidance of Section 5.1 of NUREG-0612 (Reference 13.5-4).

The COL Applicant will include the abovementioned procedures in the scope of the Plant Operating Procedures Development Plan (COL 13.5-5-A).

Emergency Procedures

A writer's guide shall be developed and implemented which defines the process for developing emergency procedures. The writer's guide will contain objective criteria that require that the emergency procedures developed are consistent in organization, style, content and usage of terms.

The documentation describing the emergency procedure development activity results shall include, but is not limited to:

- The objectives of the emergency procedure development process,
- The methods employed during emergency procedure development,
- Deviations from generic technical guidelines approved by the NRC, and
- Discussion of any design change recommendations or negative implications that the current design may have on safe operation as a result of emergency procedures development plan implementation.

The development of Emergency Procedures is the responsibility of the COL Applicant (COL 13.5-3-A).

13.5.3 COL Information

13.5-1-A Administrative Procedures Development Plan

The COL Applicant will develop the Administrative Procedures (Subsection 13.5.1).

13.5-2-A Plant Operating Procedures Development Plan

The development of Operating and Maintenance Procedures is the responsibility of the COL Applicant (Subsection 13.5.2).

13.5-3-A Emergency Procedures Development

The COL Applicant will develop Emergency Procedures (Subsection 13.5.2).

13.5-4-A Implementation of the Plant Procedures Plan

The COL Applicant will establish a Plant Operating Procedures Development Plan (Subsection 13.5.2).

13.5-5-A Procedures Included In Scope Of Plan

The COL Applicant will include the abovementioned procedures in the scope of the Plant Operating Procedures Development Plan (Subsection 13.5.2).

13.5-6-A Procedures for Calibration, Inspection and Testing

The COL Applicant will include in its operating procedure development program:

- Procedures for calibration, inspection and testing.
- Milestone for completing this category of operating procedures (Subsection 13.5.2).

13.5.4 References

13.5-1 [*GE Hitachi Nuclear Energy, "ESBWR Man-Machine Interface System and Human Factors Engineering Implementation Plan," NEDE-33217P, Class III (Proprietary), Revision 5, April 2009, and NEDO-33217, Class I (Non-Proprietary), Revision 5, April 2009.*]*

13.5-2 ANSI/ANS-3.2-1994; R1999, "Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants."

13.5-3 NUREG-0737, "Clarification of TMI Action Plan Requirements," November 1980.

13.5-4 NUREG-0612, "Control of Heavy Loads at Nuclear Power Plants," July 1980.

13.5-5 Regulatory Guide 1.33, "Quality Assurance Program Requirements (Operation)," Revision 2, February 1978.

13.5-6 Generic Letter Number 96-01, "Testing of Safety-Related Logic Circuits," January 1996.

13.5-7 NUREG-0737 Supplement 1, "Clarification of TMI Action Plan Requirements," December 1982.

* References that are bracketed and italicized with an asterisk following the brackets are designated as Tier 2*. Prior NRC approval is required to change Tier 2* information.

13.6 PHYSICAL SECURITY

13.6.1 Preliminary Planning

The ESBWR design supports compliance with portions of 10 CFR 73 in that all vital equipment is located in vital areas to which access is monitored and controlled. Additionally, all vital areas are located within the Protected Area (PA), providing a second physical barrier and means of access control. The "defense in depth" design concepts of redundancy and physical separation of redundant systems further support the physical security of the plant in that multiple vital Structures, Systems or Components (SSC) must be compromised in order to realize effective radiological sabotage. All vital systems and components are housed within robust reinforced concrete structures that are accessed only through a minimal number of normally locked access points that are controlled and monitored by the site security system. Many of the components of vital systems are located below site grade, thereby minimizing exposure to external threats.

The ESBWR Safeguards Assessment Report (Reference 13.6-6) provides details on those SSC(s) that have been determined to require protection as vital equipment as defined in 10 CFR 73.2. This assessment is submitted under separate cover in accordance with the requirements of 10 CFR 73.21.

13.6.1.1 Site Physical Security

Site physical protection is provided through a combination of a Security Organization including armed personnel, physical barriers, controlled access to the PA, controlled access to vital areas located within the PA, and administrative policies and procedures for screening and monitoring personnel and material allowed access to the site.

13.6.1.1.1 Physical Barriers

Physical barriers for sites referencing the ESBWR standard design include the following features:

- An Isolation Zone that is covered by an intrusion detection system to detect penetration or attempted penetration of the protected area barrier and which allows observation on either side of the barrier.
- A PA surrounded by a physical barrier such as a fence. Emergency exit provisions through the PA barrier are alarmed. The PA barrier at a minimum, encloses the following structures:
  - Reactor Building,
  - Control Building,
  - Fuel Building,
  - Turbine Building,
  - Electrical Building,
  - Radwaste Building, and
  - Service Building.

- Controlled access points for passage of personnel, vehicles and materials into the PA. An access control system that identifies and verifies entering personnel are authorized to enter the protected area is provided at the controlled access points. Equipment to enable the security force to detect firearms, explosives and incendiary devices, which could be used to commit radiological sabotage, is provided. Provisions for physical and visual searches of vehicles, personnel, and material, which could be used to commit radiological sabotage, are also provided. {{{

  }}}

- A vehicle barrier system (VBS), either constructed or natural terrain, sufficient to prevent forcible entry into the PA by Design Basis Threat (DBT) vehicles. The VBS will be located at the necessary stand-off distance to protect against the DBT bombs.
- Locked, controlled access portals to vital areas within the PA.
- Bullet / blast resistant barriers at certain vital areas.
- Strategically placed armored defensive positions.

13.6.1.1.2 Vital Areas

There are four (4) buildings within the PA that contain SSCs that are considered to be vital. The combination of the PA barrier and the vital area boundaries provide the required minimum two (2) physical barriers. The PA barrier is separate from the barriers that make up the vital area boundaries. {{{

}}}

Access to the vital areas is via controlled access portals. Portals to vital areas that are not occupied are locked and provided with an active intrusion detection system. Attempts to gain unauthorized access (intrusion) to the vital areas are detected and alarmed at the continuously manned alarm stations (Central Alarm Station [CAS] and Secondary Alarm Station). The electronic or mechanical locks used for securing these portals are of a design that is resistant to manipulation.

In addition, the MCR and CAS are located within buildings located inside the PA and are treated as independent vital areas. {{{

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Emergency exit doors to {{{ }}} Buildings are alarmed at the continuously manned alarm stations.

13.6.1.1.3 Detection Aids

Detection aids capable of detecting and alarming attempted unauthorized entry into the PA or any vital area are provided. The alarm devices are tamper indicating and self-checking, including the transmission line to annunciators (e.g., an automatic indication is provided when failure of the alarm system or a component occurs, or when on standby power).

Security alarms are annunciated in two separate, continuously manned alarm stations, each of which is equipped with the means to perform immediate alarm assessment and provide alarm response command and control. Equipment to record onsite alarm annunciation including the location of each alarm, false alarm, alarm check, and tamper indication and the type of alarm, location, alarm circuit, date, and time is provided.

With respect to Main Control Room alarms, applicable operating alarm response procedures include steps to determine if an alarm might be an indication of unauthorized access to specific vital equipment that the ESBWR Safeguards Assessment Report (Reference 13.6-6) and the plant security strategy have identified as being particularly important. These alarm response procedures include a step to notify the appropriate plant personnel of such an alarm for further investigation. The COL Applicant will identify a milestone for when these provisions for alarm response procedures will be incorporated into the applicable procedures (COL 13.6-9-A).

Security alarm response procedures include steps for responding to unexpected indication of the opening or attempted opening of the rooms or cabinets listed in Table 4-1 of the ESBWR Safeguards Assessment Report (Reference 13.6-6). The COL Applicant will identify a milestone for incorporating these provisions for security alarm response procedures into the applicable procedures (COL 13.6-13-A).

13.6.1.1.4 Communications

Communications systems are provided enabling continuous communication between the continuously manned alarm stations, on-duty guard force personnel, and the MCR. Additional conventional communications provide communication between the continuously manned alarm stations and local law enforcement agencies.

13.6.1.1.5 Access Controls

Means to control access of personnel, vehicles and materials into the PA are provided. Access control measures ensure the positive identification and authorization of personnel and search of personnel, vehicles and materials prior to entry. This includes the use of numbered picture badges.

Additional controls, limit access to vital areas to authorized personnel only.

The COL Applicant will provide a milestone for developing a program to control the issuance and use of security keys (COL 13.6-6-A). The following categories of keys are included in the key control program:

a. Keys required to provide plant personnel ingress to vital areas in the event of an emergency.

b. Keys required to access vital areas or cabinets which are identified in the ESBWR Safeguards Assessment Report (Reference 13.6-6) as needing additional protection against unauthorized access as part of the overall security strategy.

Administrative procedures control work being performed in cabinets containing the control circuitry (contact elements) on the systems listed in Table 4-1 of Reference 13.6-6. These administrative procedures will require either:

a. Two persons, each of whom are qualified to perform the intended work, be present during the performance of any work in the specified cabinets; or

b. A comprehensive surveillance of the logic circuits contained in the cabinet, which would include the exercise of the individual contacts in the circuit.

The COL Applicant will identify a milestone for incorporating these administrative controls into the applicable procedures (COL 13.6-14-A).

Administrative procedures require two persons, each of whom are qualified to perform the intended work, be present during the performance of any work on the systems listed in Table 4-1 of Reference 13.6-6. The COL Applicant will identify a milestone for incorporating these administrative controls into the applicable procedures (COL 13.6-15-A).

13.6.1.1.6 Security Lighting

All outdoor areas within the PA and isolation zones are provided with lighting providing sufficient illumination to permit observation of abnormal presence or activity of persons or vehicles. The design will comply with the lighting levels with a minimum illumination level of 0.2 foot candles measured horizontally at ground level as required by 10 CFR 73.55(i)(6) or alternate approach permitted under the provisions of 10 CFR 73.55(r). The guidance provided in IEEE-692 (Reference 13.6-5) will be used as appropriate to the security requirements.

13.6.1.1.7 Security Power Supply

Site security systems are powered from a reliable power supply meeting the requirements of IEEE-692 (Reference 13.6-5). {{{

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13.6.1.1.8 Testing

Surveillance test procedures and frequencies are established for portions of Safety-Related Distributed Control and Information System (Q-DCIS) controlling specific vital equipment that the ESBWR Safeguards Assessment Report (Reference 13.6-6) and the plant security strategy have identified as being particularly important. These surveillance test procedures and frequencies include both the frequencies needed for self-check of the Q-DCIS as well as less frequent but more comprehensive surveillance tests. The COL Applicant will identify a milestone for developing these surveillance test procedures and frequencies (COL 13.6-10-A).Other testing and maintenance procedures are established for security systems, including physical barriers. The COL Applicant will identify a milestone for developing these other testing and maintenance procedures (COL 13.6-11-A).

13.6.2 Security Plan

The Security Plan consists of the Physical Security Plan, Training and Qualification Plan, and the Safeguards Contingency Plan. The Security Plan is submitted to the Nuclear Regulatory Commission as a separate licensing document in order to fulfill the requirements of 10 CFR 52.79. The Security Plan meets the requirements contained in 10 CFR 26 and 10 CFR 73 and will be maintained in accordance with the requirements of 10 CFR 52.98. The Security Plan is categorized as Security Safeguards Information and is withheld from public disclosure pursuant to 10 CFR 73.21.

13.6.3 COL Information

13.6-1-A (Deleted)

13.6-2-A (Deleted)

13.6-3-A (Deleted)

13.6-4-A (Deleted)

13.6-5-A (Deleted)

13.6-6-A Key Control

The COL Applicant will provide a milestone for developing a program to control the issuance of security keys (Subsection 13.6.1.1.5).

13.6-7-A Redundancy and Equivalency of the CAS and Secondary Alarm Station

The COL Applicant will provide a description of the Secondary Alarm Station capabilities and an assessment of how they are equal and redundant to those of the CAS.

13.6-8-A No Single Act Requirement for CAS and Secondary Alarm Station

The COL Applicant will demonstrate that the design of the security system precludes any single postulated security event resulting in an unacceptable degradation of the site security staff's ability to monitor and direct the response to a security event from either the CAS or Secondary Alarm Station. This will include the power supplies to both alarm stations.

- Identify the location of the secondary alarm station
- Provide the design of the following aspects of the physical configuration of the security system:
  - Onsite and offsite communications equipment,
  - Alarm central processing units,
  - Data gathering panels,
  - Secondary power and remote power (main uninterruptible emergency generator [typical] and local uninterruptible power sources), and
  - Alarm and personnel communication type of transmission and the technology used for the subject transmission (e.g., electronic data/fiber optic for alarms and telephonic/radio/site intercom applied to personnel communication) and locations of pathways (both horizontal and vertical planes) thereof, as appropriate.

- Provide an analysis of single act security events such that at least one alarm station remains functional to:
  - Detect and assess alarms,
  - Initiate and coordinate an adequate response to an alarm,
  - Summon offsite assistance, and
  - Provide command and control, such that the high assurance objective can be maintained.

13.6-9-A Operational Alarm Response Procedures

The COL Applicant will identify a milestone for when the provisions for alarm response procedures will be incorporated into the applicable procedures (Subsection 13.6.1.1.3).

13.6-10-A Operational Surveillance Test Procedures

The COL Applicant will identify a milestone for developing the surveillance test procedures and frequencies (Subsection 13.6.1.1.8).

13.6-11-A Maintenance Test Procedures

The COL Applicant will identify a milestone for developing the other test and maintenance procedures (Subsection 13.6.1.1.8).

13.6-12-A Operational Response Procedures to Security Events

The COL Applicant will provide a milestone for developing an integrated response strategy to a confirmed security event that provides for manual actuation of plant systems by the operators to an evolving scenario necessitating escalating operator response.

13.6-13-A Operational Alarm Response Procedures

The COL Applicant will identify a milestone for incorporating the provisions for security alarm response procedures into the applicable procedures (Subsection 13.6.1.1.3).

13.6-14-A Administrative Controls to Sensitive Cabinets

The COL Applicant will identify a milestone for incorporating the administrative controls (for work performed in cabinets for the systems listed in Table 4-1 of Reference 13.6-6) into the applicable procedures (Subsection 13.6.1.1.5).

13.6-15-A Administrative Controls to Sensitive Equipment

The COL Applicant will identify a milestone for incorporating the administrative controls (for work on the systems listed in Table 4-1 of Reference 13.6-6) into the applicable procedures (Subsection 13.6.1.1.5).

13.6-16-A External Bullet Resisting Enclosures

The COL Applicant will provide a site arrangement drawing that shows the location of the external Bullet Resisting Enclosures and indicate the fields of fire from these locations. In addition, the COL will provide a description of the level of protection provided to security personnel stationed in the Bullet Resisting Enclosures from the effects of the equipment

available to the adversaries utilizing the Design Basis Threat (DBT) toolkit (defined in Reference 13.6-8).

13.6-17-A Site-Specific Locations of Security Barriers

The COL Applicant will provide a site arrangement drawing that shows the location of the Protected Area (PA) fence, the isolation zone on either side of the PA fence, the Vehicle Barrier System (VBS), any Red Zone or Delay Fences, and any buildings or structures inside the PA that are not part of the Certified Design. In addition the COL will identify a milestone for demonstrating that the security strategy described in the ESBWR Safeguards Assessment Report (Reference 13.6-6) remains valid.

13.6-18-A Ammunition for Armed Responders

The COL Applicant will identify a milestone for determining if armed responders require ammunition greater than the amount normally carried to provide reasonable assurance of successful engagement of adversaries from various engagement positions. This will include developing the necessary procedures to assure adequate ammunition is available.

13.6-19-A Site-Specific Update of the ESBWR Safeguards Assessment Report

The COL Applicant will identify a milestone for updating the ESBWR Safeguards Assessment Report (Reference 13.6-6) to reflect site-specific locations of engagement positions including fields of fire. This applies for the external Bullet Resisting Enclosures as well as any internal positions that also have external engagement responsibilities. The report will be updated to demonstrate that the Security Strategy can be implemented as described in the report and results in neutralization of the adversaries before significant radiological sabotage can occur.

13.6.4 References

13.6-1 10 CFR 73, "Physical Protection of Plants and Materials."

13.6-2 10 CFR 11, "Criteria and Procedures for Determining Eligibility for Access to or Control Over Special Nuclear Material."

13.6-3 10 CFR 26, "Fitness for Duty Programs."

13.6-4 10 CFR 75, "Safeguards On Nuclear Material--Implementation of US/IAEA Agreement."

13.6-5 IEEE 692-1997, "Standard Criteria for Security Systems for Nuclear Power Generating Stations."

13.6-6 GE Hitachi Nuclear Energy, "ESBWR Safeguards Assessment Report," NEDE-33391, Revision 2, July 2009, Safeguards Information.

13.6-7 Underwriters Laboratories, Underwriter Laboratories Standard Number 752 (UL 752), "Standard for Bullet-Resisting Equipment," 11th Edition, 2005 (with revisions up to and including December 21, 2006).

13.6-8 Regulatory Guide 5.69, "Guidance for the Application of the Radiological Sabotage Design-Basis Threat in the Design, Development, and Implementation of a Physical Security Program that meets 10 CFR 73.55 Requirements," August 2007.